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COMMENTARY



The COVID-19 Challenge Now Is Getting Into Heads, Arms Will Follow

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ABSTRACT

With the onset and rapid spread of COVID-19 without a safe and effective vaccine, initial efforts to reduce community spread focused on basic public health measures such as mask wearing, social distancing, handwashing, avoiding large gatherings, and suspected cases isolation and quarantine. Following was the development of the COVID-19 vaccination and a shift to immunize the U.S. population to achieve herd immunity and halt the pandemic. Many diverse methods to influence vaccine uptake behaviors have been implemented including increasing the number and accessibility of vaccine sites, lowering the eligible age, relaxing eligibility requirements, public education and outreach campaigns, introducing state, local and job-based incentives and, in some instances, vaccine mandates. With two-thirds of the population now vaccinated with at least one shot, additional gains will be more difficult requiring more creative approaches rooted in behavior change theories and strategies. The behaviors associated with COVID-19 are not new and “tried and true” behaviorally oriented prevention strategies created long before COVID-19 arrived can effectively be used to educate people. Health educators and professionals can play a critical role with this remaining resistant population subset and must employ behaviorally oriented messages that are factually accurate, persuasive and relevant, and culturally and linguistically appropriate.

A AJHE Self-Study quiz is online for this article via the SHAPE America Online Institute (SAOI) <http://portal.shapeamerica.org/trn-Webinars>

ARTICLE HISTORY

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Background

The first COVID-19 cases in the U.S. were reported in January 2020. In those early months without a safe and effective vaccine, efforts to reduce the community spread focused on basic public health measures such as mask wearing, social distancing, hand washing, avoiding large gatherings, and quarantine and isolation of suspected cases. The rapid spread of COVID-19, combined with a belief in the basic sciences as a means to mitigate this new epidemic, resulted in a federal government and private sector initiative known as Operation Warp Speed. The goal was to produce and deliver 300 million doses of safe and effective with the initial doses available by January 2021.¹ In fact, the first injection was delivered on December 14, 2020.²

In December 2020, President-elect Joseph Biden promised to provide 100 million COVID-19 vaccinations in his first 100 days in office, a milestone that also was quickly reached in 58 days.³ That number increased to 300 million by 150 days in office.³ Initially, despite ramped up production and distribution approaching three million, Americans' vaccinated daily demand exceeded supply. The challenge in the first several months was more “arms looking for shots than shots available.” States and cities scrambled to obtain sufficient vaccine supply for their citizens. Vaccine appointments

were difficult to obtain and long lines of anxious people in cars were commonplace. In the midst of early supply shortages, the three approved vaccines for emergency use (Pfizer, Moderna, and Johnson & Johnson) were well received by those wanting to be among the first vaccinated.

With ramped up production vaccine shortage quickly became a non-issue. On Tuesday May 4, 2021 the Biden administration set a new goal of 70% of adults to have at least one shot and 160 million to have been fully vaccinated against COVID-19 by the Fourth of July.⁴ To reach that goal, Biden's team expanded walk-up vaccinations at pharmacies and vaccination sites, opened additional mobile vaccination units, and accelerated a public-relations campaign aimed at addressing vaccine hesitancy and skepticism by boosting vaccine confidence.

Going forward the next major challenge will be immunizing a sufficient number of Americans who want to be vaccinated to achieve the herd immunity goal of at least 70% of the adult population fully vaccinated. This will not be easy to accomplish, as the pace of the U.S. vaccination effort has nosedived as states have had to contend with vaccine hesitancy. As of mid-April 2021, the U.S. was administering just under 3.4 million vaccine doses each day. By the time of the May 2 Biden announcement, the rate had dropped to just

under 2.3 million and has precipitously dropped to a weekly average about 1.1 million doses by June 10 and 502 thousand by June 26.⁵ As of June 26, 2021, 171 million adult Americans (66.1%) had received one dose and 147 million (57.0%) of the U.S. population has been fully vaccinated.⁶ Despite increased efforts at the federal level and by some states to encourage vaccination, the number vaccinated daily continues to decrease. With less than a week to go, Biden's goals will not be achieved. The "low hanging fruit" of those readily seeking vaccination has been achieved. Additional gains will be more difficult and require more creative behavioral approaches.

