

Lessons Learned From *Dear Pandemic*, a Social Media–Based Science Communication Project Targeting the COVID-19 Infodemic

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Abstract

The World Health Organization has identified excessive COVID-19 pandemic–related information as a public health crisis, calling it an “infodemic.” Social media allows misinformation to spread quickly and outcompete scientifically grounded information delivered via other methods. *Dear Pandemic* is an innovative, multidisciplinary, social media–based science communication project whose mission is to educate and empower individuals to successfully navigate the overwhelming amount of information circulating during the pandemic. This mission has 2 primary objectives: (1) to disseminate trustworthy, comprehensive, and timely scientific content about the pandemic to lay audiences via social media and (2) to promote media literacy and information-hygiene practices, equipping readers to better manage the COVID-19 infodemic within their own networks. The volunteer team of scientists publishes 8–16 posts per week on pandemic-relevant topics. Nearly 2 years after it launched in March 2020, the project has a combined monthly reach of more than 4 million unique views across 4 social media channels, an email newsletter, and a website. We describe the project’s guiding principles, lessons learned, challenges, and opportunities. *Dear Pandemic* has emerged as an example of a promising new paradigm for public health communication and intervention. The contributors deliver content in ways that are personal, practical, actionable, responsive, and native to social media platforms. The project’s guiding principles are a model for public health communication targeting future infodemics and can bridge the chasm between the scientific community and the practical daily decision-making needs of the general public.

Keywords

communication, social media, COVID-19, misinformation

Since the emergence of COVID-19, the public has been inundated with scientific (and nonscientific) messaging to an unprecedented extent, leading to widespread confusion about the behaviors needed to reduce personal risk and control the outbreak at the population level. The World Health Organization (WHO) declared this phenomenon to be an infodemic, “an overabundance of information—good or bad—that makes it difficult for people to make decisions for their health.”¹ Too much information can lead to confusion and unsafe behaviors and undermine trust in science itself.¹ This infodemic is partly attributable to social media platforms such as Facebook, Twitter, and Instagram, which facilitate the rapid spread of information without review of its

quality.² Social media allows both misinformation and disinformation to spread quickly, crowding out scientifically grounded information.² Misinformation is false content presented as fact, regardless of intent to deceive; disinformation is messaging specifically designed to obscure the truth.³

The infodemic has been exacerbated by uncertainties inherent in an emerging infectious disease and the scientific process more generally. Purveyors of disinformation have capitalized on the confusion by presenting content that is absolute, albeit false. Together with inconsistent governmental messaging, these factors have led to challenges in delivering accurate, timely, and trusted information to the public.

The WHO and others have called upon scientists to serve as communicators during the COVID-19 pandemic.^{4,5} Social media allows scientists to become direct-to-public crisis communicators.⁶ To this end, we present the origins, aims, and early lessons learned from *Dear Pandemic*, a multidisciplinary, social media-based science communication project. The core mission of *Dear Pandemic* (dearpandemic.org) is to educate and empower individuals to successfully navigate the overwhelming amount of information circulating during the pandemic. Although the project began as a grassroots effort to provide pandemic information for the authors' family and friends, it aligns with emergency risk communications frameworks.⁷ It also coincides with the WHO's call for scientists to engage in infodemic management to help ensure people have "access to factual information in a timely manner that is easily understood, so they may rapidly adopt behaviours to protect health and the health of others during an epidemic."¹

Methods

In late February 2020, the founders of *Dear Pandemic*, infectious disease public health researchers, became inundated with queries about COVID-19 from family and friends. They created *Dear Pandemic* on social media in March 2020 to consolidate their communication efforts in a public forum. With the recruitment of additional founding members, it grew into an interdisciplinary, volunteer collaboration involving 18 doctorally trained writers, an operations coordinator, 4 translators, and interns. Disciplinary representation includes nursing, mental health, demography, medicine, immunology, health policy, economics, and epidemiology. Because of overrepresentation of women in public health and communications and the often-invisible labor of managing family health decision making, the team that emerged was entirely women. Over time, the female makeup of the team became intentional to encourage young girls' engagement with science and to increase the public representation of women's scientific voices.

