

Time to vaccinate against hesitancy

Recent measles outbreaks worldwide highlight the urgency of tracking and countering vaccine hesitancy to ensure the continued success of immunization programs.

In 2012, the World Health Assembly endorsed the Global Vaccine Action Plan, whose goals included eliminating measles in at least five out of the six World Health Organization (WHO) regions by 2020. This goal seemed attainable, given the gains in measles vaccine coverage in low-income countries during the previous decade. And yet, in 2019, measles has surged worldwide. According to the World Health Organization (WHO), three times as many cases were reported in January through March of 2019 than during the same period in 2018. The United States, which had declared that locally transmitted measles was eliminated within its borders in 2000, has already reported the largest number of cases in any year since 1992 (<https://www.cdc.gov/measles/cases-outbreaks.html>).

Vaccine hesitancy, defined as a delay in vaccination or a refusal to vaccinate in spite of vaccine availability, has played a major role in driving outbreaks in all regions. At the beginning of 2019, the WHO declared vaccine hesitancy one of the top ten threats to global health. Routine and supplemental immunizations are a cornerstone of preventive health and wellness, but are threatened by gaps in coverage. The ongoing measles outbreaks, although tragic, provide an opportunity for health authorities to rebuild and preserve trust in immunization programs by promoting the uptake of tools to measure vaccine hesitancy, thus better supporting health care providers as they engage with patients and field-test new messaging approaches in communities that have different reasons for delaying or refusing vaccines.

Measles vaccines are the poster child for successful vaccine design and potential disease control, but a mix of complacency, fear and challenges to vaccine access have stymied vaccine coverage efforts. Although there are now a number of published tools to measure attitudes toward vaccination, in an analysis of data collected from 2014 to 2016, only 30% of WHO member countries reported performing assessments of vaccine hesitancy in the previous 5 years

(S. Lane, N. E. MacDonald, M. Marti and L. Dumolard, *Vaccine* **36**, 3861–3867; 2018). In the future, it will be important for more countries to routinely measure vaccine hesitancy and dissect which distinct factors are contributing on per-country and even more localized bases, a strategy that might help better anticipate gaps in vaccine coverage.

In the same analysis, one of the top three cited reasons for vaccine hesitancy was concerns related to the safety and side effects of vaccines. The detrimental effects of anti-vaccine messaging have thus far proven challenging to overcome. Primary health care providers already have an important influence in the decision to vaccinate and are therefore well placed to discuss the monitoring systems that ensure vaccine safety. However, to communicate this message even more effectively, providers themselves must have a strong grasp of the principles underpinning vaccine development, scheduling and surveillance, because such an understanding has been shown to increase providers' confidence in promoting immunization (Paterson, P. et al., *Vaccine* **34**, 6700–6706; 2016). In addition, some public health researchers feel that if vaccine counseling were better reimbursed by insurance companies, more health care providers in countries with healthcare systems such as that in the United States might be motivated to take on the time commitment of having these dialogues.

More information is still needed about which approaches best convey the benefits of immunization and address the concerns of parents who delay or refuse vaccines. One study has found that common fear-based messages might actually backfire (B. Nyhan, J. Reifler, S. Richey and G. L. Freed, *Pediatrics* **133**, e835–e842; 2014). In that study, parents randomly received one of four interventions designed to provide information about the safety of the measles–mumps–rubella vaccine or the risks of contracting these diseases. Those who were given images of children sick with measles, mumps or rubella were actually

more likely to believe in the discredited link between vaccines and autism. New studies are needed to test the efficacy of more refined motivational or empathetic communication, with the caveat that there will be no one-size-fits-all strategy in light of the varied contextual factors that contribute to the lack of vaccine confidence. In addition to addressing the needs of caregivers, approaches designed to enhance preventive-care education of young adults, including those in college, could mitigate gaps in vaccine knowledge and confidence later in life. Social media has been rightly lambasted for its role in perpetuating irresponsible and dangerous beliefs about vaccine safety and efficacy, but attention has mostly focused on how to block the spread of spurious misinformation on online platforms. Immunization programs should also better leverage social media to respond to determinants of vaccine hesitancy in different communities.

If measles continues to circulate in the United States through the fall, the country is at danger of losing its elimination status. Importantly, the effects of vaccine hesitancy extend beyond measles vaccines. If elimination of measles, a relatively simple disease to control, cannot be achieved, the possibility of elimination of other vaccine-preventable diseases with more complex dynamics and variable vaccine efficacy seems less likely. Restricting allowable exemptions from vaccination for school-age children, although a welcome development in response to the outbreaks in regions of the United States, would provide only part of the solution. To be truly effective, immunization programs must improve both education and outreach by incorporating strategies to measure and respond to vaccine hesitancy. Unless this epidemic is used to galvanize these changes, the United States will be no better prepared to prevent the next outbreak. □

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