COMMUNICATION STRATEGIES FOR BUILDING CONFIDENCE IN COVID-19 VACCINES: ADDRESSING VARIANTS AND CHILDHOOD VACCINATIONS

Authors: Emily K. Brunson*
Robert Chialdini**
Kasisomayajula Viswanath***
Donald M. Berwick****

This rapid expert consultation was produced through the Societal Experts Action Network (SEAN), an activity of the National Academies of Sciences, Engineering, and Medicine that is sponsored by the National Science Foundation and the Alfred P. Sloan Foundation. SEAN links researchers in the social, behavioral, and economic sciences with decision makers to respond to policy questions arising from the COVID-19 pandemic. This project is affiliated with the National Academies’ Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats, which is sponsored by the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, and the Standing Committee on Advancing Science Communication, which is sponsored by the Alfred P. Sloan Foundation, Kavli Foundation, National Academy of Sciences W.K. Kellogg Foundation, and the Science Sandbox – Simons Foundation.

SEAN is interested in your feedback. Was this rapid expert consultation useful? For further inquiries regarding this rapid expert consultation or to send comments, contact sean@nas.edu or (202) 334-3440.

*Associate Professor, Department of Anthropology, Texas State University
**Emeritus Professor of Psychology, Arizona State University
***Professor of Health Communication, Harvard University and Dana-Farber Cancer Institute
****President Emeritus and Senior Fellow, Institute for Healthcare Improvement
EXECUTIVE SUMMARY

The fourth wave of the COVID-19 pandemic in the United States has been fueled by the delta variant, which is more contagious than earlier variants, and a slowing down in new vaccinations. Most hospitalizations and deaths in the United States are occurring among people who are not vaccinated. This context affirms the importance of tackling vaccine hesitancy and communicating with parents of children who are eligible to be vaccinated and those for whom future eligibility is anticipated. This rapid expert consultation identifies actionable guidance that state and local decision makers can use to communicate with the public to build confidence in and promote the uptake of COVID-19 vaccines.

This consultation addresses the changing landscape brought about by the delta variant and potential other variants, the potential introduction of booster doses, the role of pediatric immunization, and the continuing threat of vaccine resistance. Box 1 summarizes some communication strategies that may be useful in communicating with people who are vaccine hesitant, especially those who are not yet resistant, and for building confidence among parents and guardians of children.

BOX 1
Key Communication Strategies

Communicating with People Who Are Not Vaccinated

- **Using new, personally relevant, and salient information to influence change:** Highlight new events or evidence to urge a change in vaccination status without derogating people’s previous decision to avoid vaccination.
- **Identifying and targeting people’s reference groups:** Use the fact that people are influenced by those they relate to in providing information about vaccination.
- **Using trend information:** Show data from three or more points in time to highlight changes in vaccination rates among people’s reference groups.
- **Using trusted messengers:** Use the fact that people are more likely to respond if someone they trust delivers a message about vaccination.
- **Tackling misinformation and disinformation:** Target false “information” to help build vaccine confidence.

Communicating with Parents

- **Emphasizing safety and efficacy:** To alleviate parents’ concerns, emphasize the rigorous clinical process of safety, efficacy, and continued monitoring of the approved vaccines that are available for children.
- **Encouraging parent-provider communication and primary care provider recommendations:** Most children, especially young children, visit primary care providers on a regular basis, and these health care providers are a highly trusted group; messages from primary care providers about vaccines’ safety and efficacy may be important for parents.
- **Leveraging social networks to influence parents’ vaccination decisions:** Parents are influenced by their broad trusted social network connections; targeting members of those networks, especially the most influential ones, can help encourage parents to vaccinate their children.
INTRODUCTION

The fourth wave of the COVID-19 pandemic in the United States has been fueled by the delta variant,\(^1\) which is more contagious than previous variants. It is also occurring as vaccination uptake has slowed, even though most hospitalizations and deaths in the United States are occurring among people who are not vaccinated (Pilishvili et al., 2021; Rosenberg et al., 2021).

Across the country vaccination uptake varies greatly. As of October 4, 2021, for example, 40.5 percent of the eligible population in West Virginia was fully vaccinated, compared with 69.6 percent of the eligible population in Vermont.\(^2\) States with low vaccination rates are experiencing higher numbers of confirmed cases, hospitalizations, and deaths from COVID-19 than states with higher vaccination rates (Kates et al., 2021).\(^3\)

More significantly, data from the week ending August 31, 2021, show that the delta variant was responsible for 99.1 percent of all new cases in the country, making it the dominant COVID-19 variant at this time (Centers for Disease Control and Prevention [CDC], 2021a). The recent increases in COVID-19 infections have been attributed to the variant’s higher levels of transmissibility (CDC, 2021a). Early evidence also shows that the delta variant makes people sicker, particularly younger individuals (Sheikh et al., 2021).