COVID-19 is both an acute and chronic disease. While COVID-19 is considered an infectious disease, it can also be deemed chronic in nature. Among others, underlying chronic medical conditions such as chronic lung diseases, including COPD, asthma, diabetes, heart conditions, liver disease, weakened immune system, overweight and obesity can increase a person's risk of severe illness from COVID-19.⁷ Similarly, COVID-19 symptoms can sometimes persist for months with the virus damaging lungs, heart and brain, which increases the risk of long-term health problems.⁸ Known as "long haulers," people can experience symptoms long after their initial recovery.

The importance of health literacy

One essential and necessary component crucial to influencing and changing health behaviors is providing accurate health information in an understandable manner to the public. Health Literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."^{9(p4)}

Health literacy is essential to preventing health problems and protecting our health. COVID-19 is no exception. Its sudden emergence as a new pandemic disease, its ability to spread rapidly, as well as its severity, lethality and absence at the outset of a treatment or vaccine presented unique challenges. It required people to acquire and apply health information, and adapt their behavior at a fast pace.¹⁰ Some information on how to avoid getting or spreading the infection was simple and practical such as washing hands, mask wearing and maintaining social distancing. Later, and as more became known and a vaccine emerged, there was more complexity. Through the entire pandemic there was changing, contradictory, and false information.¹¹

Health literacy is an essential measure of the effectiveness of health education and can be applied to the full range of determinants of health (individual, social, and environmental). The importance of health literacy for the health education professions is incorporated in the Eight Areas of Responsibility that contain a comprehensive set of Competencies and Sub-competencies defining the role of

the Health Education Specialist.¹² These include Area I: Assessment of Needs and Capacity that calls on health education specialists to analyze data to determine the knowledge, attitudes, beliefs, skills, and behaviors that impact the health literacy of priority populations. Also, Area VI: Communication includes identifying the assets, needs, and characteristics of the audience(s) that affect communication and message design (e.g., literacy levels, language, culture, and cognitive and perceptual abilities). It also specifies employing media literacy skills such as identifying credible source that the at-risk population trusts.

Misinformation and disinformation

Misinformation is detrimental to one's health and the health of society. Specifically, misinformation is harmful to those who suffer from chronic disease, those who are in search of strategies to improve their current health, and even health providers and health promotion and Health Education Specialists who are seeking updated and new information for their patients, clients, or students.¹³ The COVID-19 pandemic has provided ample evidence of how distortions and mistruths can and have caused confusion among the public. Information about COVID-19 comes from many sources including the government, health authorities, news media, politicians and a vast array of social media. Messaging has evolved as more became known about COVID-19. Not surprisingly, besides well-documented factual information coming from science, medical and academic communities, there has been no shortage of misinformation and disinformation about COVID-19. These are different concepts. Misinformation is not having the right information. There is no intended malice or animosity. In contrast, disinformation is when a person or groups of people purposely spread false information with the intent to misrepresent and deceive people.

While misinformation and disinformation about health and disease is nothing new, it has been greatly amplified with respect to COVID-19, spread by groups or individuals of political persuasions, especially in the Wild West age of social media that provides fertile ground for conspiracy theories of which there is no shortage. Adding to the confusion, some federal, state and local authorities repeatedly have contradicted their own government and public health experts while others have facilitated COVID-19 spread by refusing to follow CDC guidelines. Several governors have enacted policies repudiating CDC guidelines and even penalizing those adhering to these guidelines.

Misinformation and disinformation play an important role with respect to COVID-19 behavior from mask wearing to social distancing to getting COVID-19 vaccines.

