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Effective Approaches to Combat Vaccine Hesitancy

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INTRODUCTION

Vaccine acceptance across the lifespan is of global public health importance, yet millions of children remain under or unvaccinated and vulnerable to vaccine-preventable diseases. As highlighted by the current COVID-19 pandemic, many adults exhibit vaccine hesitancy, although this has fluctuated in most settings in response to many factors, especially vaccine safety signals^{1,2}. Vaccine hesitancy has also been demonstrated by those who work in healthcare. However, healthcare workers are often more reluctant to voice their vaccine-related concerns due to the government, organizational and societal pressures to vaccinate, with these hidden concerns even harder to address³. The causal drivers of vaccine hesitancy are complex and context-specific and

vary across time, place and vaccines², and are distinct from barriers that limit access to vaccines or vaccine services. Vaccine hesitancy, or the motivational state of being conflicted about or opposed to getting vaccinated, is influenced by how people think and feel about vaccines and the social processes that underpin vaccine acceptance⁴.

Interventions to increase vaccine uptake are often tested in the general population, rather than only targeting vaccine-hesitant individuals, with strong evidence on effective strategies often lacking for specific groups. Recent reviews suggest that interventions based on a “knowledge-deficit” approach, such as information or education that is not tailored to address the values or heuristics that underpin vaccine decision-making, may increase uptake but are unlikely to address hesitancy.^{5,6,7} Behavioral ‘nudges,’ such as reminder/recall interventions have been shown to increase childhood, adolescent and adult immunization uptake in the general population, but their appropriateness for reducing hesitancy is unclear^{7,8}. Strategies to inform best practice continue to be debated internationally⁹. So, what approaches are effective to combat vaccine hesitancy?

MEASUREMENT OF HESITANCY IS KEY

Identifying and measuring barriers to vaccine acceptance is critical to inform cost-effective strategies to address vaccine hesitancy. Several tools have been developed to measure parent hesitancy towards childhood vaccination¹⁰ (eg, the well-validated parent attitudes about childhood vaccines¹¹), but

fewer (eg, the Vaccine Confidence Scale¹²) address parent hesitancy towards adolescent vaccination. There are no validated tools specifically available to measure adult vaccine hesitancy. However, the 5C scale, published in 2018, is a psychometrically validated tool that assesses five psychological antecedents of vaccination (confidence, complacency, constraints, calculation and collective responsibility), capturing an individual’s attitudinal and behavioral tendencies¹³.

To understand the population-specific drivers of vaccine uptake, it is important to distinguish vaccine hesitancy from external barriers to vaccination, such as access. Several new tools are under development. The Vaccine Barriers Assessment Tool is currently being developed to measure both acceptance and access-related barriers to childhood vaccination in Australia and New Zealand, with the potential for adaptation for other settings, including low- and middle-income countries, as well as different population groups that is school-age children, adults and vaccines that is influenza and COVID-19 vaccines¹⁴. The World Health Organization (WHO) Working Group on the Behavioural and Social Drivers of Vaccination is developing standardized quantitative and qualitative tools to measure behavioral and social drivers of vaccination. Tools like these can be used to detect emerging trends in vaccine accessibility and acceptance. Understanding why specific groups and individuals do not receive recommended vaccines is key to inform the design and evaluation of cost-effective and tailored strategies to increase vaccine uptake.

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References 16–30 (see References, Supplemental Digital Content 1; <http://links.lww.com/INF/E685>).

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COMMUNICATION AND COMMUNITY ENGAGEMENT

Broad vaccine information campaigns can influence vaccine attitudes in the community, but tailored communication is often required to reach high-risk or vulnerable populations. Vaccine acceptance sits on a spectrum, from those who strongly refuse all vaccines to those who are strong vaccine advocates, with influences that are unique to each parent or individual. As such, vaccine communication should be evidence-based, context-specific and culturally appropriate and tailored to the individual's position on the vaccine hesitancy continuum. By engaging with specific groups based on their concerns, discussions can be focused and are more likely to be productive and less confrontational.

