



## Parental Refusal for Treatments, Procedures, and Vaccines in the Newborn Nursery

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### Keywords

- Newborn nursery • Refusals • Vitamin K • Erythromycin ointment • Hepatitis B
- Infant metabolic screen • Hearing screen • Antivaccine movement

### Key points

- Parental refusals of standardized care in the newborn nursery seem to be occurring more frequently.
- Parents and caregivers must be educated about the importance of newborn treatments and risks of refusal.
- Parents receive their information about newborn care from a wide range of sources, with important demographic differences.
- Providers need to know how to manage parental expectations and how to deal with difficult parents.

## INTRODUCTION

In this current era of medicine, a pediatrician's job not only includes the difficult task of keeping infants and children healthy but also addressing parents' hesitation and distrust of Western medicine. With increased use of the Internet and social media, parents are turning from their health care providers to other sources of information that are often replete with misinformation. The increasing antivaccine movement has trickled down to refusals for standard

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newborn care. Although information needs to be continually provided to parents, physicians also need to educate themselves regarding the reasons standard newborn care is delivered, what the common sources of misinformation are, and how to better communicate with parents. We have included direct quotations at the beginning of each section from parents and nurses to provide examples of reasons for refusals.

## **HEARING SCREEN REFUSAL**

“I don’t want my baby’s ears to explode.” “It just isn’t necessary.” “I know he can hear without the test.” “It looks like it hurts his ears.”

The universal hearing screen is a simple, fast, noninvasive, and painless test performed prior to nursery discharge. It can alert parents and providers to potential hearing loss. Detecting hearing loss at an early age is crucial to infants’ speech and brain development, and early intervention is key to developing speech and other forms of communication. Approximately 1 to 3 of 1000 infants are born with hearing loss, 50% of whom do not have risk factors for hearing loss. All states have statutes mandating newborn hearing screens. The United States Preventive Services Task Force (USPSTF) and the American Academy Pediatrics (AAP) both endorse universal hearing screen guidelines [1].

Otoacoustic emissions (OAEs) are the primary screening test that can detect conductive hearing loss. OAE screening measures the presence of sound waves generated by the outer hair cells when the cochlea is stimulated by sound. It is an appropriate test for those who are unable to verbally respond to sound stimuli, such as newborns, and does not require sedation. A small earpiece with a microphone and speaker is placed at the entrance of the external canal, sounds are generated, and the emission from the cochlea is recorded. OAE screening, however, is not able to measure central hearing loss so providers should further screen for hearing loss if speech delay is detected at future well visits [1].

If a newborn does not pass OAE screening, audiologists may perform an auditory brainstem response test, which measures cochlear nerve function. Electrodes are placed on the forehead, and brainwave responses to sound are recorded. This is also appropriate to use in newborns because a response is not required. This test lasts only a few minutes longer than OAE screening [1].

Providers must ensure that every infant has the opportunity to acquire the skills needed to develop appropriate milestones. Poor parental understanding of the scheduled appointment time for follow-up if an infant has failed a hearing screen and the cost of the test itself have been factors associated with refusal of the newborn hearing screening [2]. Without hearing, speech acquisition is delayed, which can have an impact on other developmental milestones.

## **NEWBORN METABOLIC SCREEN REFUSAL**

“We don’t have any diseases in our family.” “I don’t want my baby to cry from the pain.” “My baby does not need this.” “I don’t want the government storing information about my baby.”

Newborn metabolic screening encompasses a wide range of tests that determine if infants have certain serious medical conditions. The US Department of Health and Human Services recommends screening for 31 different disorders, and each state can include additional screenings for other disorders. This minimally invasive test, which requires just 5 drops of blood, enables treatment or precautions to be initiated before serious conditions develop.