They sow seeds of doubt and create confusion. They undermine confidence and foster skepticism and hesitancy. Although a majority of people are confident and willing to receive the vaccine, most surveys show there is a significant percentage of people who remain hesitant. Understandably, despite a pledge from nine pharmaceutical companies that a potential vaccine would meet rigorous standards, a Pew Research Center national survey of 10,093 in September 2020 reported widespread public concerns while the vaccine was being developed.¹⁴ The Pew Center survey found three-quarters of Americans (77%) thought it was very or somewhat likely a COVID-19 vaccine would be approved in the United States before its safety and effectiveness are fully understood. When asked about the pace of the vaccine approval process, 78% say their greater concern was that it would move too fast, without fully establishing safety and effectiveness, compared with just 20% who were more concerned approval would move too slowly thus creating unnecessary delays. Not surprisingly, fertile ground for vaccine hesitancy and skepticism existed when Pew found mixed public opinions whether enough Americans would get vaccinated to curb the spread of COVID-19 with 53% saying they were at least somewhat likely, while 46% saying not at all likely.

After vaccines were introduced, the concern was that vaccines were rushed into development in record time while only receiving emergency approval. Other expressed concerns after vaccines were introduced focused on the long-term side effects and efficacy of the vaccines over time, neither of which were known.

In a free society, misinformation or disinformation will never be eliminated. Additionally, especially with a new and evolving challenge like COVID-19, the science is tentative and transient. Some of this uncertainty is inherent and unavoidable. People or citizens need to realize that absolute truth is not always possible. While there may be competing claims, where possible we need to develop consensus based on the preponderance of scientific evidence at any given moment. At the same time, those same agencies and responsible media continually need to counter misinformation and disinformation by providing accurate information from trusted authorities. An ongoing challenge may require the social media platforms taking responsibility to stop the spread of misinformation and disinformation.

Vaccine hesitancy is a multifaceted construct

Adding to the complexity of public health's COVID-19 response strategy has been the emergence of what experts have now termed, "vaccine hesitancy." The Strategic Advisory Group of Experts Working Group on Vaccine Hesitancy concluded that vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of

vaccination services.¹⁵ Vaccine hesitancy is both complex and context specific and varies across time, place and vaccines. According to this work group, key influencing factors identified were complacency, convenience and confidence.

Vaccination complacency occurs when perceived risks of vaccine-preventable diseases are low and vaccination is not deemed a necessary preventive action. Convenience also is a significant factor influencing the decision to be vaccinated. Vaccine compliance and hesitancy can be affected by physical availability, affordability, geographical accessibility, ease of gaining access, time and difficulty to secure a vaccination, quality of the service, health literacy, language and the cultural and physical comfort of the vaccination environment. Confidence is defined as trust in the effectiveness and safety of vaccines, the system that delivers them, including the reliability and competence of the health services and health professionals and the motivations of policy-makers who decide on the needed vaccines.

Measured success – but challenges lie ahead

The success of the COVID-19 vaccination rollout and administration, along with mask-wearing and social distancing has resulted in a rapid and significant decline in cases, hospitalizations, and deaths throughout the country. With the drop off in vaccinations at mass vaccination sites, policymakers and public health officials have shifted their focus on ways to accelerate the pace of vaccine uptake. A multitude of diverse methods to influence vaccine uptake behaviors have been implemented including increasing the number and accessibility of vaccine sites, lowering the eligible age range, relaxing eligibility requirements, public education and outreach campaigns, introducing state, local and, job-based incentives and, in some instances, vaccine mandates.

Specific examples include increasing options available to patients by making the vaccine available to an expanded diversity of providers such as ambulatory clinics, primary care doctors, pediatricians and pharmacies in accessible, familiar and comfortable settings for their patients. Some cities and states have opened pop-up clinics in neighborhoods and shopping centers, county fairs, sporting or entertainment events. Others have employed mobile vaccination sites for people lacking adequate access to health facilities or facing geographic or transportation challenges.¹⁶ Rather than having people find the vaccine, the emphasis now is taking the vaccine to the people.

Many states, cities, organizations, businesses and corporations also have adopted a "carrot approach" to incentivize vaccine uptake.¹⁷ These have included lotteries offering millions of dollars, free four year college scholarships including tuition, room and board to state schools, admission to or free tickets to concerts and sporting events, free

saving bonds and even free ride-shares to vaccination sites. Some corporations have made national news. Even the White House has gotten involved. In an effort called the “all-American sprint,” as part of President’s push to reach a level of pre-COVID-19 normalcy by Independence Day, Anheuser-Busch, the company behind Budweiser, has partnered with the Biden White House. As part of Anheuser-Busch’s “Let’s Grab a Beer” initiative aimed at playing an active role in the country’s recovery, the company will give every drinking age American a \$5 voucher for beer, seltzer, or nonalcoholic beverages if 70% of Americans are vaccinated with at least one shot by the Fourth of July.