The rise of the delta variant and the potential for the emergence of other new variants among unvaccinated people reinforce the urgent need for vaccine uptake among those who are eligible to receive the vaccines and, when they are available, for children 11 and younger as well. The emergence and spread of new variants also signal the need for increasing the acceptability, trust, and accessibility of vaccinations. Ensuring vaccine uptake is critical to ending the pandemic (Brunson et al., 2021; National Academies of Sciences, Engineering, and Medicine [NASEM], 2021a), as those who are not vaccinated, and thus at greater risk of serious illness than those who are vaccinated, may increase the burden on health care facilities, which has the potential to reduce the availability of medical resources and increase the cumulative risk for people with compromised immune systems who either cannot be vaccinated or for whom the vaccine is less effective.

This rapid expert consultation draws on the sciences of anthropology, behavioral economics, communication, decision making, and psychology to identify actionable guidance that state and local decision makers can use to communicate with the public to promote uptake of

---

\(^1\)The World Health Organization recently recommended using letters of the Greek alphabet when referring to SARS-CoV-2 variants. Current labeling of variants is B.1.1.7 (which would be alpha), B.1.351 (beta), P.1 (gamma), and B.1.617.2 (delta).


\(^3\)According to the Kaiser Family Foundation (KFF), in states that report breakthrough cases of COVID-19, more than 9 in 10 of new cases, hospitalizations, and deaths have occurred among people who are unvaccinated or not yet fully vaccinated (Kates et al., 2021).
COVID-19 vaccines. It addresses the changing landscape brought about by the delta variant, the potential introduction of booster doses, the role of pediatric immunization, and the problems of vaccine hesitancy. It also suggests strategies that may be useful in communicating with people who are vaccine hesitant, including parents and guardians of children. In a rapidly evolving situation, where new evidence is continually emerging, state and local decision makers must be ready to frequently adjust and adapt their communication and messaging strategies to meet public needs.

UNDERSTANDING COVID-19 VARIANTS OF CONCERN

The emergence of the delta variant has changed the course of the pandemic in the United States. As noted above, 99.1 percent of new COVID-19 cases were attributable to the delta variant in August 2021, compared with only 7.3 percent of new cases at the end of May 2021 (CDC, 2021b). The increase of this variant’s dominance across the country has been attributed to its high level of transmissibility. Data from the United Kingdom show that the delta variant is between 40 and 60 percent more transmissible than the alpha variant; it is also almost twice as transmissible as the original variant (Scientific Pandemic Influenza Group on Modelling, 2021). CDC data show that in comparison with fully vaccinated people, people who are not fully vaccinated are five times more likely to contract COVID-19, more than 10 times more likely to be hospitalized from COVID-19, and more than 10 times more likely to die from COVID-19 (Scobie et al., 2021).

Recent studies of the delta variant show that current COVID-19 vaccines are effective in preventing cases, hospitalizations, and deaths, though breakthrough cases are occurring with increased frequency among fully vaccinated people (Rosenberg et al., 2021; Scobie et al., 2021). These breakthrough cases have led to guidance for fully vaccinated people to continue...
other public health measures, including wearing masks indoors and social distancing.

The increase in case numbers, hospitalizations, and deaths has been concentrated in states with relatively low rates of vaccination (Rosenberg et al., 2021). As of August 21, 2021, for example, the 10 states with the lowest vaccination rates had nearly four times higher hospitalization rates and five-and-a-half times higher death rates than the 10 states with the highest vaccinations rates (CDC, 2021b).8

Decreasing transmission and controlling infection through vaccination is critical for limiting the emergence of future serious variants. The spread of new variants may also necessitate additional doses of vaccine, at least in some groups. While currently authorized and approved vaccines induce a robust and durable immune response, serum antibody titers appear to wane over the course of 6–9 months;9 as a result, booster doses may be needed to limit ongoing transmission of SARS-CoV-2, the virus that causes COVID-19, particularly in high-risk individuals. Current U.S. Food and Drug Administration (FDA) emergency use authorization of the Pfizer vaccine allows for a single booster dose among the immunocompromised (12 years and older), those 65 years of age and older, those 18 through 64 years of age at high risk of severe COVID-19, and those 18 through 64 years of age whose frequent institutional or occupational exposure to SARS-CoV-2 puts them at high risk of serious complications of COVID-19 including severe COVID-19 (FDA, 2021).

VACCINE HESITANCY

Characteristics of People Who Are Not Vaccinated

As of October 3, 2021, 215,233,625 people (64.8%) in the United States had received at least one dose of a SARS-CoV-2 vaccine, and approximately 185,492,579 people (55.9%) were fully vaccinated (CDC, 2021c). After a successful vaccine launch in early 2021 that saw millions of vaccinations administered daily, the rate of vaccination has begun to lag in many areas of the country.

Individuals who are not vaccinated are not a homogenous group, although they share some characteristics. As of September 2021, Republicans, white evangelicals, rural residents, younger adults, those without college degrees, and adults without health insurance lagged in vaccine uptake (Hamel et al., 2021b). Additionally, despite a narrowing of gaps among vaccinated people by race and ethnicity, White people continue to be vaccinated at higher rates than either Black or Hispanic people (Hamel et al., 2021b). The reasons for this lag might include lack of trust in the larger system, lower perceptions of risk, exposure to “conservative” sources of information, and barriers to access to vaccine locations and services (Brunson et al., 2021; Ndugga et al., 2021; Viswanath et al., 2021).