Ideally, an infant undergoes screening between 24 hours and 48 hours of age, and abnormal results are reported to the physician and family within 1 week. When a family receives an initial diagnosis, depending on the severity of the condition, the parents have various ways to access more information. They can immediately refer to online fact sheets published by the Screening, Technology and Research in Genetics Project [1]. The fact sheets are written by genetic counselors and reviewed by metabolic and genetic specialists to ensure that the information is accurate and appropriate for parents who need to learn what steps to take to address their infant's diagnosis. The sheets address frequently asked questions and possible treatments, ensuring that caregivers have the appropriate background knowledge about their infant's medical needs and condition. The pediatrician should review the newborn screen results at the well child visits. Depending on the initial results, these tests may need to be repeated or an infant may be referred to an appropriate specialist [1].

## **ERYTHROMYCIN OPHTHALMIC OINTMENT REFUSAL**

"He won't be able to see me." "I don't have any diseases." "It's not natural." "We didn't do this back in the day and those babies were all fine."

Carl Credé, a German obstetrician/gynecologist, was the first to discover that silver nitrate could prevent ophthalmia neonatorum (ON). In the 1880s he demonstrated a 97% reduction in gonococcal ON after initiating prophylaxis; this association became known as Credé's prophylaxis [3].

Gonococcal ON can occur as early as 2 days to 5 days of age. This purulent infection caused by *Neisseria gonorrhea* extends from the superficial epithelial layer all the way into the subconjunctival connective tissue, continuing past the surface of the eye. It can cause corneal ulceration, scarring, and eventual blindness. Left untreated, gonorrheal ON can begin to cause vision loss in as little as 24 hours. ON caused by *Chlamydia trachomatis* is less severe but more common [4]. In the United States, more women are now infected with chlamydia than gonorrhea [5].

Most US states mandate that erythromycin ophthalmic ointment 0.5% be applied prophylactically to all newborns' eyes, even after cesarean deliveries because ascending infection can occur. Silver nitrate is no longer offered in the United States because it is uncomfortable and can cause chemical conjunctivitis [6]. The transmission rate of gonorrhea from mother to newborn is 30% to 50%, and eye prophylaxis reduces the ON rate by 80% to 95% [7].

A review of state statutes in 2006 revealed that 32 states had laws mandating that the erythromycin ointment be applied. Enforcement can be strict, as in New York, where parental informed refusal is not an option, and Child

Protective Services can be called if a parent declines the treatment [8]. In 1996, the USPSTF made a grade A recommendation for prophylactic ocular topical medication to prevent gonococcal ON in all newborns; this recommendation was reaffirmed in 2009. The Centers for Disease Control and Prevention (CDC), AAP, World Health Organization, and other Canadian societies all firmly recommend ophthalmic prophylaxis [9].

Alternatively, povidone-iodine in 2.5% solution was studied as a potential prophylaxis because it does not confer antibiotic resistance easily and is highly effective. It is not yet available in the United States, however, due to the high cost of the Food and Drug Administration approval process and low margin of profit for drug makers [10].

Providing a prophylactic ointment with few side effects to prevent blindness is absolutely essential for the newborn. Unfortunately, parental refusals of erythromycin ointment has been increasing.

## HEPATITIS B VACCINE REFUSAL

"I don't want my baby getting any shots right now. I'll wait until his next set of shots." "He will cry." "Newborns are too young for vaccines. You should wait until he sees his pediatrician later."—postpartum nurse. "The hepatitis B vaccine will decrease a mother's milk supply."—postpartum nurse.

The need for newborn vaccination for hepatitis B is questioned by parents and even some medical professionals. Infants may be infected by their mother or any chronically infected household member. The virus is easily spread through blood, semen, saliva, and vaginal secretions and can live on surfaces for days. Infection can occur before an infant's first set of vaccines at 2 months of age. Maternal testing for hepatitis B, which is standard of care, can be falsely negative, or there can be miscommunications between a mother's and newborn's care providers, who may not realize that maternal testing was not done. According to the Immunization Action Coalition, there were 500 cases in which perinatal testing was not done from 1999 to 2002 in the United States [11].

Within the first year of life, 90% of children acutely infected with hepatitis B become chronically infected. This is in stark contrast to newly infected adults, of whom only 4% become chronically infected [11]. Furthermore, 25% of patients with chronic hepatitis B infection may go on to develop liver cancer and liver failure followed by death if untreated by their 20s. Unfortunately, approximately 1000 cases of perinatal hepatitis B infection are still contracted annually in the United States [11].

