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Responding to Questions of Parents with Vaccine Concerns

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ABSTRACT

Responding to Questions of Parents with Vaccine Concerns

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Introduction: Even with the benefits of vaccinations, some parents refuse vaccinations due to influence from vaccine opponents. The purpose of this article is to identify common vaccine concerns on public forums and address these concerns with scientific evidence, thereby offering PNPs information on how to respond.

Method: Six electronic databases were searched to identify articles examining concerns of parents regarding vaccines and provide evidence-based responses to each concern.

Results: Some parents are concerned that healthcare providers are not obtaining written informed consent prior to vaccinating their child(ren). Another common concern is that pharmaceutical companies are solely motivated by financial profits when manufacturing vaccines. Parents also share concern about vaccine manufacturers’ exemption from liability for those who suffer a vaccine-related injury.

Discussion: PNPs have a responsibility to address parents’ concerns regarding vaccines and provide correct information to the public. PNPs are in a prime position to positively influence parental vaccine decision-making.

Keywords: vaccine, immunization, Pediatric Nurse Practitioner, patient education, anti-vaccine movement
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Responding to Questions of Parents with Vaccine Concerns

Vaccinations are one of the most effective global public health achievements (Centers for Disease Control and Prevention [CDC], 2018; Lantos et al., 2010; Edwards et al., 2016). In fact, vaccines have successfully reduced the prevalence of vaccine-preventable diseases worldwide and are essential to global health (Greenwood, 2014; Hussein et al., 2015; Vanderslott & Roser, 2018). The administration of vaccinations has helped control many infectious diseases such as measles, rubella, tetanus, diphtheria, and Haemophilus influenza (CDC, 2018). Each of these diseases have seen a substantial decline as a result of vaccine coverage. Because of global vaccination initiatives, smallpox has been eradicated and poliomyelitis is now only endemic in three countries - Afghanistan, Nigeria, and Pakistan (United Nations Foundation, 2017).

Scientific advancement of new vaccines continues to provide further benefits to pediatric patients (College of Physicians of Philadelphia [CPP], 2018a). Multiple vaccines have now been combined into a single injection, allowing children to receive the same protection against communicable diseases but with fewer injections (CDC, 2017a). Furthermore, additional vaccines have been developed since 2005, providing protection to children and adolescents from Human Papilloma Virus and meningococcal serogroup B (Children’s Hospital of Philadelphia [CHOP], 2019a).

In addition to reducing the prevalence of disease, vaccinations have been lauded one of the most cost-effective ways to eliminate disease (United States Department of Health and Human Services [USDHHS], 2019a; World Health Organization [WHO], 2019b). If children are vaccinated, following the schedule as recommended by the Centers for Disease Control and Prevention (2011a), $14 billion could be saved in healthcare costs over the lifetime of the children. Additionally, between 2010 and 2015, vaccines prevented 10 million deaths worldwide (WHO, 2017). This reduction in morbidity and mortality associated with vaccine-preventable diseases
indicate that vaccinations are unquestionably one of the most beneficial and cost-effective strategies to protect the health of children worldwide (CDC, 2011b; Harder et al., 2018).

Notwithstanding the benefits of routine vaccination, some parents either refuse or delay vaccination of their children (Navin et al., 2019). The reasons for vaccine refusal or delay vary but include: conflict with religious beliefs, the desire for more information from healthcare providers (HCPs), lack of knowledge regarding seriousness of vaccine-preventable diseases, and the concern that vaccines are unsafe (McKee & Bohannon, 2016; Salmon et al., 2015). However, fear that vaccines might cause harm, whether a logical concern or illogical anxiety, is the most common reason for vaccine refusal in the United States (U.S.) (Whitaker et al., 2015). Parental concern regarding potential serious adverse effects of vaccines in the U.S. creates barriers to elimination of infectious diseases worldwide (Whitaker et al., 2015). In fact, the World Health Organization (WHO) (2019a) declared, “vaccine hesitancy – the reluctance or refusal to vaccinate – as one of the planet’s top 10 global health threats in 2019” (para. 27). Thus, parental reluctance to vaccinate children is concerning and affects not only the unvaccinated children, but the entire health of the community in which they live.

