Commentary

Vaccine safety concerns: Should we be changing the way we support immunization?

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Concerns about vaccine safety are not new but can have a major impact on vaccine acceptance [1]. A review of three years of World Health Organization (WHO)/UNICEF Joint Reporting Form country data revealed that vaccine safety was the most common reported underlying vaccine hesitancy factor [2]. Adverse events following immunization (AEFI) range from minor to serious and are classified as: 1) vaccine product−related reaction, 2) vaccine quality defect−related reaction, 3) immunization/program related errors (immunization stress related responses (ISRR)), 4) immunization anxiety−related reactions, and 5) coincidental events (AEFI not caused or precipitated by the vaccine) [3]. (https://apps.who.int/iris/bitstream/handle/10665/259959/9789241513654-eng.pdf?sequence=1).

While there is no "perfect" vaccine i.e. 100% safe and effective, most AEFI are minor and resolve quickly (e.g., fever, swelling at the injection site, rashes); with serious AEFI attributable to the vaccine or its manufacturing being exceedingly rare. Most serious AEFI (i.e., events that are life-threatening, requires hospitalization, results in persistent or significant disability or in congenital anomaly or birth defect) are coincidental unrelated events or due to program errors not the vaccine itself. However, coincidental events and even ISRR can have a profound effect on vaccine safety perceptions and undermine vaccine acceptance [4]. In the digital age, vaccine safety concerns spread quickly − even those not based on evidence or reality- and can influence hesitancy and acceptance [5]

The report by Lee and Sibley on *Attitudes toward vaccinations are becoming more polarized in New Zealand: Findings from a longitudinal survey* in this issue provides provocative insights into the evolution of infant and child vaccine safety concerns over the time period 2013 to 2017. The views were not static nor were the population sub-groups with concerns stable [6]. Given that this study used national surveys with national probability sampling, the most reassuring finding was that 60% showed consistently high confidence in infant and childhood immunization with an additional 10% becoming more confident over that time period Of note though, 30% were more skeptical, an increase over time.

What is not evident from the study is what influenced the changes or of lack of changes in confidence. The study highlights that attitudes are not static and monitoring over time is required if communications are to be tailored to meet the needs of different groups within a population. Tailoring interventions to address subgroup concerns - including tailored communications- is an evidence based strategy for growing acceptance amongst the hesitant [7]. Knowing what the concerns are and if they have changed is crucial.

Several question arise from the study. Is there a less costly and more rapid way to detect shifts in vaccine safety concerns other than serial national surveys? Would semantic network analysis of online social media at regular time points be a quicker way to discern if any shift in vaccine safety concerns [8]? What would be lost when compared to serial national surveys?

There are potential gaps. Semantic network analysis tools only observe those using social media − not a national probability sample. Disadvantaged people, newcomers, older people with less digital literacy and of course, those without Internet access maybe excluded. Similar gaps arise with national web based surveys. Furthermore, neither capture who has changed their mind over time; a nuance needed for more tailored interventions. Qualitative research can help gather more in depth understanding. As well focusing only on vaccine safety concerns is not enough as many other factors can contribute to lower vaccine acceptance [2]. Tools monitoring vaccine acceptance need to include other factors as well (e.g., social norms, provider recommendations, trust, etc.). [9]

Looking forward to the next decade, the emphasis for immunization globally is shifting beyond infant and child immunization to cover immunization across the life course [10]. Thus surveys focused solely on infant and child immunization safety concerns will not suffice. Public health programs will need to repeatedly assess the immunization attitude pulse of seniors, pregnant women, adults with chronic diseases, adults who are healthy in addition to assessing the views of parents of young children and adolescents. However, surveys cannot be too lengthy or complicated or completion will be low.

The survey population will need to be broad as views might differ widely depending on the vaccine (e.g., influenza versus pneumococcal vaccine); the targeted population (e.g. pregnant women versus seniors); and the demographics (e.g. 20 year old pregnant woman versus a 68 year old obese senior with diabetes). Serial national survey strategies as utilized by Lee and Sibley for infant and child vaccines will not be practical.

To add to the complexity, context also affects perceptions of vaccine safety and confidence in immunization programs [1]. Longitudinal approaches to monitor vaccine acceptance over time should be flexible enough to adapt to context changes. The Covid −19 pandemic and the need for a vaccine that is effective across the age span may (or may not) shift the focus amongst the public and/or some subgroups from attention on safety to centering on effectiveness provided COVID-19 vaccines have high safety profiles. This shifted focus onto effectiveness may spill over to other vaccines as the importance of controlling vaccine preventable diseases is sharpened by the pandemic.

As emphasized by this New Zealand study, one time surveys alone while helpful, are not good enough for keeping current vaccine communication programs well targeted. Public health programs in low, middle and high income countries, as well as global partners, to relook at what and how frequently information on vaccine concerns are being collected and how this can be optimized for use in tailoring communications. Care must be paid to who is and is not missed by the survey processes. If we are to get COVID-19 vaccine communications to fit well with populations with differing needs, we must indeed know more about current perceptions of vaccine requirements, safety and effectiveness across the life course.

Declaration of Competing Interest

The authors have no interests to declare

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