The hepatitis B vaccine is given as an immunoprophylaxis soon after birth as a series of 3 doses. Although parents may express concern about mercury in the vaccine, it has been available without mercury-containing thimerosal since 1999. Although thimerosal is not dangerous and has been shown to not cause autism, it was removed due to parental concerns [12]. The hepatitis B vaccine is considered the first cancer prevention vaccine, because it prevents the future development of liver cancer that can result from chronic hepatitis B infection. Postvaccine surveillance reveals that the vaccine generally has no major side

effects other than fever, pain, and swelling at the injection site. The vaccine series has resulted in a 90% decline in acute hepatitis B perinatal infection since its introduction in 1982 in the United States [11].

Previously, it was recommended that newborns receive the vaccine before hospital discharge. The Advisory Committee on Immunization Practices of the CDC, however, has updated the recommendation in 2017, which now specifies that newborns be vaccinated within the first 24 hours of life. Receiving the hepatitis B vaccine prior to 24 hours of birth is 75% to 95% effective in preventing maternal transmission, making this a highly effective vaccine. This update has also been endorsed by the AAP and the American College of Obstetricians and Gynecologists [11].

The National Quality Forum supports the birth dose coverage rate, that is, the percent of newborns vaccinated, as a measure of hospital quality. A CDC national immunization survey revealed that in 2014, 72% of newborns in the United States received their first hepatitis B vaccine dose within the first 3 days of life, which was well below the goal of 85% perinatal coverage [13].

## VITAMIN K REFUSAL

“I don’t want my baby to get poked.” “It causes cancer.” “It’s just a vitamin.” “I’m taking my prenatal vitamins and breastfeeding.” “My first child didn’t bleed.” “Do you know what kind of chemicals they put in the shot?” “Why can’t I just feed my baby spinach in the bottle?”

Refusals of vitamin K intramuscular (IM) injections are increasing, with rates of refusal varying between different regions of the country. As a result, there are increasing reports of bleeding disorders in infants [14–17], which can be severe and life threatening.

The role of vitamin K in newborn health has been recognized since the nineteenth century. In 1894, a Boston physician linked newborn bleeding to poor breastfeeding, and a 1944 study in Sweden demonstrated that vitamin K administration lessened newborn bleeding. In 1961, the AAP recommended the vitamin injection for all newborns [18]. In 1999, hemorrhagic disease of the newborn became known as vitamin K deficiency bleeding (VKDB), further confirming vitamin K’s role in preventing bleeding in infants [19]. Limited amounts of maternal vitamin K are transferred in utero, there is limited neonatal liver storage, and human breast milk contains extremely low levels of vitamin K. Therefore, IM vitamin K is needed to ensure that newborns have sufficient levels [20].

Vitamin K<sub>1</sub> (phylloquinone) is found primarily in green vegetables, whereas vitamin K<sub>2</sub> (menaquinone) is synthesized by gut flora. Vitamin K is essential for activating coagulation factors II, VII, IX, and X and prothrombin, which are necessary for clotting [21]. According to the AAP, vitamin K<sub>1</sub> should be administered to all newborns in a single IM dose, of 0.5 mg to 1 mg, depending on birth weight. Ideally, the injection should be given after the first feed to allow for skin-to-skin bonding with the mother but no later than the first 6 hours life [11].

There are 3 different classifications of VKDB: early, classic, and late. Early-onset VKDB occurs within the first 24 hours of life. Risk factors include maternal anticonvulsants or tuberculosis medicines. Early-onset VKDB can be prevented by giving the mother supplemental vitamin K 2 weeks to 4 weeks prior to delivery [20]. Classic VKDB occurs between 24 hours and 1 week of life. It affects 0.25 to 1.7 of every 100 newborns who do not receive IM vitamin K after birth [16]. The common sites of bleeding include the umbilicus, gastrointestinal tract, nose, skin, surgical sites, and rarely brain. Late-onset VKDB occurs between 2 weeks and 12 weeks of life and up to 6 months. Breastfed infants who do not receive prophylactic IM vitamin K are at the highest risk for bleeding. It occurs in 4.4 to 7.2 of every 100,000 births. More than 50% of these cases present with intracranial hemorrhage. Late-onset VKDB has a 20% mortality risk [22]. The documented increase in late onset VKDB [14–17] needs to be addressed.