---

8The 10 states with the lowest vaccination rates at that time were Alabama, Mississippi, Wyoming, Idaho, Louisiana, Arkansas, West Virginia, Georgia, Tennessee, and North Dakota.

9Data from a preprint (not yet reviewed publication) by Pfizer showed the efficacy of its vaccine declined from 96.2 percent to 83.7 percent after more than 4 months of completing full vaccination (Thomas et al., 2021). A New York study has also showed that vaccine effectiveness against infection for adults had declined from 91.7 percent to 79.8 percent (Rosenberg et al., 2021).
Reasons for Vaccine Hesitancy

Reasons for hesitancy vary between and within groups and can include perception of low risks from COVID-19 or of high risks from COVID-19 vaccines, exposure to particular media for COVID-19 and vaccine news, party identification, confidence in science, and trust in the medical establishment (NASEM, 2021b; Viswanath et al., 2021). A previous rapid expert consultation from the National Academies, *Strategies for Building Confidence in COVID-19 Vaccines*, stated that vaccine hesitancy falls along a continuum from those who unquestioningly accept vaccines, to those who have questions and concerns (the vaccine hesitant), to those strongly or unequivocally opposed to vaccinations (NASEM, 2021b). That consultation suggested that communication efforts need to focus on the middle “hesitant” group because they are more likely to be receptive to change than the smaller “unequivocally opposed” group (NASEM, 2021b). Anthropological research shows that there are varied reasons for hesitancy and that vaccination decisions are ongoing nonlinear and dynamic social processes: those processes are influenced by multiple complex factors, including changing personal and social circumstances, to whom people turn for information, and the risk perceptions of individuals and the communities in which they live. These factors help explain why one-size-fits-all or purely educational approaches may have fallen flat (Brunson et al., 2021; Sobo, 2016).

Pediatric Vaccinations and Vaccine Hesitancy Among Parents

Currently, the Pfizer/BioNTech vaccine is authorized for emergency use for individuals 12 years of age and older, and it is fully approved for those aged 16 and older. The Moderna vaccine and the Johnson & Johnson vaccine are authorized for emergency use for individuals 18 years of age and older. Clinical trials for the Pfizer/BioNTech vaccine showed that the vaccine was 100 percent effective at preventing symptomatic COVID-19 cases, hospitalizations, and deaths in children aged 12–15 years (Frenck et al., 2021). Additional clinical trials for younger children are ongoing, including for children 5–11 years old and those under 5 years old.

Vaccinating children and youth will likely play a critical role in limiting the spread of COVID-19. Recent data demonstrate that the delta variant can rapidly spread in schools when adults who are not vaccinated, such as teachers and staff, come into close contact with unvaccinated children (Lam-Hine et al., 2021). In addition, unvaccinated parents are at risk of infecting their children who, in turn, may spread the infection in their schools. As more children are infected, the frequency of COVID-19-associated hospitalizations in children and adolescents who are not vaccinated has also increased, though the proportion of children admitted to the hospital for COVID-19 has remained stable (Delahoy et al., 2021). For June 20–July 31, 2021, “the hospitalization rate among unvaccinated adolescents (aged 12–17) was 10.1 times higher than that among fully vaccinated adolescents” (Delahoy et al., 2021, p. 1255).

Studies have found that vaccine hesitancy among parents can be attributed to a number of factors. A University of Michigan Health C.S. Mott Children’s Hospital National Poll on

---

10 In the clinical trial that included 2,229 adolescents aged 12–15 in the United States, there were 18 cases in the groups that received a placebo and no cases in the vaccinated group.

Children’s Health\textsuperscript{12} found five key decision-making factors about childhood vaccines among parents: side effects of the vaccine (70%), testing in the child’s age group (63%), how well the vaccine works in children (62%), parents’ own research (56%), and the recommendation of their child’s health care provider (38%) (Clark et al., 2021).

A Kaiser Family Foundation (KFF) survey of parents of children aged 12–17 found that the vaccination status of children closely mirrored that of parents, with older parents, Democrats, high-income earners, and those with college degrees more likely to say that their children had already been vaccinated (Hamel et al., 2021a). The major concerns reported by parents of children aged 12–17 who were not vaccinated included not knowing enough about the long-term effects of the COVID-19 vaccine in children (88%), concerns about children experiencing serious side effects (79%), and concerns that the COVID-19 vaccine might negatively affect future fertility (73%) (Hamel et al., 2021a). Younger parents, as well as Black and Hispanic parents, were more likely to report that they did not have enough information about the effectiveness, side effects, or long-term health effects of COVID-19 vaccine in children (Hamel et al., 2021a; Pippert et al., 2021).

**STRATEGIES FOR COMMUNICATING WITH PEOPLE WHO ARE NOT VACCINATED TO BUILD CONFIDENCE IN COVID-19 VACCINES**

Two previous rapid expert consultations from the National Academies have addressed building vaccine confidence, and they both provide key strategies for communicating about COVID-19 vaccines. The first one, *Strategies for Building Confidence in COVID-19 Vaccines*, broadly discussed promoting vaccine acceptance by building confidence in the COVID-19 vaccines through public engagement with targeted communications (NASEM, 2021b). The second one, *Understanding and Communicating About COVID-19 Vaccine Efficacy, Effectiveness, and Equity*, discussed how well COVID-19 vaccines work and how equitably they could be distributed, and it offered practical strategies for both the process and the content of such communication (NASEM, 2021c). The key messages from these two consultations are summarized in Boxes 2 and 3.

