Editorial

The war on infectious diseases: COVID-19 vaccines and the public: Challenges and solutions

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Today, the United States and the world are engaged in a war on an infectious disease of a magnitude never before encountered and we are now entering the most crucial and, it is hoped, the last battle of this struggle with COronaVIrus Disease 2019 (COVID-19). The enemy is a ruthless foe that has no respect for whom it infects or kills, and has defied most of our known anti-infectious disease therapeutic defenses. As of 12/14/2020, 72.8M confirmed cases of COVID-19, including 1.62M deaths, have occurred worldwide, with 16.5M cases and 300K deaths in the United States. We now have at our disposal the ultimate weapon for the defeat of this brutal enemy, the COVID-19 vaccines.

As in all wars, a system of recruitment is used to enlist soldiers for the anti-disease campaign. The major recruits in the war on COVID-19 are members of the public whose participation in mass immunization will be of key benefit to the warriors themselves. Their participation, in turn, will also protect other members of the public, even those not yet immunized against COVID-19. So, sufficient numbers of the public need to be immunized, *e.g.*, 85%, for the development of enough herd immunity to achieve this goal. Public health officials have estimated that COVID-19 vaccines need to have an efficacy of at least 70% to prevent an epidemic and of at least 80% to largely extinguish an epidemic without any other measures (*e.g.*, social distancing).[1] Pharmaceutical companies have now produced vaccines with reportedly 95% efficacy. As in all wars, however, there are barriers to achieving these goals that must be overcome.

WHAT ARE THE OBSTACLES?

To ensure that sufficient numbers are immunized, the public needs to be assured and have confidence in both the safety and effectiveness of these vaccines. As efforts to develop and test COVID-19 vaccines stimulate debate about the timing and release of a federally approved vaccine, the share of Americans who say they would get vaccinated against the coronavirus has declined sharply since earlier this year. Approximately half of U.S. adults (51%) now say they would definitely or probably take the vaccine to prevent COVID-19 if it were available today, yet nearly as many (49%) say they definitely or probably would not get vaccinated at this time and have expressed several reasons for their reluctance.

There are widespread public concerns about aspects of the vaccine development process. A new national survey by Pew Research Center, conducted September 8–13, 2020, among 10,093 U.S. adults,[2] found the intent to get a COVID-19 vaccine had declined across all demographic and major political groups. This survey found that 77% of Americans thought that it was likely that a COVID-19 vaccine will be approved in the United States before its safety and effectiveness are fully understood, and 78% express concern that the pace of the vaccine approval process will move too fast, without fully establishing safety and effectiveness. In addition, concerns about the adverse effects and uncertainty about the effectiveness of a vaccine are widely cited as reasons by those who would choose not to receive a COVID-19 vaccine if one were available today. A majority of those (72%) who would not get a COVID-19 vaccine expressed a desire to learn more about how well it would work as the major reason why they would not currently plan to receive a coronavirus vaccine.

WHAT ARE SOME SOLUTIONS?

In the late 1970s, the Immunology Center at Georgetown University Medical Center organized a *Symposium on Public Concerns of Immunization* for the purpose of bringing together the concerned public, professionals, educators, health agencies, representatives from local and federal government, ethicists, lawyers, manufacturers, and the media, all of whom shared a similar concern of diminished vaccine acceptance by the public. The Symposium was organized in 1978 in the wake of the ill-fated 1976 swine flu immunization program and was designed to bridge the communication barrier that existed between clinicians and researchers, and the public.[5] The proceedings of this Symposium were published in the journal *Pediatric Research*,[3] and some of the recommendations that emanated from the Symposium led to legislation for the National Childhood Vaccine Injury Act of 1986, a

federal vaccine injury compensation program that mandates the reporting of vaccine injuries and deaths.

To bolster better acceptance and adherence with COVID-19 immunizations, we suggest that a similar Public Concerns of Immunization with COVID-19 Vaccines be established, providing a forum for the public to express their concerns and receive evidence-based information about the potential harms and benefits of COVID-19 vaccines.

In one of the articles from the Symposium, a rather sobering statement was quoted from the Reports and Recommendations of the National Immunization Work Groups,[5] as submitted to the Office of the Assistant Secretary for Health (March 15. 1977), which has particular relevance to current public attitudes related to COVID-19 immunization:

The fortunes of the 1976 swine flu immunization program are a dramatic demonstration that the public health field has not escaped the corrosive effect of the diminished confidence of Americans in established authority and social institutions.

This same sentiment is reflected in the previously cited recent polls, which indicate a reluctance of many Americans to choose to receive a COVID-19 vaccine when available. The reasons for this are many, as cited in a recent editorial[6] and are also compounded by the active and growing numbers of individuals opposed to vaccines. Social media accounts that belong to the so-called anti-vaxxers have increased their following by at least 7–8 million people since 2019. These are major issues that must be addressed as we embark on our plans for public education.