In the authors' experience, there are several considerations and cautions in practice related to VKDB. Circumcision and frenulectomy for ankyloglossia and any surgical procedure not medically necessary should be contraindicated if the parents refuse IM vitamin K. Vietti and colleagues [23] reported increased postcircumcision bleeding in infants as far back as 1961. A case report described an infant in Africa who excessively bled for 90 minutes postcircumcision. The bleeding stopped 30 minutes after receiving IM vitamin K, revealing how quickly it can take effect [24].

IM vitamin K reduces the incidence of VKDB to nearly zero, except in infants with rare underlying liver disease. Trials that compared oral with IM versions showed that the IM version is more effective [25]. IM vitamin K is the safest and most effective way to prevent bleeding and hemorrhages in infants in the United States, where the oral suspension is not available. The Canadian Paediatric Society, but not the AAP, suggests giving the oral version when the IM version is declined [26].

Parents are frequently concerned about the side effects and the preservatives in the vitamin K injection. It is completely safe with occasional bruising and bleeding at the site of injection. There is only 1 reported case of an adverse event, which was a possible allergic reaction [27].

The only Food and Drug Administration–approved tablet form of vitamin K is 5-mg tablets, making it cumbersome to crush tablets to make an oral solution for parents who refuse IM administration. Compounding pharmacies can make a 1-mg/1-mL suspension that must be refrigerated and has only a short shelf life, requiring parents to make 3 separate trips to the pharmacy. These factors result in a low compliance rate for oral administration; often the doses are not finished, rendering the treatment ineffective [25]. The injectable 1-mg/0.5-mL solution may be given orally; however, there are no data on its bioavailability.

To the authors' knowledge, there are no studies comparing the administration of oral vitamin K alone to breastfeeding mothers postnatally, with the administration of IM vitamin K alone to newborns; such a study design would be considered unethical given the proved effectiveness of IM vitamin K. Greer

and colleagues [28] showed that 5 mg of vitamin K given to breastfeeding mothers increases breast milk levels; however, the authors still recommend IM vitamin K to prevent hemorrhagic disease, regardless of whether the mother received oral supplementation.

Some parents believe that vitamin K administration in newborns is associated with the development of leukemia. In 1990, Golding and colleagues [29] investigated childhood cancers in a cohort of children born in 1970. An unexpected finding was that vitamin K administration in the neonatal period was associated with childhood cancer. The Vitamin K Ad Hoc Task Force of the AAP, however, found no association between IM vitamin K and childhood leukemia [26], and a study published in 2000 also reported there was no evidence [30]. Recent research has linked acute lymphocytic leukemia to a gene, which further weakens the claim that vitamin K is a causal factor. These earlier fears, however, have contributed to more parents requesting oral vitamin K, which has led to an increased incidence of VKDB [26].

It is controversial whether oral vitamin K should be prescribed if parents decline IM vitamin K. Unfortunately, there are no data to support efficacy of the oral dose.

### **INCREASED REFUSALS FOR OTHER TREATMENTS**

The authors are continuing to see an increase in parental refusal for other treatments or standard care given in the nursery, including not severing the umbilical cord after birth and allowing the umbilical cord to stay attached to the placenta until the cord naturally detaches from the infant. These lotus births are encouraged to allow the mother and infant to have undisturbed bonding time. Some parents also refuse to cut the cord because they believe it will hurt the infant and cause him or her to cry. The cord is placed in a bucket or wrapped in a towel during the bonding period and is then bathed in salts and essential oils [31]. Although this holistic approach to delivery may appeal to some parents, it can be risky. Tricarico and colleagues [32] recently reported a case of acute jaundice and hepatitis associated with a lotus birth. In the authors' nursery, infants whose mothers choose a lotus birth have a screening complete blood cell count because the placenta can be a source of infection, and the serum bilirubin levels are monitored closely.