More recently, at some places of employment, mandates have been implemented for workers. Employers can legally require COVID-19 vaccination for employees to reenter the workplace and can provide incentives to encourage employees to get a shot, according to new guidance issued by the Equal Employment Opportunity Commission.¹⁸ Under federal law, vaccine mandates may be subject to exemptions based on disability or religious objection.

The challenge of vaccine hesitancy

Vaccine skepticism and hesitancy present formidable obstacles. Some are concerned with the rapid rollout of the COVID-19 vaccines and taking a wait-and-see approach. Others may be hesitant until assured, after millions are vaccinated, that the vaccines are not only effective but also safe from serious side effects. They also may want to know how safe and effective the vaccine is for their age group or for people with similar health status. Still others might want to know how long their immunity will last. Lastly, will vaccines protect against new variants and will a booster shot be needed?

The reluctance to be vaccinated is readily evidenced by public opinion polls reporting a non-insignificant portion of the population reluctant to be vaccinated. Early in the COVID-19 pandemic one poll showed nearly half of Americans would refuse a shot if offered immediately.¹⁹

In multiple regression analyses, vaccine hesitancy was predicted significantly by sex, education, employment, income, having children at home, political affiliation, and the perceived threat of getting infected with COVID-19 in the next one year. Specifically, vaccine hesitancy has been found to be higher among African-Americans, Hispanics, those who had children at home, individuals with lower education and incomes, rural dwellers, and those who identified as Republicans.²⁰ Similar findings by race, income, geographic location and political affiliation were noted by the ongoing the Kaiser Family Foundation COVID-19 Vaccine Monitor research project tracking the public’s attitudes and experiences with COVID-19 vaccinations.²¹

Surprisingly, high rates of vaccine resistance have been noted among health care workers, caretakers in nursing homes and correctional and police officers who are in higher risk populations than the public.²² Department of Defense officials recently reported that about 33% of military service members declined voluntary vaccination.²³

Using open-ended questions to understand public concerns better about getting a COVID-19 vaccine and the messages that might increase the likelihood of getting vaccinated, the Kaiser Family Foundation (KFF) conducted interviews with a nationally representative sample of 1,009 adults.²⁴

As shown in [Figure 1](#), when asked to put their concerns in their own words, KFF reported nearly four in ten (36%) of U.S. adults who have not yet been vaccinated say their major concern is the possible side effects of the vaccine. Far less concern was expressed about vaccine effectiveness and safety.

To gain greater insight into people’s biggest concerns, KFF did a deeper dive into the data by willingness to be vaccinated. Results of [Figure 2](#) and [Figure 3](#) show that significant differences in concerns by predisposition to get the vaccine shot.

Vaccine hesitancy and resistance is much more than a knowledge problem

Clearly, vaccine hesitancy remains a challenge. About a third of Americans are vaccine hesitant or resistant.²⁵ Some medical and public health experts view vaccine hesitancy as a knowledge problem, “If only we could educate them.” It can take several forms. The “empty vessel” or “sponge” model views people as passive learners needing to be filled with or soak up information. The more the better to account for spillage or overflow. With the focus on factual knowledge people simply need more information to make an informed decision.

If it were only that easy. Social science research suggests vaccine hesitancy and resistance behavior is much more than providing information by medical and public health experts. Often there are deeply held beliefs that account for people’s behavior and need to be understood and addressed. Political polarization explains some but is only part of the larger story.²⁶ Amin et al. found an association of moral values and vaccine hesitancy. In two correlational studies they found that the concepts of harm and fairness often emphasized in traditional vaccine-focused messages were not significantly associated with vaccine hesitancy. However, purity (concerns about things that might harm one’s body), liberty (freedom, individual rights, self-determination, control over one’s life, “doesn’t like to be told what to do”), and skepticism with medical and government authorities and institutions need to be included in vaccine discussions.

