It's Time for a National Surveillance System for Vaccine Confidence and Hesitancy

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How did the coronavirus disease 2019 (COVID-19) pandemic change parents' confidence in and motivation to get vaccines for their children? Two studies in this issue of *Pediatrics* seek to address this pressing question, providing novel data that suggest reasons for both reassurance and concern. Beginning with the good news, Higgins et al found no change in a composite measure of vaccine beliefs (or confidence) and motivation (hesitancy) when they surveyed repeated cross-sections of Colorado parents about early childhood vaccination over the course of the pandemic.[1] The bad news was that the study identified large proportions of parents (19% to 23%) with serious misgivings about vaccines at each time point, with the proportion being even higher among some parents of minoritized children, parents with lower levels of education, and others. In contrast, Honcoop et al used qualitative data from a multistate sample of 36 parents to understand hesitancy to get COVID-19 vaccines for children.[2] They found trust in health care providers on the one hand, but a desire for more information and high exposure to misinformation on the other. Taken together, these studies suggest that the pandemic failed to fundamentally reshape parents' orientation to childhood vaccination, but that low confidence and high hesitancy nevertheless remain prevalent and persistent barriers to protecting our children from vaccine preventable diseases.

Perhaps as striking as these papers' findings is the need for such regional studies in the first place. As Higgins et al observe,[1] it is remarkable that the United States lacks a national surveillance system for monitoring vaccine confidence and hesitancy. In stark contrast to the substantial national resources devoted to evaluating vaccine safety and vaccination coverage, the United States invests very little in tracking vaccine confidence and hesitancy nationally. For this reason, available data are limited to occasional studies, which are typically focused on a single vaccine or age group in a regional sample. Although individual research teams, including those of Higgins and Honcoop, make smart use of available data and resources, individual studies cannot make up for the lack of comprehensive national surveillance that is recommended by the US National Vaccine Advisory Committee, the World Health Organization, and others.[3,4]

Adopting a national surveillance system could advance the understanding of vaccine confidence and hesitancy in the United States in several ways. First, designing such a surveillance system could force a national consensus on what these and related terms mean. Brewer et al define vaccine confidence as believing that vaccines are effective, safe, and part of a trustworthy system.[5] They define vaccine hesitancy as low motivation (or intention) to get vaccinated. Vaccine refusal is the behavior of declining vaccines, which may be because of confidence or hesitancy or some other factor, such as convenience or affordability. The National Vaccine Advisory Committee, the World Health Organization, and other groups globally have adopted these definitions,[3,4] but the vaccination literature continues to be rife with studies that conflate vaccine confidence, hesitancy, and refusal. The

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result is that findings are difficult to interpret, compare, or apply to improving vaccine promotion programs. It is time to come to an agreement on this technical language.

Second, a national surveillance system could help standardize measures of vaccine confidence and hesitancy using validated instruments.[3] A national initiative could draw from a growing list of validated measures and data collection instruments that can best move the science forward. These include the Behavioral and Social Drivers of Vaccination Tools that the World Health Organization developed,[4] one of which Honcoop et al used.[2] Carefully designed tools like these offer the advantages of aligned measures, refinement through cognitive interviewing, and having been validated.[6]

Third, coordinated efforts could systematically evaluate vaccine confidence and hesitancy over time and across vaccine types, ages groups, and geographic regions.[4] This approach would help to inform efforts to increase equity insofar as the data better represented minoritized people. As the Higgins study demonstrates, achieving a diverse sample can be extremely difficult to achieve from regions like Colorado, where only 4% of the population is Black.[1] Such lack of representation is not a failing of the study—which used high-quality, probability sampling—but rather reflects the necessarily limited scope of a single state sample.

Finally, national surveillance of vaccine confidence and hesitancy would be advantageous in providing clearer links to data on vaccine uptake. Existing US surveillance systems like the National Immunization Survey and Vaccine Safety Datalink offer vaccination data from medical records and can be coupled with parental reports of vaccine confidence and hesitancy. Such objective data sources on vaccine uptake offer clear advantages over the self-report data that are the mainstay of many regional studies and can help to clarify the complex relationship between vaccine-related beliefs, motivations, and behaviors.

The COVID-19 pandemic has demonstrated the critical importance of a robust public health infrastructure for effectively responding to health threats, including vaccine preventable diseases, in a way that earns public confidence. Such a program would do well to use measures that: (1) have a conceptual basis in behavior science, (2) assess a comprehensive suite of constructs that drive vaccination behavior, (3) align with measures used by other countries, (4) are refined through cognitive interviewing, and (5) work in multiple languages. The data gathered should: (6) reflect high response rates and representative samples, (7) be available to vaccination programs in real time without lengthy delays, and (8) support subgroup analyses (eg, by race and by meaningfully small geographic units). Efforts to reinvest in this infrastructure should include national surveillance of vaccine confidence and hesitancy. Only by doing so can we achieve a comprehensive, national response to immunization programs that the Higgins and Honcoop studies signal we so desperately need.

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