There are several reasons why establishing a forum for the public to express their concerns would be useful, including[6]:

- Public awareness and interest in medical research is soaring with the public
- Researchers and clinicians seldom receive training on how to best communicate outside of their academic and clinical environments
- Moreover, traditional approaches to communicating with the public lack meaningful engagement and need to move beyond the paternalistic views of communication, wherein professionals talk at the public rather than listening to and engaging the public in the active dialog known as shared decision-making.
- The traditional model of public education is counterproductive to effective messaging and can, at times, discourage public involvement and trust in research and public health endeavors; instead, professionals should be pursuing an ongoing dialog that empowers the public to be actively involved in science and medicine as key stakeholders rather than passive recipients
- Perhaps the most powerful incentive for us to use a new approach to public education derives from past experiences that were learned from the Public Concerns of Immunization Symposium[5] held in the wake of 1976 swine flu debacle in that we learned that:

The public in general, and to an even greater degree specific segments of the population, no longer have the level of quality of trust in the nation's leaders—in the executive branch, in the Congress, or in the medical or business communities—that those groups once enjoyed. The American people apparently feel that they have not been told the whole truth about so many events and issues affecting them that they are more than ever wary of what they are told today by persons occupying high positions.

WHAT CURRENT EFFORTS ARE BEING CONDUCTED TO ADDRESS THESE PUBLIC CONCERNS?

There, fortunately, are indications that open dialog is beginning to develop between the public, the professional societies, pharma, and policy makers to share reliable vaccine-related information through open discourse:

- Physicians are now organizing to combat misinformation about COVID-19 vaccines[7,8]

As reports of progress on SARS-CoV-2 [severe acute respiratory syndrome coronavirus 2] *vaccine candidates headline the news, the nation's physicians have affirmed a commitment to answer patients' questions and ensure information surrounding the vaccine is rooted in scientific evidence.*

These efforts have been initiated by local and national professional organizations, *e.g.*, the American College of Allergy, Asthma, and Immunology (ACAAI) House of Delegates, ACAAI,[9] American Academy of Allergy, Asthma & Immunology AAAAI,[10] and other national medical organizations, empowering physicians with information and materials to help them communicate with their hesitant patients.

- The American Medical Association (AMA)

Given the unprecedented situation with COVID-19 and with vaccine development moving at a rapid pace, many of our patients and the public have questions and concerns," said AMA President Susan R. Bailey, M.D. *"It is essential that we speak together as a strong unified voice across health care and public health—inclusive of organizations respected in communities of color—to use scientific, fact-based evidence to help allay public concerns and build confidence in COVID-19 vaccine candidates that are determined to be safe and effective."*

- U.S. Food and Drug Administration (FDA)

The FDA held a meeting of the Vaccines and Related Biological Products Advisory Committee on December

10, 2020, to discuss the request for EUA (Emergency Use Authorization) for approval of the Pfizer (Pfizer, 401 N. Middletown Rd., Pearl River, NY 10965) messenger RNA COVID-19 vaccine and on December 17, 2020, for the Moderna (Moderna Technology Center, One Upland Road, Norwood, MA 02062) messenger RNA vaccine. Both meetings were open to the public and the FDA, and has established a docket for public comments to be submitted to the Committee prior to the meeting and the proceedings of the meeting are avaiable at the same FDA websites after the meeting.[11,12]

CONCLUSION

The war on COVID-19 is still raging and continues to take its toll in terms of worldwide infection and death. Fortunately, the end of the conflict is in sight for the battle-fatigued world with the soon to be available COVID-19 vaccines. The development of these vaccines against a virus identified only 10 months ago is a truly remarkable scientific achievement, the quickest vaccines have ever been generated and Pharma has done an extraordinary job; the federal government has similarly risen to the battle by its support of science and service, and will soon be mobilizing the militia in distributing the vaccine; the AMA and the medical community are showing their leadership in educating the public; the media has entered the battle by communicating the importance of mask wearing and social distancing, and the country will soon be in a position to defeat the enemy as a result of this national mobilization effort. There still remain, however, some unanswered questions, the most important of which is: will enough Americans be well equipped with the best information to make informed decisions for themselves and their families to receive the vaccine? We as allergist/immunologists can positively contribute to the war effort through education of our patients and the public.

During the darkest days of World War II, our country and the world expressed the hopes for an end to the war with the song, "*When the Lights Go On Again (All Over the World)*"[13] and awaited "*Victory in Europe Day (V-E Day) and Victory over other conflicts*. . ." and soon, when the lamps are lit by the COVID-19 vaccines, we shall celebrate *Victory over COVID-19 Day (V-C Day)!*

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