**BOX 2**

**Strategies for Building Confidence in COVID-19 Vaccines**

**Engage Communities to Combat Mistrust and Build Public Confidence**

1. Form partnerships with community organizations that have strong existing community relationships and are close to their audiences.

2. Engage with and center the voices and perspectives of trusted messengers who have roots in the community using dialogue-based interventions, including social mobilization and engagement.

3. Engage across multiple, accessible channels tailored for different vulnerable populations. Examples include catering for those who cannot attend meetings, those who have limited broadband service, those who speak languages other than English, and those who cannot use written text.

\textsuperscript{12}The poll administered in June 2021 asked a national sample (N = 2,019) of parents of children aged 3–18 about their COVID-19 vaccine decisions.
4. Begin or continue working toward racial equity by acknowledging existing inequities and framing the COVID-19 vaccines as one of several tools that can help advance equity in communities most affected by the pandemic, and reassure those communities that this type of work will continue beyond the pandemic.

5. Allow and encourage public ownership of COVID-19 vaccination through public oversight and community engagement as a way of building trust and confidence.

6. Measure and communicate inequities in vaccine distribution as a way of identifying and addressing these inequities.

Develop Communications for Increasing Demand for and Promoting Acceptance of COVID-19 Vaccines

1. Meet people where they are, and do not try to persuade everyone.
2. Avoid repeating false claims.
3. Tailor messages to specific audiences.
4. Adapt messaging as circumstances change.
5. Respond to adverse events in a transparent, timely manner.
6. Identify trusted messengers to deliver messages.
7. Emphasize support for vaccination instead of focusing on naysayers.
8. Leverage trusted vaccine endorsers.
9. Pay attention to delivery details that also convey information.

SOURCE: NASEM (2021c).

BOX 3
The Science of Communicating About the Efficacy and Effectiveness of COVID-19 Vaccines

Four Steps for Producing Communications

1. Identify the outcomes most relevant to recipients’ decisions through community partnerships.
2. Summarize the evidence regarding those outcomes.
3. Identify the most relevant subset of evidence.
4. Evaluate messages before dissemination.

Five Principles for Designing Communications

1. Define terms clearly.
2. Use numbers to describe quantities.
3. Compare options clearly.
4. Present all relevant outcomes.
5. Communicate uncertainty and anticipate changes.

SOURCE: NASEM (2021b).

The emergence of the delta variant and the authorization of vaccinations for children 12 and older offer new opportunities for reaching people who are not vaccinated and parents and guardians of unvaccinated children. In addition to leveraging the above strategies, research from the social and behavioral sciences suggests approaches that can be used to communicate the
importance of becoming vaccinated against COVID-19. It is important that communication efforts continue to maintain positive attitudes toward vaccination among those who are not vaccinated. In addition, highlighting bipartisan support for COVID-19-related measures could be an effective strategy to reduce polarization and promote uptake of public health mitigation measures (Van Bavel et al., 2020).

As noted above, research has shown that there is a spectrum of vaccine hesitancy, and that spectrum may require different messaging depending on the reasons for that hesitancy (NASEM, 2021b, 2021c). Different people respond to different messaging, and targeted messages to specific audiences are important to consider in designing communication strategies. Research from the social sciences provides some strategies that can be used by decision makers to communicate with different types of people who are not vaccinated. These strategies are summarized in **Box 4** and discussed below.

**BOX 4**

**Communicating with People Who Are Not Vaccinated**

- **Using new, personally relevant, and salient information to influence change:** Highlight new events or evidence to urge a change in vaccination status without derogating people’s previous decision to avoid vaccination.
- **Identifying and targeting people’s reference groups:** Use the fact that people are influenced by those they relate to in providing information about vaccination.
- **Using trend information:** Show data from three or more points in time to highlight changes in vaccination rates among people’s reference groups.
- **Using trusted messengers:** Use the fact that people are more likely to respond if someone they trust delivers a message about vaccination.
- **Tackling misinformation and disinformation:** Target false “information” to help build vaccine confidence.

**Using New, Personally Relevant, and Salient Information to Influence Change**

Considerable research affirms that people want to be consistent with what they have previously committed themselves to, either by word or action (Cialdini, 2021). Trying to move them from those committed choices with claims that the choices were erroneous is difficult, as such claims undermine recipients’ view of themselves as good decision makers. Trying to influence people who are not vaccinated by suggesting that they have made a wrong decision is unlikely to succeed.

