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Proceedings of a Workshop

IN BRIEF

August 2020

Vaccine Access and Hesitancy

Part One of a Workshop Series

Proceedings of a Workshop—in Brief

Peter Daszak, co-chair of the Forum on Microbial Threats, welcomed people to the workshop, which took place via Zoom on May 28, 2020. The workshop was the first in a series on the topic of vaccine access and vaccine hesitancy, with the remaining meetings scheduled for August 17–20, 2020. In his remarks Daszak observed how the shutdowns of this spring would have seemed impossible just a few months earlier. The forum’s workshops deal with a range of topics related to emerging infections, including the financial drivers of microbial threats, how they interact with chronic health problems, and their distal causes, making its work especially timely. Given the coronavirus pandemic, he continued, the series of workshops on vaccine access and hesitancy are especially valuable. The pandemic made clear that people want scientific information, but many distrust it at the same time, making questions of vaccine hesitancy even more prominent.

After brief welcoming comments and introductions from Heidi Larson and Matthew Zahn, co-chairs of the workshop planning committee, Robin Nandy, principal advisor and chief of immunizations for UNICEF gave the first presentation. He introduced the concept of immunization equity, tying it to the Sustainable Development Goals, the United Nations’ international development targets, which have a strong emphasis on equity. When an outbreak happens, there are usually inequities among ethnic groups or in various subnational demographic pockets.

Nandy described immunization as one of the most successful health programs to be delivered at large scale, yet rates have stagnated. (The total number of people vaccinated may be increasing, but coverage has been relatively stable around 86 percent.) UNICEF estimates that about 20 million children worldwide are either completely unvaccinated or not vaccinated according to schedule. Among these 20 million are about 13 million children who are completely unvaccinated, sometimes called zero-dose children (UNICEF, 2020).

Nandy then described how UNICEF’s strategy has gradually shifted from an interest in national estimates of vaccine coverage to an interest in zero-dose children, describing pockets of the population where these children are found. He framed this shift as a move from supply-side investment to increasing demand. This shift had made questions of data quality paramount. While national estimates of coverage are almost always available and reasonably accurate, subnational data are not. To complicate the matter, the target zero-dose children generally live in places where other public services are scarce. Referencing the work of UNICEF and the Bill & Melinda Gates Foundation’s Equity Reference Group for Immunization, Nandy identified three priority populations: remote and rural areas, urban slums, and conflict areas; barriers related to gender are the fourth priority (Equity Reference Group for Immunization, 2020).

Of the four priority barriers, remote and rural are the best understood. People in these areas are hard to reach because the marginal cost of travel is high. Recruiting and deploying health workers to these communities can be difficult, the supply chain is long, and the people on the receiving end of it have little power, making political will to reach them low. This group has some similarities with the urban poor, who face what Nandy described as a social distance

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rather than a physical distance from services. People living in illegal settlements may be especially reluctant to do anything that would bring them into contact with the authorities, including seeking health services. Therefore, while there may be good data available on service use in their geographic area, these data may not include the most vulnerable.

Measurement is also a challenge in conflict situations, where large-scale displacement and movement of refugees make it difficult to find patients and to track their visits to health posts. Even in places with good infrastructure and developed supply chains, conflict disrupts these systems and leads to migration of health workers, Nandy continued. A gender barrier cuts across all four target populations, and other relatively well-served ones. In places where women have low status, they might not be able to make decisions. Disrespectful treatment from providers can further deter immunization, as can problems with health literacy.

There is a continuum of reasons why children miss vaccines, ranging from the parents' knowledge about immunizations to a lack of trust or confidence in the product, including fear of side effects. Other reasons have more to do with the environment, including logistical challenges with getting to the immunization center or problems with the perceived quality of the services.

In his concluding comments, Nandy observed how the easy gains in vaccination have already been made; the populations left are hard to reach. The strategies responsible for increasing coverage rates from 30 percent to 80 percent are different from those designed to reach the remaining 20 percent. Targeted strategies will be needed to reach different priority groups, and they will have different costs. COVID-19 is likely to aggravate any existing problems with equity in immunization, Nandy concluded. He explained that the pandemic, with its disruptions to routine immunization, will set progress back, though how far back remains to be seen. He also encouraged the audience to think of the opportunity to rebuild the immunization system, integrate it with primary care, build efficiency, and regain public trust.