While some parental concerns regarding vaccine safety are relatively straightforward, focusing on topics such as vaccine ingredients (Gidengil et al., 2019), other concerns have multiple dimensions and question the intentions of systems specifically designed to ensure a safe global supply chain (Jolley & Douglas, 2014). Such fears include uneasiness regarding the motives of vaccine manufacturers and suspicion of collusion between pharmaceutical companies and Federal government agencies (Guidry et al., 2015). A solid understanding of these misconceptions, specifically regarding motive to manufacturer vaccines and governmental regulation of vaccine safety standards, may be helpful when addressing these types of parental questions regarding vaccines.
Furthermore, some parents question the legality of vaccinations and believe they have the basic civil right to informed choice when it comes to vaccinating their children, a value promoted on 38% of anti-vaccination websites (Kata, 2010). Similar to the argument of informed choice is the idea that HCPs must obtain written informed consent prior to administering any vaccine. Obtaining informed consent prior to any medical procedure is a widely accepted practiced and creates a pathway for injury compensation, injury prevention, promotion of trust, and patient autonomy (Parmet, 2005). To truly support patient autonomy is to allow parents to make decisions based on all information and without coercion (Reiss & Karako-Eyal, 2019). The fact that there is no Federal requirement for written informed consent prior to vaccination (CDC, 2016) seems to only heighten public distrust of vaccines among some parents, especially with regard to risk for coercion (Zagaja et al., 2018).

Pediatric HCPs, including Pediatric Nurse Practitioners (PNPs), play a critical role in shaping parental beliefs regarding vaccinations. It is, therefore, essential for PNPs to address parental concerns regarding childhood vaccinations (Clift & Rizzolo, 2014). In fact, “it is incumbent that PNPs also be aware of misinformation in the public domain and provide the correct information to the public and the health care community” (National Association of Pediatric Nurse Practitioners et al., 2018, p. A-9). It is sometimes difficult, however, for PNPs to manage the quickly and ever evolving arguments against vaccines (Paterson et al., 2016). The purpose of this article is to identify common vaccine concerns on public forums and address these concerns with scientific evidence, thereby offering PNPs information on how to respond.

**Research Questions**

**Parental Question 1:** Should healthcare providers obtain written informed consent from parents whose child(ren) receive vaccinations?
Parental Question 2: Are pharmaceutical companies motivated by financial gain when manufacturing vaccines?

Parental Question 3: Are pharmaceutical companies exempt from liability when a vaccine causes an injury?

Methods

Websites were examined to identify concerns regarding vaccines as outlined by various parent-led groups, such as the National Vaccine Information Center (NVIC). Then, six electronic databases were searched to identify scientific articles explaining vaccine-related informed consent, financial gains of pharmaceutical companies, and liability for vaccine injuries. The databases included CINAHL, MEDLINE, PubMed, Academic Search Premier, Health Source: Nursing/Academic Edition, and Family and Society Studies. Scientific institutions, such as the Centers for Disease Control and Prevention (CDC), the WHO, the National Institutes of Health, the Advisory Commission on Childhood Vaccines, the National Association of Pediatric Nurse Practitioners (NAPNAP), the American Academy of Pediatrics (AAP), the American Medical Association, the Advisory Committee on Immunization Practices, and Children’s Hospital of Philadelphia were reviewed.

Inclusion criteria comprised articles and books published in English since 2005. Additionally, inclusion criteria encompassed articles only related to childhood vaccines. Search terms included parental concerns; hesitancy; refusal; vaccine; vaccination; adverse reactions; recommendations; controversy; immunize; immunization; vaccine-preventable diseases; safety; myths; misconceptions; reluctance; global health; and public health.