In contrast, providing decision-relevant information or noting events that have recently occurred allows people to unmoor themselves from an earlier choice. One can say, in effect: “This is something you could not have known at the time, but that you would want to take into account now, as any good decision maker like you would.” In the domain of vaccination against COVID-19, such new events or information\(^\text{13}\) could include:

\(^{13}\)A KFF September 2021 vaccine monitor report showed that for adults who got vaccinated from June 1 onwards, there were three major reasons for getting vaccinated: “the increase in COVID cases due to the delta variant (39%), reports of local hospitals filling up (38%), and knowing someone who became seriously ill or died (36%)” (Hamel et al., 2021b).
1. The emergence of the more transmissible and consequential delta variant, including high case counts, hospitalizations, and deaths, which now puts everyone, including children, at greater risk.

2. Increased numbers of people, especially people like themselves who were initially hesitant, have decided to become vaccinated.

3. Although there were many questions about vaccine safety in January 2021, given increases in the number of vaccines administered there is now a voluminous amount of data available on vaccine safety.

4. FDA has granted full approval of the Pfizer vaccine and recognized its continued safety. Clinical trials for the Moderna and Johnson & Johnson vaccines continue to collect data for submission for full approval.

5. COVID-19 now poses increased burdens of severe complications among people who are not vaccinated.

6. There is accumulating evidence that vaccines provide significant protection against the most serious complications of COVID-19 and death.

Using new information is more likely to work if the information is presented in ways that are personally relevant and salient (Poland, Matthews, and Poland, 2021). Vaccine safety data, for example, might be more impactful if stories of individuals known to the person are presented, as opposed to generic statistics or percentages (Fitzgerald et al., 2020; Viswanath and Emmons, 2006). In addition, it is important to acknowledge that things can, will, and do change regularly in a public health emergency like the COVID-19 pandemic. This means that communication needs to be transparent, consistently communicating the timing and process of regulatory decisions.

**Identifying and Targeting People’s Reference Groups**

Communication trends can be most persuasive when they describe an individual’s reference group, which can be defined as the group that the individual relates to or aspires to relate to. A reference group serves as the individual’s frame of reference and source for ordering his or her experiences, perceptions, cognition, and ideas of self; they include neighborhoods, churches, workplaces, and friendship networks (Singer, 2017). Reference groups are not necessarily fixed and can change over time, which means that the success of this technique might depend on current trends within groups. Ozarks Healthcare in Missouri, for example, created a private setting for vaccination for those patients who were afraid of being accused of “selling out” when they were seen being vaccinated by their peers or people in their reference groups.14

For COVID-19 mitigation overall, studies show that social approval from important others is critical (Smith et al., 2021). Amplifying stories of individuals who are in people’s reference groups and who regret their decisions to not accept vaccines may also lead hesitant individuals in that group to review their stance (Wang and Shen, 2019). In addition, these stories may also highlight why different people reassessed their decisions and chose to be vaccinated. Advertising campaigns in Michigan, for example, show stories of people who decided to reassess

---

and get vaccinated with such reasons as “so I can hug my grandma” and “so I can get back to school.”  

**Using Trend Information**

Rather than citing the total current number or percentage of people who are vaccinated, presenting trends over time (especially of previously hesitant individuals within one’s reference group) could be more persuasive. People who are not vaccinated and who see these trends in people like them are more likely to predict that this trend in behavior (in this case, becoming vaccinated) will continue. This then produces something more than current social proof of the wisdom of the action (getting vaccinated), creating what can be labeled as “future social proof” (Cheng et al., 2020; Loschelder et al., 2019; Mortensen et al., 2017; Sparkman and Walton, 2019). Social proof is a psychological phenomenon in which people assume the actions of others in an attempt to reflect correct behavior for a given situation (Cialdini, 2021).

One way to do this is to present growth curves with at least three data points so that communicators can show the data as a meaningful trend. One such example is the trend and stories behind the increase in vaccination rates among Black individuals in the United States. In March 2021, 5 percent of the Black population was fully vaccinated; this percentage rose to 24 percent in April 2021, 34 percent in July 2021, and 43.2 percent in September 2021 (Ndugga et al., 2021). The increase has been attributed in part to tailored messages, community engagement, acknowledging and addressing barriers to access, and addressing mistrust within Black communities. Demonstrating such trends is more likely to be persuasive if the information includes a specific example of a person or family who has changed their mind; reporting the trend alone may not be as effective as interpreting or contextualizing it, as with an example.

**Using Trusted Messengers**

Studies have also shown the value of identifying trusted messengers that can promote a pro-vaccination message. Trusted messengers are different for different people, but they often have prior relationships with a group and are relied on for information, advice, or assistance. Usually, this trust is developed over time. For example, work on HPV vaccine promotion has shown that pastors can be used as trusted messengers for vaccine promotion (Lahijani et al., 2021). Examples of similar efforts to use trusted messengers in the COVID-19 context include the Michigan State Extension Office (Williamson et al., 2021), which engages local community leaders and farmers to answer questions from others in the community. In Wyoming, state health leaders met with trusted community messengers in communities of color, with disability rights groups, and with immigration rights groups to promote vaccine confidence by building long-term partnerships focused on equity (LeBlanc et al., 2021).