The number of followers of *Dear Pandemic* has grown from a few dozen family and friends to nearly 200 000 to date.

As the following grew, the goals of *Dear Pandemic* expanded to become a larger public-facing science communication effort that aims to (1) disseminate trustworthy, comprehensive, and timely scientific content about the pandemic to lay audiences and (2) promote media and science literacy and information-hygiene practices, equipping readers to better manage the COVID-19 infodemic within their own networks.

Dear Pandemic operates across 4 main social media channels, a newsletter, and a website (Table 1). For efficiency, the social media channels selected were ones on which team members were already active prior to the pandemic. Each week, writers publish 8-16 posts on pandemic-relevant topics. Content is adapted for each social media platform to maximize readability and visibility and then added to the project website. A subset of posts is translated and adapted into Spanish and posted to *Querida Pandemia*, the Spanish-language page on Facebook. Twice each week, newsletter subscribers receive selected posts via email. *Dear Pandemic* has also hosted weekly live video question-and-answer (Q&A) sessions addressing readers' questions.

Guiding Principles

Based on practical experience, *Dear Pandemic* evolved to operate under a set of guiding principles that inform content and interactions with readers.

An interdisciplinary approach to science communication. Posts aim to address many scientific perspectives on the pandemic and apply a holistic approach in the range of topics covered. This approach aligns with the WHO's approach to infodemic management,¹ affirming that the pandemic is not the domain of any single discipline. Topics covered by such posts include mental health, immunology, demography, economics, and others.

Risk reduction model. Risk occurs along a spectrum⁸; posts on *Dear Pandemic* provide a framework for thinking about risk mitigation as a continuum and encourage readers to apply the framework to their own lives (Figure). This framework is consistent with a harm reduction approach, which has

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Table 1. *Dear Pandemic* social media metrics, 2020-2021^a

Metric	Channel				
	Facebook (English)	Facebook (Spanish)	Instagram	Twitter	Website
No. of followers as of September 8, 2021	100 661	49 238	16 800	9833	86 562 ^b
Reach in August 2021, no.	3 174 003 ^c	552 699 ^c	288 912 ^d	120 000 ^e	155 652 ^f
Sampling of top posts and metrics					
Topic	"I'm fully vaccinated but my kids are not. What does the new CDC guidance say about our situation? I'm so confused." (3/21/2021)	"¿Qué hacer si has estado expuesto a alguien con síntomas o con COVID-19 confirmado?" ^g (8/8/2021)	"Why is Delta more transmissible?" (7/21/2021)	"What's up with the new CDC mask study?" (2/11/2021)	"Is it normal to have pain in my armpit or breast after the COVID-19 vaccine?" (4/29/2021)
Overall reach, no.	428 000 ^b	104 403 ^b	14 294 ^c	78 000 ^d	65 727 ^e
Likes, no.	1800	637	607	107	NA
Shares, no.	3783	793	748	49	NA
Link to post	facebook.com/dearpandemic/posts/287776619517659	facebook.com/QueridaPandemia/posts/351376596721164	instagram.com/p/CRlkKa6D7wh/	twitter.com/Dearpandemic/status/1359995830556647428	dearpandemic.org/vaccine-effects-on-lymph-nodes

Abbreviations: CDC, Centers for Disease Control and Prevention; NA, not applicable.

^a *Dear Pandemic* (dearpandemic.org) is a social media-based COVID-19 science communication project that launched in March 2020.

^b Number of users in August 2021.

^c Expressed as impressions on Facebook, the number of times any content from the page entered a person's screen.

^d Expressed as impressions on Instagram, the number of times any content from the page entered a person's screen.

^e Expressed as impressions on Twitter, the total of all the times any Tweets have been seen.

^f Expressed as website page views, or instances of a web page being loaded in a browser.