Results

Parents have a variety of concerns regarding childhood vaccinations. Claims regarding dangers of childhood vaccinations are promulgated through blog sites, anti-vaccine websites, and
social media (Getman et al., 2018; Kata, 2010; Kata 2012). Such concerns regarding vaccinations quickly change, making it difficult for PNPs to remain current on the most recent parental questions and concerns regarding vaccines (Paterson et al., 2016). A review of arguments in the lay literature for parents revealed common legal issues and questions regarding the ethical behavior of pharmaceutical companies and the government. Whether or not informed consent should be obtained from parents prior to vaccination of children has recently inundated the lay literature (Fisher, 2017; National Vaccine Information Center [NVIC], 2019a). Additionally, the belief that pharmaceutical companies are solely motivated by financial profits when manufacturing vaccines, with no regard for the health and well-being of children is common (Fisher, 2019a; Guzman, 2018). To further exacerbate parental apprehensions, some parents call into question vaccine manufacturers’ exemption from liability from those who suffer a vaccine-related injury (Children’s Health Defense, 2018; Rex, 2018).

## Informed Consent

**Parental Question 1: Should healthcare providers obtain written informed consent from parents whose child(ren) receive vaccinations?**

The idea that parents do not receive adequate information about vaccinations prior to vaccinating children is of utmost concern. There is some trepidation that parents are not receiving all the pertinent information regarding side effects and risks of vaccinations prior to making an informed choice (Raines, 2019). The NVIC (2019a) claims that vaccinations, as with any other medical interventions, have the “inherent ability to result in the injury or death of that healthy person” (para. 3) and should be subject to mandatory written informed consent. Parents rely on HCPs to offer a fair and balanced risk analysis regarding vaccines, although some of the rhetoric claims HCPs often offer biased reassurances that childhood vaccines are safe and effective and rely on coercion to bully parents into vaccinating children (Hammond, 2019; NVIC, 2019a). It has
also been suggested that informed consent regarding vaccines should be written and not merely verbal, similar to the written informed consent required for most other invasive procedures (Mercola, 2017). Likewise, vaccine opponents also believe true informed and written consent prior to vaccination should be supplemented with copies of the vaccine manufacture’s package insert which outlines vaccine ingredients and side effects reported during drug trials (Hammond, 2019; NVIC, 2019b).

**Response**

According to the WHO (2014), consent is defined as “the principle wherein individuals must give their permission before receiving a medical intervention or procedure” (p. 2), which includes vaccinations. Written consent is typically utilized by middle-to high-income countries where a high percentage of the population is literate and is usually reserved for invasive tests or treatments with significant risks such as surgical procedures or when anesthesia or sedation is utilized (Kakar et al., 2014; Wagner et al., 2018; WHO, 2014). Verbal consent from a parent or legal guardian is an appropriate consent process for vaccination if the child is accompanied by the parent or legal guardian and is, generally, adequate for routine treatments, procedures, and prophylaxis (Kaker et al., 2014; WHO, 2014). Implied consent is measured by patient conduct rather than a patient’s verbal or written expression. For example, if a patient rolls up his or her sleeve in anticipation of having blood pressure measured, the act of rolling up the sleeve and offering access to the arm is considered implied consent (Rock & Hoebeke, 2014).

In most countries, children under the age of 18 years old cannot legally consent to receiving vaccinations so, accordingly, consent for a child to receive vaccinations is obtained from the parent or legal guardian (WHO, 2014). Furthermore, the WHO (2014) recommends parents or legal representatives should be informed about each dose of vaccine and consent for the vaccination should be obtained, although consent can be written, verbal, or implied. With implied
consent, communication with parents or legal guardians often takes place through indirect communication, such as letters, and is based on an opt-out principle, meaning that parents who do not wish to consent will actively take steps to ensure their child is exempt from receiving a treatment, such as vaccinations (WHO, 2014).