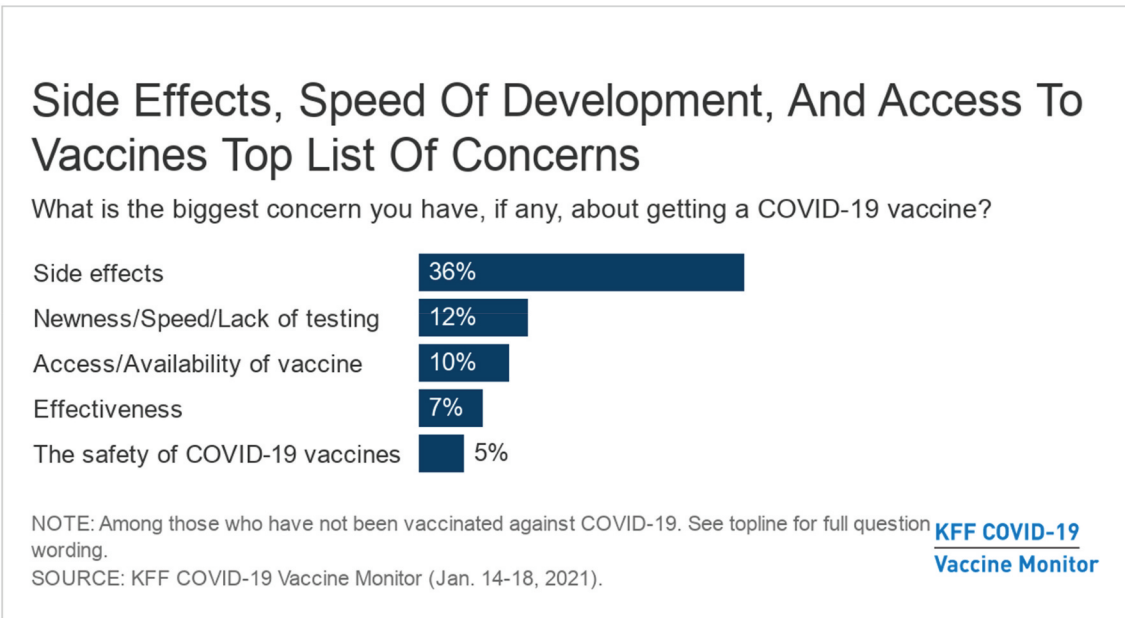


Figure 1. Side effects, speed of development, and access to vaccines top list of concerns.

What is the biggest concern you had/have, if any, about getting a COVID-19 vaccine?	Total	Get it as soon as you can (41%)	Wait and see (28%)	Get it only if required/ Definitely not get it (23%)
Side effects	36%	30%	55%	23%
Newness/speed/lack of testing	12	2	17	26
Access/availability of vaccine	10	20	1	2
Effectiveness of vaccine	7	8	6	7
The safety of the COVID-19 vaccines	5	3	4	7
Getting sick/dying from the vaccine	4	1	6	6
Don't want it/Don't need it	3	*	*	12
COVID-19 is not that bad/Vaccine is worse than COVID-19	1	*	2	2
Personal medical concerns/previous bad experiences with vaccines	1	*	1	1
Don't know what is in it/Vaccine ingredients	1	-	2	3
Don't know if they should get vaccine if they already had COVID-19	1	-	1	1
Lack of trust/political concerns	1	-	1	3
People at higher risk should get it first	1	1	1	1
No concerns	17	33	2	5

NOTE: Among those who have not been vaccinated. Responses receiving at least 1% shown.

Figure 2. Biggest concerns about getting a COVID-19 vaccine by COVID-19 vaccine enthusiasm.