^g What should I do if I've been exposed to someone with symptoms or with confirmed COVID-19?

traditionally been used in the context of substance use and HIV; here, it is applied to COVID-19.⁹ This strategy aims to reduce the harms associated with certain behaviors, particularly when the restriction of behaviors is unrealistic for the long term. Rather than providing the public with a set of fixed do's and don'ts, *Dear Pandemic* provides readers with strategies to reduce, but not necessarily eliminate, the risk of infection.

Promote scientific literacy. *Dear Pandemic* equips readers with skills to evaluate evidence and combat the infodemic in their own social networks—a key aim in the WHO call for action on the infodemic.⁵ In addition to communicating facts, the team provides scientific and epidemiologic explainers, including how scientific evidence evolves (eg, "What's up with the shifting scientific guidance?"). Educating the public about the scientific process and its uncertainties has been key to enhancing knowledge and increasing trust.⁷

Nonpartisanship. The writing team avoids partisan perspectives and views the partisan fissure in the United States as a fundamental cause of our collective inability to mount an appropriate response to the pandemic. *Dear Pandemic* contributing writers have close connections with both conservative and progressive communities. Because the team members are trusted scientists in these communities, readers across the

political spectrum trust *Dear Pandemic*'s messages. Social media also facilitates sharing of *Dear Pandemic* content in both conservative and progressive networks, contributing to the bipartisan reach of our messaging (Table 2).

Two-way communication. A critical part of *Dear Pandemic*'s approach is a 2-way model of communication.¹⁰ This framework calls upon experts to approach the intended audience as equal members in conversation rather than using a 1-way didactic framework, which is customary in most public health communication strategies.¹¹ To this end, *Dear Pandemic* actively solicits and responds to questions and comments from readers through a web-based question box.

Outcomes

As of September 2021, more than a year after its launch, *Dear Pandemic* has nearly 200 000 followers across 4 main social media channels, a newsletter, and a website (includes some overlap across platforms) and a combined monthly reach of more than 4 million impressions, or unique views (Table 1). *Dear Pandemic*'s reach extends throughout all 50 states, Puerto Rico, and the District of Columbia and to more than 60 countries around the world. Approximately 90% of readers on Facebook and Instagram are women, and most of the audience is aged 35-54 years (data unavailable for the other outlets). Questions from readers fall into 3 main



Figure. Infographic from a *Dear Pandemic* post depicting ways to reduce the risk of COVID-19 infection and transmission. *Dear Pandemic* (dearpandemic.org) is a social media-based COVID-19 science communication project that launched in March 2020.

categories: understanding risk, science and media literacy, and resilience and coping with adversity.

Understanding Risk

Readers frequently ask questions about the risks of day-to-day activities (eg, how safe is it to ride a bus, get a haircut,

work in an office setting) and how to apply general public health guidance in specific situations (eg, “Should I wear a mask while jogging?”). Readers seek help with risk assessment and appreciate answers that are simple, practical, and actionable.¹²

Science and Media Literacy

Readers also seek clarification about scientific jargon (eg, “Can you define ‘efficacy’ in practical terms?”). *Dear Pandemic* provides plain-language explanations of basic science concepts that have become household phrases in the past year (eg, “herd immunity,” “exponential growth”). Readers seek advice on media literacy, such as how to vet sources, how to approach conspiracy theorists, and how to think about uncertainty and changing scientific knowledge as a way to increase self-efficacy.¹²

Resilience and Coping With Adversity

Readers often have questions about the deep and lasting psychological impacts of the pandemic. One of the most frequent themes is, “When will things go back to normal?” Acknowledging the multitude of emotions and disruptions to normal routines, *Dear Pandemic* posts shed light on the shared trauma of the pandemic and associated feelings of anger, isolation, apathy, and loss while also providing practical tips to put one foot in front of the other.

Lessons Learned

Dear Pandemic is an evolving project. Following are key lessons learned that may inform strategies for similar efforts addressing infodemics.