Under the National Childhood Vaccine Injury Act in the U.S., Vaccine Information Statements (VIS) are required by law to be distributed to the parent or legal representative of each child, prior to the administration of each vaccine dose (American Academy of Pediatrics [AAP], 2019; CDC, 2019a). VISs are one-page documents authored by the CDC that contain a short, easy to understand, summary of each vaccination and outlines the benefits as well as the risks associated with each vaccine (Immunization Action Coalition, 2019). While the distribution of VISs prior to vaccination is required by Federal Law (National Childhood Vaccine Injury Act, 1987), VISs are not official informed consent documents (CDC, 2019b). Nevertheless, both benefits and risks of each vaccine are outlined on VISs and anyone reading through the information should be adequately informed (CDC, 2019b). Thus, if provided and reviewed with the child’s parent or legal guardian prior to vaccination, VISs may be a helpful document when obtaining verbal or implied consent.

Currently, the U.S. Federal Government has no legal requirement for documentation of informed consent with vaccination; however, some states have written or verbal medical consent laws relating to childhood vaccinations (CDC, 2016; CDC, 2019b; CPP, 2018b). Therefore, PNPs should consult with their local health department regarding state regulated informed consent laws and vaccinations (CDC, 2016).

In addition to Federal regulations and state laws, professional organizations have also weighed in on informed consent. While not specific to vaccinations, the AAP (2016) states that informed consent is critical in healthcare practice and the act of obtaining informed consent from
parents or legal guardians prior to instituting medical interventions is now standard practice. Furthermore, “the law has evolved to require a full disclosure to the patient of the facts necessary to form the basis of a reasonable, informed consent” (AAP, 2016, para. 4). Adequate education about vaccines should be provided for parents and legal guardians. According to NAPNAP (2018), vaccine “education must include the most current scientific evidence related to vaccine safety, risk, and benefits” (para. 4). Additionally, parents “…must be informed about sources and dangers of misinformation” (National Association of Pediatric Nurse Practitioners, 2018, para. 4).

All vaccines must have a manufacturer’s package insert (PI) that meets strict Food and Drug Administration (FDA) regulations. According to FDA regulations, all adverse reactions reported during Phase III of the vaccine trials are published in the PI, even if the adverse reaction occurred an equal amount of times in the placebo group (CHOP, 2019b). While parents have access to PIs via the Internet, they may not understand that if an adverse reaction is reported during Phase III of a vaccine clinical trial it may not necessarily be related to administration of the vaccine. Additionally, and in contrast to the VIS, PIs are very long, complex, and utilize research and technical jargon, making PIs difficult to read and understand. Thus, PIs are not ideally suited as tools for patient education but are instead documents that ensure HCPs have adequate information to safely recommend and order the vaccine (Nathan, 2015; Pires & Cavaco, 2014).

**Pharmaceutical Companies and Financial Gain**

**Parental Question 2: Are pharmaceutical companies motivated by financial gain when manufacturing vaccines?**

Another prominent concern is that pharmaceutical companies’ primary motivation for manufacturing vaccines is that of financial gain, creating mistrust among parents and leading to vaccine hesitancy (Crescitelli et al., 2020). Another claim is that pharmaceutical companies receive research funding, grants and donations from government programs, and tax dollars to
manufacture and test vaccinations and then manipulate the government to support compulsory vaccine requirements for school children. Because the U.S. government directly funds vaccine research and then requires the American school-aged children to receive vaccines, vaccine opponents accuse pharmaceutical companies and the U.S. government of unethical behavior (Guidry et al., 2015). In this mutually beneficial relationship, pharmaceutical companies control the profit and government controls the population (Rawlinson, 2017). Such a lucrative and unethical business model is the result of vaccine manufacturer greed and policymaking quid pro quo, guaranteeing a sustainable financial gain. Further allegations suggest members of government programs own stock in vaccine manufacturers or share vaccine patents, thereby creating conflicts of interest (Dangersofvaccines.com, 2020). The CDC has been accused of knowingly overlooking these conflicts of interest (Children’s Health Defense, 2019; Fisher, 2019b).