**Tackling Misinformation and Disinformation**

The continued rise of COVID-19-related misinformation and disinformation has targeted specific populations, contributing to continued vaccine hesitancy. Misinformation is untrue information, factually or contextually, that is shared or distributed. If that information is intended to deceive, it is often referred to as disinformation (Buchanan, 2020). While debunking false
beliefs is difficult, risk communication research has shown that countering misinformation and disinformation requires public communication that has three characteristics: (1) provides clear, definitive information through official channels; (2) provides information that is consistent—even when information is tentative—so that public authorities are speaking with a single voice to reduce information overload; and (3) provides transparent communication about the situation (Galvão, 2021; Organisation for Economic Co-operation and Development, 2020).

While the evidence regarding what works for combatting misinformation and disinformation is limited and still emerging, suggestive evidence provides some guidance for practical steps that decision makers could take to counter misinformation and disinformation:

- implementing transparent and timely communication strategies,
- promoting trusted sources of information,
- facilitating communications staff in developing a strategy to counter misinformation and disinformation campaigns,
- integrating communication strategy into existing emergency and public health response protocols,
- building public resilience to misinformation and disinformation, and
- collaborating with industry and social media organizations (National Governors Association [NGA], 2020).

Countering misinformation and disinformation requires the provision of accurate information in easily accessible ways. The Department of Health in North Dakota, for example, has used a print campaign, sending letters that have vaccine information and a hotline number to schedule an appointment to those eligible for the vaccine, including older adults and rural residents who have limited internet access (LeBlanc et al., 2021). Hyper-local community-led efforts by personally trusted topical opinion leaders (e.g., primary care providers for combatting vaccine hesitancy or health misinformation) could help ensure that accurate information is conveyed clearly.

**STRATEGIES FOR COMMUNICATING TO PARENTS ABOUT PEDIATRIC VACCINATIONS**

Communicating with parents about COVID-19 vaccinations for their children will require additional communications strategies. Communication with parents will need to focus on improving parental acceptance of COVID-19 vaccines, with an understanding that parents bring their own backgrounds and their previous experiences with vaccines and the health care system, as well as their concern for their children, to the decision-making process (Brunson, 2013a). Such communications will also need to recognize the context in which parents are making decisions about the COVID-19 vaccine, as parents are currently grappling with numerous decisions about COVID-19 risks and mitigation measures—including masking and COVID-19 testing in schools—in a complex communication environment often awash in misinformation. **Box 5** provides a brief summary of communication strategies geared at parents and guardians.
Communication strategies need to be tailored to parents—there is no one-size-fits-all approach (Brunson, 2013a). Studies on pediatric vaccinations have sought to understand how parents make decisions about vaccinations. One study suggested that there are three primary ways that parents go about making their decisions: some simply accept the social norms of vaccination; others rely on their social networks for information and advice; and others seek information for themselves from outside sources, including peer-reviewed journal articles (Brunson, 2013a, p. 5466). The group that relies on others, whether in person or through social media, is the most likely to respond to communication efforts.

Another study (Leask et al., 2012) found that parents can be grouped in three somewhat different ways:

- **unquestioning acceptors**—parents who vaccinate their children and want to vaccinate them, with no specific questions about the safety and necessity of vaccines;
- **cautious acceptors**—both parents who vaccinate their children despite having minor concerns and parents who vaccinate their children but have significant concerns; and
- **late or selective vaccinators**—parents who have concerns and might delay or select only certain vaccines, as well as parents who refuse all vaccines for their children.

While the different groups will require tailored messaging, communication can start by focusing on what vaccinating children can help ensure: children’s being able to attend school in person without risking their health and being able to participate in other activities, such as sports or clubs, especially since some schools have mandated COVID-19 vaccination for students or as a requirement for participating in extracurricular activities. Three important communication messages are emphasizing safety and efficacy, encouraging parent-provider communication and provider recommendations, and leveraging social networks to influence parents’ vaccination decisions.

**Emphasizing Safety and Efficacy**

To alleviate parents’ concerns, communications can emphasize the safety and efficacy of approved vaccines that are available for children. As shown by the KFF surveys described above,
many parents are concerned about the potential long-term side effects of COVID-19 vaccines, including the possibility the vaccine could affect their children’s future fertility (Hamel et al., 2021a). Data also indicate that parents are apprehensive about the potential immediate side effects that their children could experience (Hamel et al., 2021a; Uslu et al., 2021). These are not unreasonable concerns for parents to have given the novelty of COVID-19 and the newness of the vaccines. Developing communications that include specific facts about side effects, such as comparisons of the frequencies of adverse consequences of vaccines in comparison with the adverse consequences of contracting COVID-19, and presented in a way that is easy to understand, such as using graphics or analogies, could help to address these concerns.

One way of addressing these anxieties is to inform parents about evolving scientific efforts that will increase everyone’s ability to answer these questions. In addition, decision makers can highlight ongoing risk monitoring that continues after vaccines are fully approved. Messages could stress the safety data from the clinical trials for 12- to 17-year-olds and the relatively rare occurrence of serious adverse events16 among the 12- to 17-year-olds who have already been vaccinated.17

For parents with children under 12, safety concerns may well be heightened because parents may perceive them as more vulnerable. Engaging parents of these younger children now, even before the vaccines for these age groups are authorized, could be critical for increasing vaccine confidence for parents of children in this age group. The focus of these conversations could be an overall description of the regulatory process, the rigor of clinical trials, the lower vaccine dose in the pediatric formulation, and a reasonable extrapolation of the data for adolescents.