Key points

- Halting the COVID 19 pandemic will require changing people’s behaviors. The behaviors associated with COVID 19 are not new and our profession is well versed on behaviorally oriented prevention strategies that can effectively be used to reach vaccine hesitant people.
- Reliance on a “one size fits all” messaging will not be sufficient to halt the COVID 19 pandemic. COVID 19 educational content will need to be tailored to specific subpopulations and will require distinctive messages to different groups using different sources of information and channels of communication. Our health messaging

If there is one message or piece of information you could hear that would make you MORE LIKELY to get vaccinated for COVID-19, what would it be?	Total	Already got it/ Get it as soon as you can (49%)	Wait and see (28%)	Get it only if required/ Definitely not get it (23%)
More information on side effects	16%	14%	23%	11%
More information on effectiveness	15	16	21	7
That the vaccine is safe	12	11	18	8
Experiences from people who have already been vaccinated	6	6	10	3
Want results of long-term studies/longer use in population	4	*	8	8
More information on how it was made/developed	4	3	4	5
Easier to get/more vaccine available	4	8	1	1
More information on access/availability	1	1	*	-
If my work/school/childcare requires it	1	*	*	2
Vaccine came in different form/Single dose/Not a shot	1	1	-	2
Seeing certain people get it	1	1	1	*
Full approval of FDA	1	-	1	2
Return to normal life/visit friends and family members	1	2	1	*
I was already planning on getting vaccinated	11	23	*	3
Nothing	20	12	12	47

NOTE: Responses receiving at least 1% shown.

Figure 3. Messages that would make the more likely to get a COVID-19 vaccine by COVID-19 vaccine enthusiasm.

must be factually accurate, persuasive and relevant, as well as culturally and linguistically appropriate to various audiences.

- We must work with the vaccine hesitant rather than the antivaccination individuals. The best chance of defeating COVID 19 will be to ramp up efforts and hope to change those who are vaccine hesitant as they may hold the key to achieving herd immunity. While we must continue our ongoing strategies to convince the anti-vaxxers, for the time being we should focus our energies on those whom we believe are malleable.
- The health education profession can and should play a leading role in designing and implementing behavioral health communication strategies as we enter a new phase in targeting vaccine hesitant populations. In fact, as an applied science we translate basic science into everyday language or lexicon so that it is more easily understood by the everyday reader. These efforts are also consistent with NCHEC's two of the seven areas of Responsibility for Health Education Specialists, Area VI: Communications, and VII: Leadership and Management.¹²

More specifically, Health Educators can develop COVID 19 programs by first identifying all available communication channels including mass media and social media. This assessment must carefully consider and understand

the target audience, paying close attention to its characteristics such as literacy levels, language, cultural differences and cognitive and perceptual abilities. Further, these programs, grounded in communication theories, should use social and mass media approaches that are tailored, culturally appropriate and sensitive to various cultures, values, and traditions.

A path forward

The nine-month sprint to design, test and administer a new vaccine against the deadly pandemic has been nothing short of an unprecedented medical triumph. Achieving herd immunity has shifted from being a medical or logistical challenge to a behavioral one and will take effective public health messaging and broad public support to accomplish this goal. The behaviors associated with COVID-19 are not new and "tried and true" behaviorally oriented prevention strategies created long before COVID-19 arrived can be effectively used to educate people.²⁷ Building this kind of support will require expertise from behavioral scientists and health communicators as well as health education. Beating this pandemic is still all about behaviors.²⁸ Achieving herd immunity will require "getting into people's heads" as much as getting shots into arms. The best approaches will involve messages that are consistent with American values. These include concern for the common good, for family and friends, and the importance

of personal responsibility. Other essential messaging components need to consider important values such as human rights, liberty, personal freedom, democracy, and social responsibility.

Reliance on a “one size fits all” messaging by medical experts alone will not suffice. Messages will need to be tailored to specific subpopulations. It will require Dr. Fauci and medical experts to work alongside “Dr. Phil” and behavioral/educational experts. Compliance will require different messages to different groups using different sources of information and channels of communication. Success in defeating COVID-19 will not come alone from laboratory successes but through community support and involvement.²⁹ Our health messages must be factually accurate, persuasive and relevant, as well as culturally and linguistically appropriate.

Public health officials also will need to confront a formidable wall of vaccine resistance that could hinder return to our pre-COVID-19 life. If a significant number of Americans abstain from vaccination, they will thwart efforts to achieve herd immunity and the coronavirus will continue to circulate and mutate, posing an ongoing threat to our society. The belief that “if you build it, they will come” might be true for baseball or Disneyland but not for sufficient COVID-19 vaccination among the hesitant or resistant.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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