The authors are also seeing an increase in the number of parents who refuse transcutaneous bilirubin monitoring, serum bilirubin monitoring, screening complete blood cell count, antibiotics for chorioamnionitis, and point-of-care glucose screening. These refusals put infants at increased risk for undetected hyperbilirubinemia leading to kernicterus, blood-borne infections, sepsis, and hypoglycemia, many of which could be avoided with low-risk screening tests to avoid potentially high-risk complications.

### **DEALING WITH SKEPTICAL PARENTS**

Most of the pediatrician's patients in the Newborn Nursery are in excellent health. Even the healthiest of newborns, however, require universal



anticipatory care and regular monitoring of vital signs. Based on risk factors, some newborns require routine interventions, including blood work, imaging, and so forth. The pediatrician's main goal should be to promote primary prevention rather than secondary or tertiary interventions [33].

Most of the time, doctor-patient relationships are not strained by this model, which the authors often refer to as "well until proven otherwise." Most of the care the authors provide is primary in nature, in that it aims to prevent disease before it occurs. This aim creates a paradox in which the interventions are hard to explain or justify to parents in the absence of the signs and symptoms of disease versus secondary prevention, where the aim is to reduce the impact of the disease that has already been diagnosed.

The World Health Organization Strategic Advisory Group of Experts on Immunizations reviewed strategies to address vaccine hesitancy [34]. They state that multicomponent and dialogue-based interventions are the most effective. The authors find that these same strategies can be applied to hesitancies that occur with standard newborn care in the nursery.

From a legal standpoint regarding primary prevention (ie, patients have a set of risk factor[s] that places them into a higher risk category for conditions of interest, which would then prompt providing recommended interventions), it is not clear where the line between refusing a preventive treatment crosses over to the area of harm. The authors confer with risk management and the university legal team when faced with these situations. Different states have different statutes regarding parental rights and refusal of treatment. Therefore, each practitioner needs to be familiar with the state statutes or have ready access to someone who is. In general, parents usually have the right to refuse any medical treatment of their children unless the absence of the treatment constitutes abuse, abandonment, or neglect.

The issue of treatment refusals raises significant ethical issues for caregivers of newborns. First, what is the appropriate response when parents decline recommended treatment? The pediatrician's duty is to present factual information to the parents, and they would be morally blameworthy if they did not attempt to persuade a parent to consent to a medically indicated intervention. Second, should clinicians offer an alternative therapy, such as oral vitamin K, when families decline the recommended IM vitamin K? Clinicians are responsible for only recommending treatments that have a reasonable possibility of benefiting the patient. Therefore, the physician is implying that a suggested treatment may have positive outcomes for the patient. In the case of oral vitamin K, however, there is no evidence that it is effective in preventing late-onset VDKB. It seems unethical to offer a potentially ineffective medication for a disease with serious sequelae when an effective and safe medication is readily available [35].

It is important to act with utmost respect when eliciting parental concerns. Once parents explain their views, a physician should attempt to correct any misinformation the parents might have. Then the medically appropriate intervention should be recommended with reasons given as to why it is



strongly suggested. Written information can be a good supplement to the discussion. At the end of the discussion, if the parents still decline, they should sign a document declaring that they have received information, had their questions answered, and that they understand the risks of declining the treatment [35] (a suggested template is in Fig. 1). Breuner and Moreno [36] discuss strategies for dealing with challenging patients, and they encourage physicians to try to partner with instead of confronting patients and families (Table 1).

## SOURCES OF MISINFORMATION

Unfortunately, there is little information regarding parental perceptions of the safety of the newborn procedures described previously. In contrast, there is considerable information related to parental refusals for vaccines. Presumably, many of the principles, including reasons for refusing and sources of misinformation, are similar between refusals in the nursery and vaccine refusals in older infants and children.