Ève Dubé, medical anthropologist from the National Institute of Public Health in Quebec, gave the next presentation, an overview of vaccine hesitancy and the cultural shifts that have given rise to this trend. She opened by explaining how the value of vaccines lies partly in community immunity, sometimes called herd immunity. Activating community immunity requires vaccine coverage of 80 to 90 percent—a high bar for a public health intervention.

In 2019, the World Health Organization listed vaccine hesitancy¹ as one of the top 10 threats to global health. She described the phenomenon as a continuum, with the vaccine hesitant being different from people vocally opposed to vaccination (the so-called anti-vaxxers) and also different from the vast majority of the population that fully accepts vaccines.

Vaccines are often described as a victim of their own success, meaning that as the memory of the death and disability caused by childhood illness fades, people may believe that vaccine-preventable diseases are not serious or not serious enough to counter the risk of vaccine side effects. The reality of vaccine hesitancy, Dubé continued, is more complicated. There are many overlapping influences on vaccine hesitancy ranging from the recommendations of a friend, the fear of adverse events, controversies in the media, and others. Furthermore, vaccine hesitancy is not new; it has been around since the first smallpox immunizations. At the same time, cultural shifts that Dubé described as “crisis of trust” and “crisis of truth” have magnified these concerns.

Much of daily life depends on trusting unseen, unknown experts to do their jobs well. Without trust in such experts, it would be impossible to ride an elevator or drink tap water. Yet even as modern technology increases dependence on experts, Dubé continued, there is growing distrust in them (crisis of trust), especially trust in the ability of government health authorities to do their work. A parallel growth in biased news and disinformation, often spread by the Internet and social media, has corrupted the value of scientific facts (crisis of truth), causing people to down-weight the advice of doctors, nurses, or other trained professionals. Evidence indicates that even a relatively short time spent on a vaccine-critical website can dissuade parents from vaccination. Referring to a recent *Nature* publication, she described how Facebook users expressing anti-vaccine views tend to have a higher reach than those in favor of vaccines (Johnson et al., 2020). Friends and family have a strong influence on the decision to vaccinate, and once the seeds of doubt are sown, reluctant parents tend to use the Internet only to confirm their decision, not to seek out information that runs counter to it.

The first response to vaccine hesitancy is usually to give facts about vaccines and the diseases they prevent, to use proscriptive language, and to scare people, but research shows these strategies will not be effective and can backfire. Effective strategies to address vaccine hesitancy should consider how people process information and make decisions. Scientists may wish decisions were made in a totally rational manner, but Dubé explained that everyone makes decisions based on emotions, on how they feel about the facts, not the facts themselves. Once formed, attitudes are hard to change; information alone is rarely enough. Based on her interviews with vaccine-hesitant parents, Dubé explained how, in her experience, most are not anti-science or uneducated and should not be thought of as ignorant.

¹ Defined as “delay in acceptance or refusal of vaccines despite availability of vaccination services” (WHO, 2014).

She emphasized how stories can be powerful tools to address vaccine hesitancy, with sad stories being more powerful. Frontline providers also play a crucial role in maintaining confidence in vaccines. Research indicates that one of the main reasons hesitant parents reconsider or change their minds about vaccination is a conversation with a trusted provider. At the same time, some providers are themselves vaccine hesitant, a population that Dubé saw as crucial for future research given their influence on their patients.

Questions of context are especially important in understanding vaccine hesitancy. The reasons wealthy Canadian mothers give for hesitancy are different from those cited by mothers in rural Bulgaria. Dubé cautioned against making assumptions about the causes of hesitancy without doing an in-depth investigation.

The last presentation of the morning came from Nancy Messonnier, director of the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention (CDC). Her presentation on the U.S. immunization program began with an acknowledgment that the vaccination program in the United States was in the fortunate position of starting from a place of high coverage and low burden of infectious diseases as well as a sophisticated supply chain and reliable system for monitoring adverse events. While vaccine coverage among young children is high, with more than 94 percent of children having required vaccines at the start of kindergarten, coverage among adolescents is mixed. Years after approval of the human papillomavirus vaccine, only about 68 percent of adolescents are vaccinated, and half get the annual flu vaccine. Adult vaccination rates are similarly uneven.