**Encouraging Parent-Provider Communication and Primary Care Provider Recommendations**

The role of health care providers in communicating with parents of children will be particularly important in terms of building confidence in COVID-19 vaccination for children. Most children, especially young children, visit health care providers on a regular basis. Previous research has indicated that health care providers are trusted messengers and often important conduits of vaccine information and encouragement to parents (Fisher and Ryan, 2019; Gust et al., 2008; Opel et al., 2015). To support health care providers in these efforts, local, state, and national decision makers could provide message templates and other resources to the providers and their professional organizations. The Kansas Department of Health and Environment, for example, has developed a manual for primary care physicians on creating and sending patients mass emails and text messages encouraging vaccination (Williamson et al., 2021).

**Leveraging Social Networks to Influence Parents’ Vaccination Decisions**

It is critical that health care providers and public health officials engage not only individual parents, but also people whom parents consider trustworthy and influential in their communities (Sobo, 2016). In addition to health care providers, these social networks may

---

16As of July 16, 2021, the Vaccine Adverse Event Reporting System (VAERS) received 9,246 reports after Pfizer-BioNTech vaccination in this age group; 90.7 percent of these were for nonserious adverse events and 9.3 percent were for serious adverse events, including myocarditis (4.3 percent) (Hause et al., 2021).

17As of July 31, 2021, 31.9 percent of children aged 12–17 in the United States were fully vaccinated.
include family members, friends, coworkers, social media networks, various media, and church members (Brunson, 2013b). The influence of such trusted social network connections means that decision makers need to think broadly about who to include when developing communication messages for parents (Brunson, 2013b).

CONCLUSION

The delta variant has changed the COVID-19 vaccination landscape. The risk it presents, and the potential for the emergence of additional future variant mutations due to lagging vaccinations, requires renewed efforts to build COVID-19 vaccine confidence, address vaccine hesitancy, and reduce barriers to vaccine access. Communicating with people who are not vaccinated will require the use of new strategies that identify new variants as creating new risks. The availability of vaccines for teenagers and younger children presents important opportunities for communicating with parents and children about the safety and efficacy of COVID-19 vaccines.

*SEAN is interested in your feedback. Was this rapid expert consultation useful? Send comments to sean@nas.edu or (202) 334-3440.*
REFERENCES


Communication Strategies for Building Confidence in COVID-19 Vaccines

e114. Available: https://doi.org/10.1016/S1473-3099(20)30721-0.


Communication Strategies for Building Confidence in COVID-19 Vaccines


Communication Strategies for Building Confidence in COVID-19 Vaccines


ACKNOWLEDGMENTS

We thank the sponsors of SEAN—the National Science Foundation and the Alfred P. Sloan Foundation—and of the Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats—the U.S. Department of Health and Human Services, Assistant Secretary for Preparedness and Response—and of the Standing Committee on Advancing Science Communication, which is sponsored by the Alfred P. Sloan Foundation, Kavli Foundation, National Academy of Sciences W.K. Kellogg Foundation, and the Science Sandbox – Simons Foundation.

Special thanks go to the members of the SEAN executive committee, who dedicated time and thought to this project: Mary T. Bassett (co-chair), Harvard University; Robert M. Groves (co-chair), Georgetown University; Dominique Brossard, University of Wisconsin–Madison; Janet Currie, Princeton University; Michael Hout, New York University; Arati Prabhakar, Actuate; Adrian Raftery, University of Washington; and Jennifer Richeson, Yale University. We thank as well the Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats, particularly Harvey Fineberg (Gordon and Betty Moore Foundation).

We extend gratitude to the staff of the National Academies, in particular to Emily P. Backes, Malvern T. Chiweshe, Chelsea Fowler, and Shalini Singaravelu, who contributed research, editing, and writing assistance. We thank Dara Shesfka, who led the communication and dissemination of the project, as well as Monica Feit, Holly Rhodes, and Lisa Brown, who provided helpful guidance and insights. We thank Eugenia Grohman for her skillful editing.

To supplement their own expertise, the authors received input from several external sources, whose willingness to share their perspectives and expertise is appreciated. We thank Sarah Bauerle Bass, Temple University; Robert A. Bednarzyk, Emory University; Noel Brewer, University of North Carolina; Henna Budhwani, University of Alabama; Timothy Callaghan, Texas A&M University; Ron Carlee, Old Dominion University; Clarence Buddy Creech, Vanderbilt University; Bernice Hausman, Pennsylvania State University; Ruth Lynfield, Minnesota Department of Health; Noni Macdonald, Dalhousie University; David Magnus, Stanford University; Ron Carlee, Old Dominion University; Clarence Buddy Creech, Vanderbilt University; Bernice Hausman, Pennsylvania State University; Ruth Lynfield, Minnesota Department of Health; Noni Macdonald, Dalhousie University; David Magnus, Stanford University; Amy Pisani, Vaccinate Your Family; Lisa Prosser, University of Michigan; Rachel Smith, Pennsylvania State University; Elisa Sobo, San Diego State University; Itzhak Yanovitzky, Rutgers University; David Yokum, Brown University; Xun Zhu, University of North Dakota; and Brian J. Zikmund-Fisher, University of Michigan.