Studies confirm that health care professionals remain the primary source of information regarding vaccine safety [3,37–39], although there are considerable demographic variations, as evidenced by the range of state-by-state nonmedical exemptions for vaccines [40] (Fig. 2). Freed and colleagues [41] surveyed 1552 parents in Michigan to determine the proportion of parents who trust vaccine information from different sources and to assess demographic differences; 76% of parents reported having a lot of trust in their children's doctor for vaccine information, followed by other health care providers (26%), government vaccine experts (23%), family and friends (15%), parents who believe their child was harmed by a vaccine (8%), and celebrities (2%). Women were significantly more likely than men to have some trust in parents who claim their child was injured by a vaccine (67 vs 61%), celebrities (28% vs 18%), television shows about a child harmed from vaccines (47 vs 43%), and magazines/news articles about children injured from vaccines (52 vs 43%). In addition, white and Hispanic parents were significantly more likely than black parents to trust family and friends for vaccine safety information, and Hispanic parents were more likely than white or black parents to trust celebrities.

There is some evidence that midwives may be a source of some misinformation. Gosai and colleagues [42] administered an anonymous survey to midwives and medical staff about their attitudes regarding newborn vitamin K prophylaxis; 100% of the medical staff but only 55% of midwives recommended that all newborns receive vitamin K prophylaxis. Midwives were significantly less concerned than physicians that some infants were missing out on vitamin K (31.5% vs 78.4%), and they were more concerned that prophylaxis may constitute interference with a natural process (22.8% vs 0%) and that naturally low vitamin K levels may have a physiologic purpose we are unaware of (52.6% vs 2.7%).

Sahni and colleagues provide additional evidence [43]. Parental refusal of vitamin K prophylaxis was significantly more common for infants born at a

In order to provide the best care for my newborn child, the physicians at [ ] follow standard of care practices for newborns. These practices include, but are not limited to:

- Providing erythromycin eye ointment to prevent eye infections
- Providing an injection of vitamin K to prevent bleeding;
- Performing a newborn metabolic screen and hearing screen prior to discharge.

My baby's physician, the American Academy of Pediatrics (AAP), and the Centers for Disease Control (CDC) strongly recommend that these medications and screening tests be administered according to recommendations.

I have had the opportunity to discuss these recommendations and my refusal with the medical team, who have answered all of my questions about the recommendations.

If my baby does not receive these medications and screening tests, which are recognized as the medically- accepted standard of care, the consequences may include, but are not limited to:

- Contracting the illness the antibiotic is designed to prevent. The outcomes may include severe eye infections, meningitis/encephalitis leading to permanent brain damage, pneumonia, and permanent blindness
- Bleeding into the nose, gastrointestinal system and/or brain, which may cause severe and permanent effects including brain damage and death;
- Inability to promptly evaluate, diagnose, and manage inborn metabolic disorders, endocrine disorders, hemoglobin disorders, and cystic fibrosis; delay in diagnosis may cause severe and permanent effects including brain damage and death
- Inability to promptly evaluate, diagnose, and manage hearing impairments, which may lead to speech delay, and profound and permanent hearing defects

At this time I refuse the following standard of care medications or procedures, as indicated below by checking the appropriate box:

- ☐ Erythromycin ophthalmic prophylaxis
- ☐ Vitamin K intramuscular injection prophylaxis
- ☐ Newborn Screening
- ☐ Universal Hearing Screening

I acknowledge that I have read this document in its entirety and fully understand it.