Reiterating a point from the Nandy presentation, Messonnier explained how population coverage estimates hide some important geographic and socioeconomic disparities. State coverage estimates vary widely, from around 86 percent at the low end to 96 percent at the high end. Nevertheless, about a third of young children have delayed or missed at least one vaccine (included in this third are the completely unvaccinated). Uninsured children are nine times more likely to miss vaccines, even though a federal entitlement (the Vaccines for Children program) provides free vaccination. She also cited notable disparities in vaccine coverage between rural and urban areas, with rural areas being less well served. Some disparities are about convenience, she continued, but others are harder to discern. For example, a 2019 study found about 2.5 percent of kindergartners had a vaccine exemption (Seither et al., 2019). It is often unclear what portion of exemptions are for temporary circumstances (e.g., the doctor did not have an appointment before the first day of school) and what portion are permanent (i.e., having no plan to be vaccinated).

High coverage with vaccines is necessary to protect the population because the causes of outbreaks are complex, Messonnier continued. For example, there is no indigenous transmission of measles in United States. About half of measles cases are introduced from visitors to this country, the other half from unvaccinated residents exposed when traveling abroad. Such imported cases will not cause outbreaks unless there is exposure to an unvaccinated population in the United States. This is what happened in 2018 and 2019 among Orthodox Jewish children in New York and New Jersey, causing the worst measles outbreak in the United States in 30 years (McDonald et al., 2019). She explained how the lack of vaccination in this population was the result of targeted misinformation, delivered with narrow messages designed to resonate with Orthodox Jewish parents. It is difficult to know how to correct such misinformation as it is often disseminated in sophisticated ways.

Misinformation on vaccines is a global problem. Even though Messonnier's data showed that the majority of parents in the United States have positive views of immunization, she pointed to troubling trends to the contrary. Polls indicate growing concerns with the safety of vaccines and vaccine ingredients, with doubts growing among racial and ethnic minorities and among lower-income parents, going against some assumptions that vaccine-hesitant parents are white and more affluent. These same pulse check surveys indicate that parents generally consider their child's doctor the most trusted source of information.

Messonnier concluded by describing how the problems of vaccine access and hesitancy are intertwined. CDC's 2019 strategic framework *Vaccinate with Confidence* recognizes this relationship, emphasizing finding pockets of the population with poor vaccine coverage and developing targeted approaches to reach them, strengthening the ability of parents to talk to their providers about vaccines, and stopping the myths and misinformation that erode public trust in vaccines (CDC NCIRD, 2019). When describing priorities for 2020, she explained how the COVID-19 pandemic had disrupted both the supply chain for vaccines and the process of routine immunization. She expressed hope that some vaccine would be available soon, and mentioned CDC's work to understand perceptions of the disease so to develop good communication strategies.

To close the meeting, Larson led a brief discussion with the panelists. In response to a question about the relative contributions of trust, socioeconomic status, and challenging settings (i.e., rural and remote areas, urban slums, and conflict zones), Nandy explained that UNICEF has long been concerned with mothers' education and indicators of socioeconomic status as predictors of immunization coverage, but those details are less helpful in understanding how to find pockets where vaccine access is limited. At the same time, he acknowledged that the relatively affluent in rural areas, urban slums, and even conflict situations can always access services.

There was also some discussion of trust and the importance of people’s beliefs about vaccination. In response, Dubé suggested that it may be unwise to emphasize the “right and wrong” aspect of people’s beliefs. Providers may need training to handle conversations with reluctant parents. Doctors and nurses may view these parents as problematic, which can influence the tone of the discussion. They may also find the number and types of questions raised by vaccine-hesitant parents overwhelming given the short time available for consultation. She discussed the importance of maintaining relationships and giving providers tools to communicate effectively with their patients. One should not expect vaccine-hesitant parents to change their minds quickly, she continued; a conversation over many months may be needed to persuade them. Larson echoed these comments, pointing out that that changing strongly held opinions is neither a short nor an easy process. She reminded the audience to nuance their conversations with the vaccine hesitant, and to remember the goal is to recruit—not alienate—the undecided. ◆◆◆

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For additional information regarding the workshop, visit <https://www.nationalacademies.org/event/05-28-2020/the-critical-public-health-value-of-vaccines-tackling-issues-of-access-and-hesitancy-a-zoom-meeting>.

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