**Response**

The motive behind manufacturing vaccines, and whether or not pharmaceutical companies are incentivized by financial gain is a fair question. Producing vaccinations that are safe, effective, and prevent a variety of life-threatening diseases is an extremely difficult feat that requires cooperation from many organizations. In fact, manufacturing vaccinations is one of the most complex responsibilities undertaken by pharmaceutical companies (Plotkin et al., 2017), requiring a high level of quality control throughout every stage of the vaccine development process. Because the arduous process includes multiple steps such as animal studies, several phases of clinical trials, and evaluation for immunogenicity and efficacy, it takes, on average, 10-20 years to develop a vaccine (CHOP, 2020). Pharmaceutical companies, therefore, have to not only ensure high quality of research but also a high commitment to funding the process of vaccine development since the upfront cost is immense (Regan, 2018; Smith et al., 2011). Indeed, the cost of developing a vaccine is estimated to be between $500 million to $1 billion per vaccine (Pronker
et al., 2011). When combined with the fact that only 7% of vaccines successfully progress from research and development to licensure (Pronker et al., 2013), the level of commitment vaccine manufacturers must have to community wellness and public health becomes even more evident.

The high level of complexity, combined with the high fixed cost of development, makes vaccine manufacturing a challenging endeavor with limited potential of profit (Plotkin et al., 2017; Regan, 2018; Smith et al., 2011). Drug manufacturing, on the other hand, is much more profitable because of daily dosing regimens rather than a once per year or once in a lifetime administration schedule (Lam, 2015). During the last five decades, all but four pharmaceutical companies (GlaxoSmithKline, Merck, Pfizer, and Sanofi Pasteur [Plotkin et al., 2015]) abandoned vaccine manufacturing because of the slim profit margin (Lam, 2015; Offit, 2005). Furthermore, the revenue generated from vaccines only accounts for about 2-3% of global pharmaceutical sales (Boost Oregon, 2016). Thus, production of vaccines is not a very profitable endeavor (Offit, 2005).

**Vaccination Injuries and Liability**

*Parental Question 3: Are pharmaceutical companies exempt from liability when a vaccine causes an injury?*

The realization that pharmaceutical companies cannot be directly sued for vaccine-related injuries makes some parents fear that pharmaceutical companies may be tempted to ignore safety precautions and rush new and inadequately tested vaccines to market (NVIC, 2011). With no direct accountability, pharmaceutical companies are then free to sell vaccines that could be potentially dangerous with little regard for patient safety because of the need to please stockholders (NVIC, 2011). The derogatory nickname, Big Pharma, is derived from this perceived unchecked power and greed within the pharmaceutical industry. Some well-known vaccine opponents, such as Robert F. Kennedy, have even accused the pharmaceutical industry of
poisoning an entire generation of American children, with vaccines, who now have no legal recourse, thus constituting one of the greatest scandals in American medicine (Mnookin, 2017). Additionally, the Children’s Health Defense (2018), a group led by Robert F. Kennedy, Jr., further allege the CDC and other government agencies have altered vaccine science, manipulated vaccine safety and efficacy data, and are involved in cover-up and trickery (Children’s Health Defense, 2018).

Response

Vaccines have successfully reduced the prevalence of many diseases and protected individuals, families, and communities from the morbidity and mortality associated with vaccine-preventable diseases (Health Resources & Services Administration [HRSA], 2016; Meissner et al., 2019; Pasquale et al., 2016). The safety of vaccines is ensured by a collaborative effort between multiple agencies, including the WHO, the CDC, and the U.S. Food and Drug Administration (FDA) (Pasquale et al., 2016; Shimabukuro et al., 2015). Before receiving approval from the FDA, vaccines undergo extensive testing spanning several decades (Preiss et al., 2016). In fact, vaccines are held to a greater safety standard than other medications and biologic products (Whitaker et al., 2015). Even after release to the public, the CDC and FDA continually oversees the safety of vaccines (CDC, 2014; Shimabukuro et al, 2015). The extensive testing prior to vaccine licensure and the surveillance of side effects after widespread dispersal in the general population safeguards the U.S. vaccine supply (See Figure 1) (CDC, 2013; HRSA, 2019; Marshall & Baylor, 2011; Meissner et al., 2019). The U.S. vaccine supply is, therefore, the safest and most effective supply in the world.

