SARS-CoV-2 Vaccine Acceptance: We May Need to Choose Our Battles

A vaccine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is widely considered a key strategy to ending transmission of the virus and getting our social and economic lives "back to normal." All eyes are on Operation Warp Speed and other rapid vaccine development initiatives, with optimistic projections for a safe and effective vaccine being approved in the next few months. But as Fisher and colleagues (1) note in their analysis of attitudes toward a potential SARS-CoV-2 vaccine, published in this issue, approval of a vaccine is just the starting line of a long and challenging race to achieve widespread acceptance of 1 or more novel coronavirus vaccines.

In an April 2020 survey of around 1000 adults representative of the U.S. population, Fisher and colleagues (1) found that only about 6 in 10 respondents said "yes" when asked whether they will get vaccinated when a vaccine for coronavirus becomes available. Consistent with other similar surveys fielded later in 2020, about 1 in 10 said "no" and 3 in 10 said "not sure." It's clear from past vaccine promotion efforts that different strategies will be needed for each of these groups. Given long-standing underfunding of public health infrastructure and programs, it's also clear that we may need to choose our battles in terms of which groups we focus on to achieve SARS-CoV-2 vaccine coverage.

It's tempting to focus on the most resistant group—the 10% in Fisher and colleagues' study who reported they would not get the vaccine. The study's capture of open-ended responses explaining a "no" or "not sure" answer is helpful here: Respondents in the "no" group most commonly explained their stance with responses about not believing in vaccines, not wanting the vaccine, or not feeling comfortable with vaccines. Safety, side effects, and general distrust were also common. Unfortunately, prior research on vaccine acceptance suggests that this group may be very difficult to persuade to vaccinate. Targeted messaging campaigns that seek to change attitudinal or belief-based antecedents of existing vaccine hesitancy have not shown much efficacy (2). Mandates, scare tactics, and even simple information provision efforts can backfire (3, 4). Given a strengthening antivaccine movement, continued politicization and polarization of vaccines, and limited public health research and programmatic funds, this may be a battle we choose not to fight.

The "not sure" group (about 30% of Fisher and colleagues' respondents) is one we can't afford to lose but is also hard to influence. Although this group's stated reasons for not being sure about vaccinating overlap with those of the "no" group, the safety, efficacy, and newness of the vaccine rank higher in importance, with a strong need for more information. Distinct from garden-variety vaccine hesitancy, the hesitancy around the SARS-CoV-2 vaccine appears to be driven by the unprecedented speed of the vaccine development process and uncertainties about the U.S. Food and Drug Administration approval process and allocation of a limited vaccine supply. This group might well be called the "wait and see" group—they may sit out the early months of vaccine rollout until more safety and efficacy data accumulate. This form of vaccine hesitancy makes the "not sure" group particularly susceptible to misinformation about SARS-CoV-2 vaccines, which is likely to increase as we get closer to approval and in the early months of rollout.

A promising strategy to counter and build "resistance" to misinformation is psychological inoculation. Inoculation theory–based interventions expose people to a weakened "dose" of a pathogen—in this case, misinformation—and also offer preemptive rebuttals or refutations of the weakened arguments, for example by pointing out logic flaws or malicious intent (5). The goal is to build resistance to these persuasive techniques so that they can be recognized when encountered on social media or in a personal appeal. Research efforts are already under way to build inoculation theory–based interventions to counter SARS-CoV-2 vaccine misinformation, but they are not shovel-ready.

The "not sure" group may also be engaging in some rationalization. As my colleague Dr. Michael Hallsworth and I recently described (6), people may feel that they don't need a SARS-CoV-2 vaccine because they believe they've already had coronavirus disease 2019 (COVID-19)—a particularly easy belief to adopt, given high rates of asymptomatic cases and chronically low availability of COVID-19 diagnostic testing. Or, uncertainty about future vaccine acceptance (on the grounds of not needing it) may reflect a desire to rationalize risky behaviors that some people want to engage in (such as travel or socializing) or must undertake (such as going to work). Interventions to counter these rationalizations involve replacing faulty or biased mental models (for example, overestimating the probability of prior infection) with salient, personalized risk communication. Like inoculation theory–based interventions, they are complex and time-consuming to design and trial.

