

Pharmacology Consult

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A Looming Threat Within a Pandemic

Vaccine Hesitancy and Refusal

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We have forgotten the risks and disease burden we have been protected from with vaccines.¹ Despite overwhelming evidence that vaccines are one of the greatest achievements in public health, increasing numbers of persons believe vaccines are unsafe and unnecessary.^{2,3}

VACCINES THEN AND NOW

Vaccines save between 2 million and 6 million lives each year, but 1.5 million more lives could be saved. The greatest barrier is vaccine hesitancy, defined by the World Health Organization as reluctance to vaccinate related to fears about vaccine safety, and despite reassurances from providers and public health. Vaccine hesitancy and refusal are particularly problematic in high-income countries and may be related to increased access to misinformation regarding vaccine safety via the media and internet. Political, cultural, and social factors also drive hesitancy and refusal, and there may be an even deeper issue here, a breakdown in trust between society and the healthcare system.^{3,4}

Vaccine development in the 20th century has reduced morbidity, mortality, and outbreaks for children and adults. Despite this evidence, vaccine-preventable diseases (VPDs) are increasing related to low and decreasing vaccination rates. Nearly 1 in 8 children in the United States younger than 2 years is not vaccinated, and the number of parents requesting vaccine exception is rising.^{4,5} The current continuum could be described as the many who accept vaccines and those who absolutely reject all vaccines and the vaccine-hesitant pathway between these two positions.⁴

Resistance to vaccines is not new. Mandated smallpox vaccines were perceived as a violation of liberty in 1850

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and 1879. With the introduction of immunizations for polio, measles, tetanus, pertussis, and tuberculosis beginning in the 1960s, vaccination was widely accepted that resulted in significant reduction in morbidity and death. Table 1 provides a brief summary of vaccine development since 1796.⁶

In the 1970s, antivaccine movements arose again, beginning in the United Kingdom regarding vaccine safety. Andrew Wakefield's false and refuted claims in 1998 reporting a link between autism and the MMR vaccine created a worldwide outbreak of vaccine fear that lingers today.^{2,4} Initially published in *The Lancet*, this study was later discovered to be fraudulent and was retracted in 2011. Longitudinal studies involving more than 600 000 children revealed no evidence of association of MMR vaccine and autism. Nevertheless, Wakefield's discredited work and claims with evidence continue to impact vaccination rates and trust of vaccines worldwide.⁷

Subjective fears and misinformation are increasingly becoming the basis for dangerous choices and significant risks to public health. Additionally, beliefs that hygiene, natural immunity, and personal habits make vaccines unnecessary have resulted in lower vaccination rates, particularly for children. As a result, community thresholds necessary to maintain herd immunity are not possible.⁸ For example, after a decline in DTaP (diphtheria, tetanus, pertussis) vaccination rates in California in 2012, 9000 residents developed pertussis, and 10 infants died, the worst outbreak in 60 years. This outbreak, like others, results in great community health burdens related to quarantine, contact tracing, needed healthcare, lost work, disability, and death.¹

VACCINE HESITANCY AND REFUSAL

Persons with limited experience with VPDs cannot comprehend how ill one can become with disease. As a result, there is more fear of the vaccines than the disease. Therefore, healthcare providers have incredible opportunity to be the most important messenger and predictor of vaccine acceptance compared to media or any other sources.⁴ Table 2 describes interventions the clinical nurse specialist

Table 1. Vaccine Timeline 1796 to 2006⁶

1796	Smallpox vaccine
1840	Mandatory smallpox vaccination in UK
1948	First combined DPT vaccine licensed
1949	First mumps vaccine
1953	Polio vaccine
1958	First measles vaccine tested
1964	12.5 million cases—rubella outbreak
1966	First measles vaccine campaign in US
1967	World Health Organization begins eradication of smallpox project
1969	First rubella vaccine licensed
1971	First measles, mumps, and rubella vaccine licensed
1980	Smallpox declared eradicated
1994	Polio declared eradicated
2000	Conjugated pneumococcal vaccine for children licensed
2002	Measles declared eradicated from the Americas
2006	First human papillomavirus vaccine licensed

(CNS) can use to reduce vaccine hesitancy or refusal.^{4,9} Obtaining a vaccine should be presented as a positive healthcare decision for self, as well as a social responsibility to protect one's family and the community. Provision of any information should be done after careful assessment of the patient's knowledge, beliefs, perceived risk, religious views, and experiences.⁴ Vaccine acceptance is a function of trust and confidence regarding the efficacy and safety the vaccine, the health system, healthcare providers, and the research communities. More research is needed on how trust varies over time, as well as how to sustain trust because the numbers of vaccines that will be required in the future will increase.^{10,11} Additionally, public health education needs to be structured to fit the patient position: support for those who accept vaccine, education for those who are hesitant, and patience for those who reject vaccines.²