Lesson 1: Foster Trust

Dear Pandemic initially aimed to deliver scientific content about COVID-19 to family and friend networks who trusted contributing members with their questions and concerns. The team has worked to keep this personal connection intact even as the audience has grown. The team builds relationships with readers by responding to their questions with empathy, humor, and expertise. This style is intentionally grounded in nursing’s tradition of therapeutic communication—the team’s innovation is using the same techniques in online communities.¹³ Team members act as a trusted friend rather than a faceless entity. Together with their credentials as scientists, this approach serves to increase the project’s source credibility.¹²

Dear Pandemic also provides updates as scientific knowledge rapidly evolves, engendering readers’ trust that the content is transparent, accurate, and timely. Throughout the pandemic, the scientific process, with all of its uncertainties, has been on public display. Being transparent about the uncertainties and discussing when and why the science has

Table 2. Sample comments from *Dear Pandemic* readers illustrating trust and bipartisan reach, 2020-2021^a

Post date	Post title or topic	Comment	Link to post
5/8/2020	How do I figure out if a news story is SOLID or SENSATIONAL?	Not for everyone, but I ignore all posts regarding the big P unless they have been vetted by <i>Dear Pandemic</i> . I am sure I am missing something but I can trust you. I am ignoring way more noise. Happy Friday!	https://www.facebook.com/dearpandemic/posts/137210881240901
7/4/2020	A reminder from the Nerdy Girls to “Stay SMART” while you celebrate	<i>Dear Pandemic</i> nerdy girls. I want to thank YOU. You’ve given me freedom from misinformation, unnecessary anxiety, and timely early information to make life decisions. There are many heroes in the pandemic. Your gifts to your readers through <i>Dear Pandemic</i> , balancing work and family and more, have meant so much to my family and our safety.	https://www.facebook.com/dearpandemic/posts/157178389244150
8/21/2020	Don’t forget to get your flu shot!	Love your posts and those from YLE! I share them to my local coronavirus resource page. I live in a small town with a lot of doubters and deniers . . . so sadly I do get some blowback for it . . . but it’s worth sharing!	https://www.facebook.com/dearpandemic/posts/172231811072141
12/19/2020	Share of Facebook Page	In response to an anti-vaccine post in this group this morning, I’d like to share an excellent science-based resource for those of you with questions about what is safe/unsafe as we all continue learning about SARS-CoV-2 during the second phase of the pandemic. <i>Dear Pandemic</i> is a site run by some wonderful female epidemiologists and infectious disease scientists and doctors, and addresses questions about vaccines, rumors, and conspiracy theories with facts and clarity.	Not applicable
12/23/2020	Reframing Christmas (share)	Epidemiologists reflecting on the nature of Christmas.	https://www.facebook.com/dearpandemic/posts/228315418797113
1/5/2021	I’m reading that the new strain of COVID-19 is 70% more transmissible. What does this mean? How transmissible was the first strain?	Just wanted to share because of yesterday’s the <i>Dear Pandemic</i> post on the new more transmissible variant and the mathematical examples, I was able to get someone to change their behavior and make a significantly less risky decision. The work you and the DP team is literally saving lives. THANK YOU!!!	https://www.facebook.com/dearpandemic/posts/237297197898935
1/14/2021	I already had COVID-19 and have questions about getting the COVID19 vaccine. Help!	It’s like <i>Dear Pandemic</i> is reading our minds and knows the questions we get asked every day.	https://www.facebook.com/dearpandemic/posts/245588420403146
2/2/2021	What’s the current advice on the COVID-19 vaccine and pregnancy?	Highly recommend following <i>Dear Pandemic</i> for easy-to-understand info about COVID, truth bombs, updates about the latest news, vaccine info, etc. They were featured on an American Academy of Family Physicians (AAFP) CME town hall, so I trust them as a resource. And I can actually understand what they are telling me! This specific question has been a hot topic for our members and their patients.	https://www.facebook.com/dearpandemic/posts/258008569161131
2/3/2021	Message from a dermatologist	I belong to a FB group that has thousands of dermatologists from all over the country. The question today is—where can I refer patients to displace so much misinformation abt COVID? <i>Dear Pandemic</i> to the rescue I say!!!!	Not applicable