The leaves the "yes" group. Counterintuitively, this majority group that already asserts their intention to vaccinate will also need focused interventions to ensure high rates of vaccine coverage. Fisher and colleagues (1) note that although 60% of respondents stated an intention to get vaccinated, the percentage that will actually get vaccinated is likely to be much smaller. Why? We know from studies of annual influenza vaccination campaigns (7) that even persons who plan to get a flu vaccine often procrastinate, forget, or balk at seemingly small logistic or financial barriers. Fortunately, interventions to close the intention-to-behavior gap for vaccines already exist, and they are often easy and inexpensive

This article was published at Annals.org on 4 September 2020.

to implement. Getting the vaccine must be as easy and hassle-free as possible. It should be free at the point of service—no copays for the vaccine or a vaccine administration fee. Vaccine services should meet people where they are: at a gym, at school, at a retail pharmacy, or in an Uber. Other well-tested strategies—reminders, commitment devices, social comparisons, incentives—can be easily adapted for SARS-CoV-2 vaccine. Efforts to adapt and scale interventions such as these should start now.

Ideally, the public health community will be ready to go on day 1 (approval of one or more vaccines) with a national plan for SARS-CoV-2 vaccine communication, demand creation, promotion, and delivery. In the absence of national investments in such a plan, state and local health departments, health systems, and health insurance plans will have to forge their own paths and may need to pick and choose where to focus their efforts given resource constraints. Closing the intention-to-behavior gap for most U.S. residents who appear willing to get a SARS-CoV-2 vaccine is likely to have the greatest payoff for vaccine coverage, disease mitigation, and population health.

Alison M. Buttenheim, PhD, MBA
School of Nursing, Center for Health Incentives and Behavioral Economics, and Leonard Davis Institute, University of Pennsylvania
Philadelphia, Pennsylvania

Disclosures: The author has disclosed no conflicts of interest. The form can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M20-6206.

Corresponding Author: Alison M. Buttenheim, PhD, MBA, University of Pennsylvania School of Nursing. 416 Fagin Hall, 418 Curie Boulevard. Philadelphia, PA 19104; e-mail, abutt@nursing.upenn.edu.

Ann Intern Med. doi:10.7326/M20-6206

References

1. **Fisher KA, Bloomstone SJ, Walder J, et al.** Attitudes toward a potential SARS CoV-2 vaccine: a survey of U.S. adults. Ann Intern Med. 3 September 2020. [Epub ahead of print]. doi:10.7326/M20-3569
2. **Brewer NT, Chapman GB, Rothman AJ, et al.** Increasing vaccination: putting psychological science into action. Psychol Sci Public Interest. 2017;18:149-207. [PMID: 29611455] doi:10.1177/1529100618760521
3. **Omer SB, Betsch C, Leask J.** Mandate vaccination with care. Nature. 2019;571:469-72. [PMID: 31332351] doi:10.1038/d41586-019-02232-0
4. **Nyhan B, Reifler J, Richey S, et al.** Effective messages in vaccine promotion: a randomized trial. Pediatrics. 2014;133:e835-42. [PMID: 24590751] doi:10.1542/peds.2013-2365
5. **Basol M, Roozenbeek J, van der Linden S.** Good news about bad news: gamified inoculation boosts confidence and cognitive immunity against fake news. J Cogn. 2020;3:2. [PMID: 31934684] doi:10.5334/joc.91
6. **Hallsworth M, Buttenheim A.** Challenges facing a COVID-19 vaccine: a behavioral science perspective. Behavioral Scientist. 11 August 2020. Accessed at https://behavioralscientist.org/challenges-facing-a-covid-19-vaccine-a-behavioral-science-perspective on 1 September 2020.
7. **Milkman KL, Beshears J, Choi JJ, et al.** Using implementation intentions prompts to enhance influenza vaccination rates. Proc Natl Acad Sci U S A. 2011;108:10415-20. [PMID: 21670283] doi:10.1073/pnas.1103170108