**Fig. 1.** Release of liability for parental refusal for standard of care procedures and screening tests.

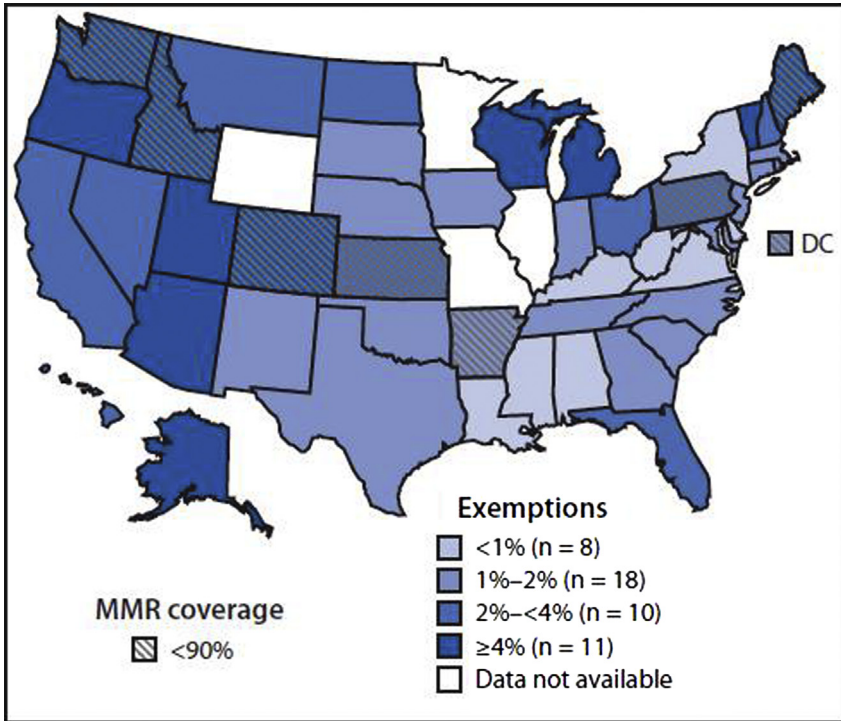
birthing center or who had a planned home birth (14.5%) and for infants whose primary attendant at birth was a midwife or nurse (6.8%) compared with a physician (0.2%). The investigators recommend that physicians providing pre-conception care to women who intend to seek midwifery care should be aware

**Table 1**  
Helpful communication techniques

Goal	Activity	Suggested Phrase
Improve listening and understanding	Summarize the patient's chief concerns. Interrupt less. Offer regular, brief summaries of what you are hearing from the patient. Reconcile conflicting views of the diagnosis or the seriousness of the condition.	"What I hear from you is that...Did I get that right?"
Improve partnership with the patient	Discuss the fact that the relationship is less than ideal; offer ways to improve care.	"How do you feel about the care you are receiving from me? It seems to me that we sometimes don't work together very well."
Improve skills at expressing negative emotions	Decrease blaming statements. Increase "I" messages (for example, "I feel..." as opposed to "you make me feel...")	"It's difficult for me to listen to you when you use that kind of language."
Increase empathy; ensure understanding of patient's emotional responses to condition and care	Attempt to name the patient's emotional state; check for accuracy and express concern.	"You seem quite upset. Could you help me understand what you are going through right now?"
Negotiate the process of care	Clarify the reason for the patient seeking care.  Indicate what part the patient must play in caring for his or her health.  Revise expectations if they are unrealistic.	"What's your understanding of what I am recommending, and how does that fit with your ideas about how to solve your problems?" "I wish that I (or a medical miracle) could solve this problem for you, but the power to make the important changes is really yours."

*Reproduced from Breuner CC, Moreno MA. Approaches to the difficult patient/parent encounter. Pediatrics 2011;127:167; with permission. Copyright© 2011 by the AAP.*

of the need to provide information about vitamin K prophylaxis and that midwives should provide guidance documentation for vitamin K prophylaxis. They point out that midwife deliveries are usually preceded by midwifery prenatal care and that midwives often spend considerable time with their patients, providing opportunities to provide information and address concerns and misconceptions. Further confirming the need for prenatal education is a study by Hamilton and colleagues [44], which found that approximately half of parents who refused vaccination for their infant had not discussed immunization with their maternity care provider.



**Fig. 2.** Estimated percentage of children enrolled in kindergarten who were exempted from receiving one or more vaccines<sup>a</sup> and with less than 90% coverage with 2 doses of measles, mumps, and rubella (MMR) vaccine—United States, 2013 to 2014 school year. <sup>a</sup> Exemptions might not reflect a child's vaccination status. Children with an exemption who did not receive any vaccines are indistinguishable from those who have an exemption but are up-to-date for one or more vaccines. (From Seither R, Masalovich S, Knighton CL, et al. Vaccination coverage among children in kindergarten - United States, 2013–14 school year. *MMWR Morb Mortal Wkly Rep* 2014;63:913–20; with permission.)