The majority of people receiving vaccines experience no serious adverse effects (USDHHS, 2017). However, as with any medications or medical interventions and despite the rigorous safety precautions, risk for adverse effects remain (College of Physicians of Philadelphia,
Generally, the side effects of vaccines are rare, mild, and usually resolve with no long-term harmful effects. Common side effects include pain, redness, and swelling at the injection site, or systemic symptoms such as fever or myalgia. On rare occasions an unexpected serious adverse event, such as a severe allergic reaction, seizures or death can occur, however, only in very rare instances (College of Physicians of Philadelphia, 2019; HRSA, 2019; Pasquale et al., 2016).

Nevertheless, during the 1970s and 1980s, individuals and families who believed they were injured by vaccines filed lawsuits against the vaccine manufacturers. Due to increasing liability, many pharmaceutical companies halted the production of lifesaving vaccines. As a result, there was a shortage of vaccines and the cost of the remaining vaccines significantly increased (CDC, 2015; College of Physicians of Philadelphia, 2019; HRSA, 2019; Meissner et al., 2019; Offit, 2011).

Sensing a looming public health crisis, Congress approved *The National Childhood Vaccine Injury Act* (NCVIA) that removed the liability for vaccine-related injuries from the vaccine manufacturers (College of Physicians of Philadelphia, 2019; Offit, 2011). With ratification of the NCVIA, the vaccine supply was protected, those who suffered a vaccine-related injury were compensated, parents received information regarding the benefits and potential side effects of vaccines, and the safety of vaccine manufacturing was continuously monitored. The NCVIA also required that HCPs reported all adverse events related to the administration of a vaccine to the Vaccine Adverse Event Reporting System (VAERS) (CDC, 2015; College of Physicians of Philadelphia, 2019). HCPs or parents can report a possible vaccine-related injury to VAERS through the contact information provided on VISs.

To ensure the provisions of the NCVIA were met, The U.S. Department of Health and Human Services (USDHHS) established the National Vaccine Injury Compensation Program
The Advisory Commission on Childhood Vaccinations (ACCV) is a chartered organization of the VICP. The nine voting members of the ACCV oversee the VICP and provide recommendations to the USDHHS regarding VICP operations (HRSA, 2019). Such recommendations include funding and staffing the VICP, the statute of limitations for filing an injury claim with the VICP, the benefit caps under the VICP, what information should be included on VISs, and which adverse events should be compensable according to the Vaccine Injury Table (USDHHS, 2019b).

**Discussion**

With the availability of vaccine-related information through social media platforms, news outlets, and the Internet, parents are often inundated with conflicting claims about vaccines, leaving many parents confused and frustrated (Ames et al., 2017). In fact, social media is an especially potent platform for vaccine conspiracy beliefs (Featherstone et al., 2019). Research investigating the social platform Pinterest found 74% of pins involving vaccine-related content contained anti-vaccine sentiment (Guidry et al., 2015). According to the Royal Society for Public Health (2019), 50% of parents with children under the age of 5 years report exposure to negative vaccine messages on social media. As a result, parents may lack confidence in the safety of vaccines, lack knowledge about the severity of vaccine-preventable diseases, or they may lack trust in the healthcare system (WHO, 2019a). These factors make it difficult for parents to process information and make educated vaccine decisions based on empirical evidence (Vrdelja et al., 2018).
Providing accurate vaccine information and correcting vaccine misinformation has the potential to positively influence parental vaccine decision-making (Eby, 2017). Parents who are reluctant to vaccinate their children have often conducted a heuristic vaccine risk versus benefit analysis of sorts (Jacobson et al., 2015), although they often overestimate the risk of side effects and underestimate the protective benefits of vaccines (Damnjanovic et al., 2018; Romijnders et al., 2019). Vaccine knowledge among those who refuse some or all vaccinations is usually based on anecdotal, rather than scientifically accurate information (Romijnders et al., 2019). In fact, only 77.6% of parents make a vaccine decision that is based on correct information (Lehmann et al., 2017). As patient advocates, PNPs should ensure that parental decisions regarding childhood vaccines are made on correct information.