Research confirms provider recommendation to vaccinate is one of the key drivers of vaccine uptake, with different approaches taken by providers. Presumptive communication assumes people are ready to vaccinate (“We’re going to be ...”), whereas participatory communication asks people if they want to vaccinate or seeks their views on vaccination (“Did you want to ...”). Studies have suggested a presumptive approach is associated with higher uptake of childhood vaccines (observational studies) or adolescent HPV vaccines (randomized controlled trial¹⁵).

Motivational interviewing offers a more structured counseling approach designed to guide people towards change by exploring and enhancing internal motivation. At its core are 5 key principles: open questioning, affirming, reflecting back, summarizing and informing and advising. Examples of motivational interviewing interventions for vaccination include the Canadian PromoVac intervention, in which nurses with extensive motivational interviewing training delivered intensive education to new parents in the maternity ward (Reference 16, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>), S. PromoVac showed a promising impact on vaccine coverage in infancy, (Reference 17, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>) but is cost and resource-intensive. Less intensive versions of motivational interviewing, such as Sharing Knowledge About Immunisation (SKAI) and MumBubVax (Reference 18, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>) train providers to utilize both a presumptive recommendation to vaccinate as well as motivational interviewing techniques to elicit and respond to concerns of hesitant parents, with some positive effect shown in pilot data. However, evidence for physician communication training interventions is mixed. For instance, a primary care intervention in the US had no impact on

maternal vaccine hesitancy nor did it improve physician self-efficacy. (Reference 19, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>) There is also limited randomized controlled trial evidence from multi-component intervention packages to determine which elements have the most impact.

Diagrams, such as icon arrays are helpful to support providers discussing vaccine risks and benefits, especially with people with lower levels of health literacy (Reference 20, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). Decision aids are also evidence-based tools to help people clarify their values and understand their options and have been shown to reduce decisional conflict (Reference 21, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>).

Strong community engagement and the use of vaccine champions are valuable strategies to address vaccine hesitancy, alongside communication campaigns and evidence-based interpersonal communication. Training healthcare providers, community, faith and industry leaders to act as ‘vaccine champions’ who can discuss vaccination and address misinformation can build confidence in vaccines. Vaccine champions can deliver training and advocacy tailored for their own communities and workplaces, and they can positively impact social norms. Examples include the ‘Immunity Community’ campaign, which provided vaccine accepting parents with tools to engage in positive dialogues about immunizations and be immunization advocates. This campaign increased the proportion of parents concerned that other children were not vaccinated and decreased the proportion vaccine-hesitant. To promote COVID-19 vaccination, the Collaboration on Social Science and Immunisation network developed a Vaccine Champions and Vaccine Communication program which was delivered to over seventy groups around Australia in 2021 and is being adapted for countries in the Western Pacific Region in 2022.

MISINFORMATION AND DISINFORMATION

Misinformation and intentionally incorrect disinformation can increase vaccine hesitancy. The role of social media and health misinformation, including vaccination has previously been highlighted, including search patterns that are unique to the social media medium and the ability for searches to reflect temporal vaccination concerns (Reference 22–24, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). Knowing when to address misinformation is important. Social listening systems that monitor social and traditional media can identify emerging or common concerns, enabling targeted communication to address information

gaps or discredit circulating misinformation before it has a chance to stick (“prebunking”). Another strategy to help make people resilient to manipulation attempts is through identifying and calling out misleading argumentation strategies employed by antivaccine activists. Debunking misinformation once it has gained footing is more challenging as it becomes enmeshed with people’s worldview and cognitive biases (Reference 16, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). Evidence for effective approaches to address misinformation is mixed, with some studies showing that restating the myth in the process of debunking can reinforce it, while others do not see this backfire effect.