VACCINE ETHICS

Ethics also play roles in accepting or refusing a vaccine. Newly introduced vaccines are always associated with greater anxiety.⁸ Evidence suggests persons can modify decisions for vaccine hesitancy or refusal with information and assurance from a trusted healthcare provider.¹²

While society permits one to opt out of vaccines, refusal does not release one from the consequences of the choice. Evidence supports that those who do not vaccinate can cause serious harm, and increasingly, individuals are being called upon to account for the harm they do to others by their choice not to vaccinate.¹³ Ethicists suggest that one's freedom of choice with regard to vaccine ends with the vulnerable in the home, in school, in church, at the market,

or at work. Pursuing legal action for harm could help to reduce vaccination anxiety and avoidance and perhaps should be considered in future policy considerations since mandatory vaccination for school entry has been successful in increasing vaccination rates and reducing community disease.^{4,13} Perhaps with vaccine refusal, persons would become liable for results including healthcare costs, lost work, or even death of those exposed to disease (eg, visiting a day care center or exposing unvaccinated newborns to disease, disability, or death).^{13,14} There is legal precedence for mandating vaccination when the benefit for public health outweighs an individual's liberty.¹⁵ While some believe mandated vaccine takes away individual choice, vaccines have been and will continue to be a public health tool to protect the community. Future exploration of stricter exemption laws, economic incentives for those who are vaccinated, restrictions on social activities, and stricter mandates may be necessary going forward to improve vaccine acceptance and protect public safety.¹ Vaccine refusal remains a threat to public health and requires a multidisciplinary approach to reduce the reemergence of VPDs and spread of increasingly virulent viruses in the future.⁴

Finally, what about vaccine refusal despite intervention and significant risk? There are ethical principles for and against dissolving the provider-patient relationship for vaccine refusal.

Providers must first consider the relationship with the person, the desire to provide the current standard of care, and the goal to protect other persons in the community. There is a range of responses for the CNS including completing mandated vaccine education, signing a declination form or dismissal, and recommending the patient see another provider.⁴

VACCINE POLITIC: PAST IS PROLOGUE

In 1988, the World Health Organization began work on global polio eradication by 2000 in which Nelson Mandela launched a very successful program to vaccinate 50 million

Table 2. Clinical Nurse Specialist Interventions to Reduce Vaccine Hesitancy and Refusal^{4,9}

Ask permission first to discuss vaccine hesitancy or refusal
Explore with patient-specific concerns and sources for their information
Provide educational materials; additional right sources of information
Storytelling may be a more powerful tool than provision of scientific information
Share information regarding celebrity immunization champions that are trustworthy/likable
Display confidence regarding efficacy and safety of the vaccine
Provide additional recommendations; physician, pharmacist
Lead by example—describe one's experience with vaccines

children. By 2001, polio in Nigeria had dropped from 350 000 cases to less than 500 in 2001. However, this progress was lost in 2003, when political and religious leaders in Northern Nigeria called on parents to not immunize children based on false claims and rumors that vaccines were being used to spread HIV and infertility among certain groups. These claims resulted in a resurgence of polio in Nigeria that spread to 15 countries that were once polio-free.^{16,17}

Consider what is happening now. A powerful statement recently released by the National Academies of Sciences, Engineering, and Medicine provided a warning regarding the politicization of science during the COVID-19 pandemic. Vaccine policy making must be based on the best evidence without distortion, concealment, and deliberate miscommunication. Overriding advice of science and evidence and disparagement of scientists undermine the credibility of public health and the public trust so needed to successfully accept a new vaccine and overcome this pandemic.¹⁸

This week, I had a consultation regarding COVID-19 best practices and concerns about vaccines. The family had a member newly diagnosed with mild COVID-19 and was seeking direction—rather than more information. They were fearful, anxious, and overwhelmed by endless information they had gathered from the media, internet, and news. “Who or what should I believe?” should not be the only question nearly 8 months into a global pandemic. The ongoing discredit of science, research, and best practices is threatening public health and breeding fear. Ongoing political and media interference (disguised as claims of having expert knowledge regarding COVID-19, infectious disease, public health, clinical trials) certainly will contribute to future risks for vaccine hesitancy or refusal resulting in needless morbidity and mortality.

The CNS can certainly help by providing sound evidence and assistance with decision making and empowering patients to live with less fear and more hope. Nursing's responsibility during this pandemic includes saving lives by providing the truth about vaccines in a relationship of trust during a difficult time of fake experts and political agendas. While social media and the internet provide fuel for vaccine controversies, both offer tools for nursing to address vaccine hesitation and refusal in the future.¹⁹

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