Anti-vaccine websites, as well as various social media platforms, regularly promulgate skepticism regarding Big Pharma and Federal government conspiracies such as the claim that vaccine manufacturers bribe elected leaders and other government officials to conceal the dangers of vaccines (Geraghty, 2019; Kata, 2012). In particular, conspiracy theories involving vaccines, Big Pharma, and the Federal government are directly associated with vaccine hesitancy or refusal (Jolley & Douglas, 2014; Kata, 2012). An awareness of anti-vaccine messages and how these messages undermine the overall health of the public is needed to counter the disingenuous claims made by a growing anti-vaccine movement (Kata, 2012). While parents should be commended for having healthy skepticism, misinformation should also be corrected and include detail regarding why the misinformation is a fallacy rather than simply stating their beliefs are wrong (Chan et al., 2017).

HCPs have a responsibility to equip parents or legal guardians with accurate evidence-based information and establish a trusting partnership with parents. NAPNAP (2018) suggests that PNPs are, “in the best position” (para 4) to ensure children remain healthy and protected from
vaccine-preventable diseases. Because every healthcare encounter is an opportunity for PNPs to review vaccinations with parents or guardians (CDC, 2017b; NAPNAP, 2018), it is essential that PNPs provide parents or legal guardians with correct, current, nonjudgmental, and culturally sensitive vaccine recommendations as well as clarifying the risks of not vaccinating (NAPNAP, 2018, para 4). The PNP may also find it helpful to offer parents a quick handout with reputable vaccine resources (See Figure 2). NAPNAP likewise recommends that VISs be provided to, and critically evaluated by, parents prior to the administration of any vaccination. Parents should have an opportunity to voice their concerns, ask questions, and receive factual, evidence-based answers from the PNP.

**Conclusion**

Vaccinations are proven to be safe, provide life-saving benefits, and are one of the most effective public health achievements in the world. Despite the enormous success of vaccines, a growing number of parents hesitate or refuse to vaccinate their children. While the reasons for delaying or refusing vaccines is multifactorial in nature, these reasons may involve parental questions regarding legal issues and concerns about the potential unethical behavior of pharmaceutical companies and the government. PNPs are uniquely positioned to respond to parental concerns regarding childhood vaccinations with accurate information. PNPs should also reassure parents that vaccinations are an effective and safe strategy to keep their children healthy.
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Figure 1. The vaccine life cycle: safety at every phase.

Retrieved from https://www.cdc.gov/vaccinesafety/ensuringsafety/history/index.html
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<td><strong>PLAIN TALK ABOUT CHILDHOOD IMMUNIZATION</strong>&lt;br&gt;From the Washington State Department of Health&lt;br&gt;<a href="https://www.doh.wa.gov/Portals/1/Documents/8200/348-080-PlainTalk-en-L.pdf">https://www.doh.wa.gov/Portals/1/Documents/8200/348-080-PlainTalk-en-L.pdf</a></td>
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<td><strong>VACCINES AND YOUR CHILD</strong>&lt;br&gt;By Paul Offit, M.D. and Charlotte Moser</td>
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*Figure 2. Trusted and scientifically-based resources for parents with vaccine concerns.*