We also thank the following individuals for their review of this rapid expert consultation: Matthew Baum, John F. Kennedy School of Government, Harvard University; Kirsten Ellenbogen, President and CEO, Great Lakes Science Center; Mirta Galesic, Human Social Dynamics, Santa Fe Institute; Daniel Salmon, Bloomberg School of Public Health, Johns Hopkins University; Angela K. Shen, U.S. Public Health Service (retired) and Vaccine Education Center, Children’s Hospital of Philadelphia.

Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the conclusions of this document, nor did they see the final draft before its release. The review of this document was overseen by Alicia L. Carriquiry, Iowa State University, and Robert A. Moffitt, Department of Economics, Johns Hopkins University. They were responsible for making certain that an independent examination of this rapid expert consultation was carried out in accordance with the standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the authors, and this document has been reviewed and approved for release by the National Academies.
SOCIETAL EXPERTS ACTION NETWORK (SEAN)
EXECUTIVE COMMITTEE

MARY T. BASSETT (Co-chair), Harvard University
ROBERT M. GROVES (Co-chair), Georgetown University
DOMINIQUE BROSSARD, University of Wisconsin–Madison
JANET CURRIE, Princeton University
MICHAEL HOUT, New York University
ARATI PRABHAKAR, Actuate
ADRIAN E. RAFTERY, University of Washington
JENNIFER RICHESON, Yale University

Staff
MONICA N. FEIT, Deputy Executive Director, Division of Behavioral and Social Sciences and Education
EMILY P. BACKES, Senior Program Officer
MALVERN T. CHIWESHE, Program Officer
CHELSEA FOWLER, Associate Program Officer
DARA SHEFSKA, Communications Specialist
PAMELLA ATAYI, Program Coordinator
STANDING COMMITTEE ON EMERGING INFECTIOUS DISEASES AND 21ST CENTURY HEALTH THREATS

HARVEY FINEBERG (Chair), Gordon and Betty Moore Foundation
KRISTIAN ANDERSEN, The Scripps Research Institute
RALPH STEVEN BARIC, University of North Carolina at Chapel Hill
MARY T. BASSETT, Harvard School of Public Health
GEORGES BENJAMIN, American Public Health Association
DONALD BERWICK, Harvard Medical School
RICHARD BESSER, Robert Wood Johnson Foundation
R. ALTA CHARO, University of Wisconsin–Madison
PETER DASZAK, EcoHealth Alliance
JEFFREY S. DUCHIN, University of Washington
ELLEN EMBREY, Stratitia, Inc.
BARUCH FISCHHOFF, Carnegie Mellon University
DIANE GRIFFIN, Johns Hopkins Bloomberg School of Public Health
ROBERT GROVES, Georgetown University
MARGARET HAMBURG, Foreign Associate, National Academy of Medicine
DAN HANFLING, In-Q-Tel
JOHN HICK, Hennepin County Medical Center
KENT E. KESTER, Sanofi Pasteur
PATRICIA KING, Georgetown University Law Center
JONNA MAZET, University of California, Davis, School of Veterinary Medicine
PHYLLIS MEADOWS, The Kresge Foundation
TARA O’TOOLE, In-Q-Tel
ALEXANDRA PHELAN, Georgetown University
DAVID RELMAN, Stanford University
MARK SMOLINSKI, Ending Pandemics
DAVID WALT, Harvard Medical School

Project Staff
LISA BROWN, Senior Program Officer
EMMA FINE, Associate Program Officer
SHALINI SINGARAVELU, Associate Program Officer
MARGARET MCCARTHY, Research Associate
JULIE PAVLIN, Director, Board on Global Health
ANDREW M. POPE, Senior Director, Board on Health Sciences Policy
Communication Strategies for Building Confidence in COVID-19 Vaccines

STANDING COMMITTEE ON ADVANCING SCIENCE COMMUNICATION

KIRSTEN ELLENBOGEN (Co-chair), Great Lakes Science Center
DIETRAM A. SCHEUFELE (Co-chair), University of Wisconsin–Madison
ANN M. BARTUSKA, Resources for the Future
ANGELA BEDNAREK, Pew Charitable Trust
GEORGES C. BENJAMIN, American Public Health Association
CYNTHIA E. COBURN, Northwestern University
JAMES DRUCKMAN, Northwestern University
JOHN GASTIL, Pennsylvania State University
WILLIAM K. HALLMAN, Rutgers University
LAURA HELMUTH, Scientific American
DAVID LAZER, Northeastern University
ELIZABETH LOFTUS, University of California, Irvine
AMELIE G. RAMIREZ, Salud America! and The University of Texas Health Science Center
PAMELA C. RONALD, University of California, Davis
KASISOMAYAJULA VISWANATH, Harvard University
ITZHAK YANOVITZKY, Rutgers University

Project Staff
HOLLY G. RHODES, Senior Program Officer
TIFFANY E. TAYLOR, Program Officer
LETICIA GARCILAZO GREEN, Research Associate