An increasingly popular source of health information and misinformation is the Internet and social media. Atkinson and colleagues [45] report that two-thirds of Internet users search for health information for themselves and that women are significantly more likely to seek health information online than men. A systematic review of peer-reviewed literature addressing health care information available on YouTube revealed a high probability of lay users finding content that contains misleading health information. They conclude that YouTube has the potential to change the beliefs of patients concerning controversial topics, such as vaccinations. Further confirming a negative impact of YouTube is a study by Venkatraman and colleagues [46], demonstrating that the proportion of videos that were antivaccine was considerable higher on YouTube (74.3%) versus Google (41%), Wikipedia (14.4%), and PubMed (17%). Basch and colleagues [47] identified 87 of the most

widely viewed videos on YouTube using the search terms, “vaccine safety” and “vaccines and children”. The most common sources of the videos were consumers (28%), TV-based or Internet-based news (26%), and individual health professionals (25%). A majority of the videos (65.5%) discouraged the use of vaccines.

## RECOMMENDATIONS

There is an urgent need to address the increasing rates of refusal for standardized newborn care. The negative consequences of these refusals are being seen, evidenced by increasing reports of bleeding disorders in infants. In addition, the role of caregivers of newborns in educating parents about these critical health issues can have an impact on the care of the older infant and child, because refusal of newborn care is related to later refusals for vaccinations [43,48]. Several recommendations for addressing refusals of newborn care are suggested in Box 1.

Fortunately, studies show that parents trust doctors more than any other sources of health information. Therefore, it is the physician’s duty to take the time to educate parents and patients about necessary treatments and the risks associated with refusals. It is critical to remember that educated parents make the best child advocates and that knowledge is power in situations of parental refusals. Studies have shown that demographic differences between groups of parents regarding the sources of information they trust also need to be considered, and the design of public health efforts to provide evidence-based information should use different strategies to reach specific groups of parents [41].

Another logical target for education is prenatal care providers. Better education for midwives and obstetricians will allow for more informed providers and thus a more informed parent. Another target for education is newborn nursery nursing staff. In the authors’ experience, these caregivers, although well intentioned, can be a significant source of misinformation. Gosai and colleagues [42]

### **Box 1: Recommendations for addressing parental refusals of standard newborn care**

Improve education about the importance of newborn care, targeting newborn nursery nurses and prenatal care providers.

Tailor public health messages to specific demographic groups.

Support public health efforts to provide supportive information on commonly used social media sites.

Encourage the use of social marketing to increase compliance with recommended newborn care.

Consider the use of social marketing principals to address parental refusals.

Support research into the incidence of refusals for newborn care and parental reasons for refusals.

stress the need for greater understanding of the differences in attitudes between physicians and nurses.

An additional target for intervention is social media. Numerous studies have identified the primary sources of health information and misinformation on the Internet, with investigators recommending that public health agencies produce and disseminate accurate messages through media, such as YouTube. Social marketing principles should also be explored, because studies have shown that social and commercial marketing principles and practices can be used to address vaccine hesitancy [49].

Finally, there is limited data about refusals in the newborn nursery, indicating a need for further research.

## SUMMARY

Knowledge is power. Aside from prescribing medicine, pediatricians are responsible for providing information to the parents of patients who are too young to advocate for themselves. Whether it is a hearing screening, metabolic testing, erythromycin ointment, hepatitis B vaccine, vitamin K injection, or clamping of the umbilical cord, ultimately, the health care provider can only give advice. Parents cannot be forced to accept recommendations, but pediatricians can help ensure that newborn infants get the care they deserve by educating parents about the potential health consequences of refusing these standard tests and treatments. To be effective, physicians must understand the reasons for these treatments and be able to convey this knowledge to skeptical parents. Both physicians and parents want the same thing for these young infants: a healthy lifetime. Pediatricians cooperating with parents and uniting in a general understanding of what is required to be healthy will be better equipped to achieve this goal.

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