(continued)

Table 2. (continued)

Post date	Post title or topic	Comment	Link to post
2/20/2021	Can you please help us understand vaccine efficacy vs effectiveness?	Thanks for this post, which even I found to make sense. While I don't always understand some of the details, it is clear that you explain the intricacies to others. I don't have to understand it all because you people have built a level of trust, and it is this level of trust which helps us feel confidence that the vaccines are overwhelmingly safe.	https://www.facebook.com/dearpandemic/posts/269325724696082
2/24/2021	What's the news on the Johnson & Johnson vaccine?	<i>Dear Pandemic</i> , I have been giving Pfizer COVID vaccines since December and I answer so many people's questions based on info I have learned from this page. You ladies are the best!! Keep the info coming and thank you.	https://www.facebook.com/dearpandemic/posts/271811431114178
2/27/2021	Facebook Live	I was able to send your clear, concise breakdown(s) of how the virus affects pregnant friend—she's getting the vaccine.	https://www.facebook.com/dearpandemic/videos/2855384281373807
3/18/2021	Any update on safety of the COVID-19 mRNA vaccines in pregnancy?	<i>Dear Pandemic</i> , oh my gosh. Thank YOU!!!! You have truly helped me understand this crazy time and that information has helped me feel empowered rather than lost. You are saving lives with your ability to break down the science in ways normal people can understand. It truly is information overload and that so quickly turns to dangerous misinformation. THANK YOU!!	https://www.facebook.com/dearpandemic/posts/285951293033525
3/26/2021	Private message	BTW, a colleague of mine has been on the fence about getting vaccinated and I asked if I could send her some info . . . shared some DP screenshots and now she's totally geeking out on the nerdy girls and ready to schedule her vaccine appt. You're changing and saving lives!	Not applicable
4/9/2021	Is there some benefit to people publicly trumpeting it once they've been vaccinated, say, by donning stickers, buttons, bumper stickers, etc?	I'm admittedly one of the vaccine hesitant people (I'm getting it next week so don't yell at me). It's an anxiety issue, not a don't-trust-the-vaccine issue. Seeing people post and reading about what to expect from people that I know in terms of side effects has really been helpful.	https://www.facebook.com/dearpandemic/posts/300445988250722
9/8/2021	What is the difference between "an additional primary dose" and a "booster dose"?	Thank you so much for all the informative information you have provided! I now have a vault of go to info to contradict the misinformation that pollutes social media.	https://www.facebook.com/dearpandemic/posts/398666421762011

Abbreviations: abt, about; BTW, by the way; CME, continuing medical education; DP, *Dear Pandemic*; FB, Facebook; YLE, your local epidemiologist.

^a *Dear Pandemic* (dearpandemic.org) is a social media-based COVID-19 science communication project that launched in March 2020.

changed has been key to fostering trust.¹⁴ Moreover, our commitment to providing insights independent of politics fosters trust that we deliver information using science and not partisanship as our "spin." *Dear Pandemic* has become a trusted messenger for hundreds of thousands of readers.

Lesson 2: Fight the Infodemic on Its Own Turf

Dear Pandemic confronts the challenge of rapidly spreading misinformation by leveraging the same social media platforms where misinformation circulates. This strategy makes *Dear Pandemic* content as accessible and easily shareable as

misinformation on social media. We equip users to combat the infodemic within their own networks through the power of the share button, helping to flood the information ecosphere with fact-based information. Actively soliciting questions from readers allows *Dear Pandemic* to track the rapidly changing currents of misinformation and provide responses that directly address myths and targeted attempts to undermine public health.⁶

Lesson 3: Be Specific

Readers indicate that the deluge of COVID-19 information is eroding their mental health by inducing stress, anxiety,

depression, and acedia—a reality that is confirmed by national polls.^{15,16} Even when information is trustworthy, it can be cognitively taxing to apply general advice to everyday situations. To empower readers to protect their health, it is necessary to curate the vast abundance of information and give specific, actionable advice.^{12,17} For example, rather than stating, “Wearing a mask reduces the spread of COVID-19,” we have more impact by saying, “Wear a well-fitting mask covering your nose and mouth at all times when close to other people.”