COERCIVE TECHNIQUES

Incentives or positive reinforcement of vaccine receipt can mean that an individual is rewarded for receiving recommended vaccines. Such examples of this include tax benefits, additional payments or more immediate rewards, such as lollipops, stickers or in workplaces cash prizes or even holidays. Punitive strategies, such as mandates also apply coercion to ensure that people receive recommended vaccines, penalizing individuals for not vaccinating by applying school entry requirements or financial penalties. Mandates have gained recent attention due to their use during the COVID-19 pandemic but have previously been used with both healthcare workers and children. Some experts argue mandates should be the last resort, only tried once certain prerequisites are satisfied. Broadly these should include that: the mandate should be legal and developed democratically; the burden of disease should be sufficiently high to justify a mandate; the penalty be proportionate; the vaccine should be safe and should reduce transmission; there should be a stable vaccine supply, effective distribution, equity of access, and convenient services; the mandate should be nonselective and not be used in isolation and finally, less restrictive and trust promoting measures should be pursued first (Reference 25,26, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). Mandates also pose several ethical questions, such as the rare but potential risks associated with vaccination, the ethical requirement for consent for medical procedures, and the possible social harms of targeting nonvaccinators.

While mandates have been shown to increase vaccine coverage in instances where baseline coverage is low, their impact is likely to be less effective where baseline coverage is high. For example, Meningococcal C coverage in France increased dramatically following the introduction of mandates in 2017 for children born from

TABLE 1. Effective Strategies to Address Vaccine Hesitancy

| Strategy | Evidenced-based approach |
|-----------------------------------|---|
| Diagnostic tools | Vaccine acceptance alone i.e., PACV |
| Communication approaches | Vaccine acceptance and access barriers i.e., VBAT, BeSD Broad community vaccine campaigns Tailored communication campaigns and approaches i.e., different cultural groups and communities Provider-patient/interpersonal communication i.e., presumptive communication, motivational interviewing Risk communication i.e., icon arrays, decision-aids to address health literacy challenges |
| Community engagement | Trained vaccine champions i.e., healthcare providers, community, faith, and industry leaders |
| Misinformation and disinformation | Social listening systems to inform pre and debunking approaches |
| Coercive techniques | Incentives or positive reinforcement i.e., family assistance payments/tax benefits Punitive strategies i.e., vaccine mandates |

BeSD: Behavioural and Social Drivers; PACV, parent attitudes about childhood vaccines¹¹; VBAT, Vaccine Barriers Assessment Tool.

2018 (Reference 27, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>) whereas the coverage of measles vaccination in Germany was already high (>95%) before the introduction of a selective mandate targeting measles in 2020 (Reference 28, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). However, mandates can have negative unintended consequences, including worsening inequities in access to resources, with penalties for not complying disproportionately affecting disadvantaged groups (Reference 26, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). There are also reports of a range of consequences from nonvaccinating parents, such as feeling stigmatized, social and psychological effects, and reduced early childhood educational opportunities and financial hardship (Reference 29,30, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). Mandates can also damage trust or further fuel antivaccine activism, with this extending to physicians as well as indented vaccine recipients (Reference 28,29, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>). In addition, parents have also reported feeling more steadfast in their decision not to vaccinate and an increased desire to maintain control over health choices for their children. (Reference 29, Supplemental Digital Content 1, <http://links.lww.com/INF/E685>)

Vaccine hesitancy plays a contributory role to under-vaccination globally. Each

individual’s and community’s circumstances are unique; hence identifying and measuring vaccine acceptance or hesitancy as well as access barriers are critical. Strong community engagement and communication approaches and strategies to address misinformation are needed, with coercive measures used as a last resort after less restrictive and trust promoting measures. Addressing under-vaccination requires a multifactorial evidence-based approach to accurately identify barriers to develop tailored strategies to the context and population to target those who inadvertently under-vaccinate as well as the hesitant.

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