Lesson 4: Make It Painless

The writing team endeavors to make posts easy to read and includes 1 key takeaway at the top. This strategy puts the main content before any truncation created by the social media platform, allowing readers to skim for content. We also use emojis, humor, and a coordinated graphic design to make the content readable and enjoyable.

We also use frequent repetition of key content, a classic health communication strategy,¹⁸ because even the most engaged readers do not read all posts. The social media platform algorithms, over which account managers have no control, also choose which posts are shown to which readers. In addition, the audience is constantly growing, and new readers have missed all previous content.

Challenges and Opportunities

This work has presented numerous challenges. Principal among these challenges is the gap between the need for this work and the professional rewards it returns. Nearly all of the team’s contributions thus far have been on a volunteer basis. Most of the contributors hold academic appointments at research institutions, and it is unclear how this work will fit into the typical boundaries of promotion or tenure review, even as academic institutions examine the returns to and incentives for “engaged” or “public” scholarship. Communicating science, and doing it well, takes time and means time away from activities of traditional high value in the academy. Institutional salary support and an increase in funding opportunities to support applied science communication are important to sustain these efforts.

A second major challenge is reaching communities of color and individuals with low levels of education. A survey of followers fielded on all our English-language platforms in January 2021 suggested that the *Dear Pandemic* audience comprises largely well-educated, working-age, non-Hispanic White women. Recognizing that misinformation on social media is particularly rampant in Spanish,¹⁹ in September 2020 we launched a Spanish-language site that has quickly grown to reach Spanish speakers in the United States and Latin America. We also obtained a small foundation grant to support increased racial and disciplinary diversity among our writing team and added American Sign Language interpretation to the weekly Facebook Live Q&A in January 2021. We continue to explore strategic ways to reach a broader audience.

The *Dear Pandemic* collaboration has also led to valuable opportunities for the team to contribute to broader discussions of COVID-19 messaging and science communication. A key research-based recommendation for countering misinformation involves scientists working with journalists “to ensure visibility and trust across professional sectors.”²⁰ To this end, *Dear Pandemic* contributors have been quoted in more than 400 news sources, authored essays in national and international outlets, and given talks from classrooms to Congress. It has also led to new collaborations with organizations such as the American Academy of Family Physicians, local professional networks such as IMPACT4HC, community organizations, and other operators of similar COVID-19 science communication platforms (eg, Your Local Epidemiologist, Friendly Neighbor Epidemiologist, Unbiased Science Podcast). These relationships have allowed scientists to disseminate information to even broader audiences and have fostered a community that provides scientific, operational, and moral support to achieve the shared goal of improving the public’s health and scientific literacy.

Conclusion

Dear Pandemic has empowered hundreds of thousands of readers to take action to protect themselves and their community and, perhaps more importantly, to combat misinformation by sharing science-based COVID-19 information in their own networks. *Dear Pandemic* serves as a trusted messenger of science-backed and timely information and exists natively on social media, where it can capitalize on the power of the share button.

Health communication experts have called for a reexamination of traditional public health messaging strategies, casting doubt on the ability of existing tools and measures to be effective, especially in the age of social media.²¹ *Dear Pandemic* provides a case study of a promising new paradigm for public health communication and intervention to address emerging infodemics. The overarching objective is to bridge the gap between academic/clinical science and the practical everyday decision making of the public to empower readers as they navigate the overwhelming amount of information circulating during the pandemic. *Dear Pandemic*’s reach statistics, collaborations, and media engagement suggest that these efforts are highly valued as the pandemic continues to unfold. Next steps include evaluation of social media data using machine learning approaches for the surveillance of misinformation and to track trends in attitudes toward COVID-19 topics. An impact evaluation of *Dear Pandemic* is in progress, and we are developing new methods to test public health messaging strategies described here in controlled settings.

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