
Vaccine Safety: Dispelling Vaccine Myths

Talking to Parents About Vaccines and Vaccine Safety

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A Shared Responsibility/Risk

- Immunizations protect the individual.
- Immunizations prevent transmission of certain pathogens and therefore protect immunized children who did not develop protective immunity as well as nonimmunized children.
- Immunization programs are public health efforts as well as individual medical care.
- All people except those with a “legitimate” excuse or risk factor are expected to share the risks [& benefits].
- Therefore, not participating in order to avoid the risks is a form of antisocial behavior (not in the spirit of shared responsibility).
- Vaccine refusal is not evenly distributed geographically, leaving pockets of susceptibles.

The Questions We Get

Questions from CDC Website

- **Is it okay for my baby to have so many shots at once? [children are exposed to 100s of antigens]**
- **What will happen if my child doesn't get his vaccinations? [infectious consequences]**
- **Why do children need so many shots? [each is justified]**
- **Why are vaccines given at such an early age? [maximize impact]**
- **How safe are vaccines? [Dr. Wharton]**
- **What are my child's chances of being exposed to one of these diseases? [not that remote]**

More Questions We Get

Questions from CDC Website

- **If my child's risk of exposure to disease is so low, why should I bother getting him immunized? [prevent emergence]**
- **What will happen if my child doesn't get his vaccinations? [do you want to take that risk?]**
- **I heard that some vaccines can cause autism. Is this true? [no evidence/evidence against]**
- **My child is sick right now. Is it okay for her to still get shots? [most childhood illnesses not a contraindication]**

Comparison of Pre-Vaccine and Current Reported Morbidity of Vaccine-Preventable Diseases and Vaccine Adverse Events, United States

Disease	Pre-vaccine Era*	2006**	% decrease
Diphtheria	175,885	0	100
Measles	503,282	55	99.9
Mumps	152,209	6,584	95.7
Pertussis	147,271	15,632	89.4
Polio (paralytic)	16,316	0	100
Rubella	47,745	11	99.9
Congenital Rubella Syn.	823	1	99.9
Tetanus	1,314	41	96.9
<i>H. influenzae</i> type b and unknown (<5 yrs)	20,000+	208	99.0
Total	1,064,854	22,532	97.9
Vaccine Adverse Events	N/A	15,484	+++

* Baseline 20th century annual morbidity

+ Estimated because no national reporting existed in the pre-vaccine era

** Source: *MMWR* 2007;56(33):851-64

Vaccines are very safe, but they are not risk free; nor are they 100% effective. This poses a dilemma for many parents and should not be minimized. The pediatrician should share honestly what is and is not known about the risks and benefits of the vaccine in question, attempt to understand the parent's concerns about immunization, and attempt to correct any misperceptions and misinformation.

Pediatricians should also assist parents in understanding that the risks of any vaccine should not be considered in isolation but in comparison to the risks of remaining unimmunized.

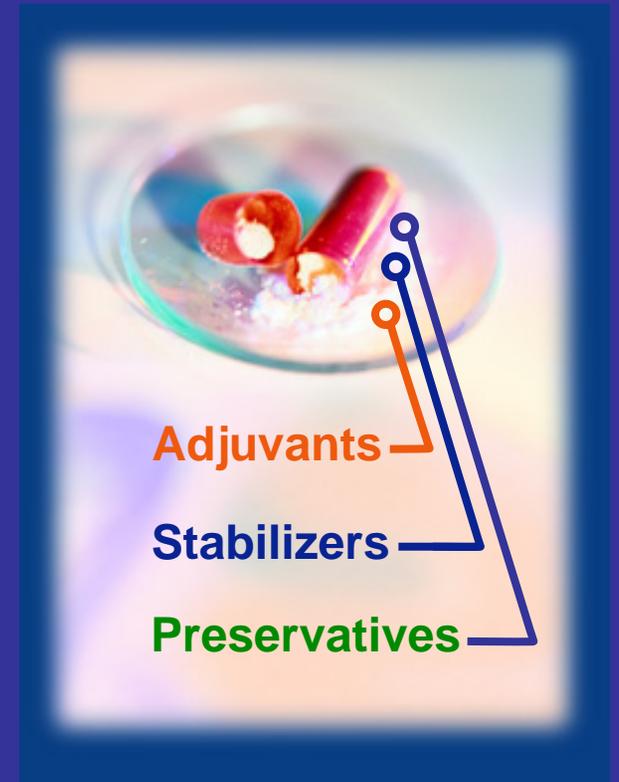
**AMERICAN ACADEMY OF PEDIATRICS
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Vaccine Additives

- Tiny amounts of three types of substances may be added to vaccines.
- **Preservatives** keep bacteria or fungus from growing, which could otherwise give vaccine recipients serious infections.
- **Stabilizers** help the vaccine keep its correct chemical composition even if conditions (such as temperature) change dramatically.
- **Adjuvants** boost the vaccine's ability to provide an immune response.
- All additives are within the safety margins established by federal agencies.
- Some additives can cause redness and soreness on the skin where the vaccination has been given.



All Additives Are Disclosed, And You Should Talk About Them.

- Every vaccine comes with a package insert listing every ingredient, including every additive.
- The insert lists every known adverse reaction ever reported, no matter how minor.
- If you wonder just what's in a vaccine, or are worried about allergic reactions, ask your doctor for a copy of the insert.
- And if you have any other questions or concerns, talk with your doctor.



RISKS OF NOT VACCINATING

Some Diseases Are So Rare, Why Keep Immunizing?

- Whooping cough, chickenpox, and other diseases still exist in the United States, causing serious illness and even death.
- When children aren't immunized, diseases can return.



In Great Britain, people stopped immunizing for pertussis (whooping cough) in the early 70s. Within just a few years, a pertussis epidemic occurred—100,000 cases with 36 deaths.



In Japan similar events occurred: a decline in childhood pertussis vaccinations during the 70s, was followed by a pertussis epidemic—13,000 cases, 41 deaths—in 1979.

Measles in an Unimmunized private school

On Feb 13, 1991 the NY Times reported on two measles deaths in **Philadelphia**. First reports indicated that these two had been students at a religious school that did not believe in immunizations and they did believe in faith healing. These two students came to the hospital in a near-death state after a prolonged measles illness at home. Telephone contact with parents indicated that as many as close to one-half, or 90 students may have had measles in the preceding weeks and the school was temporarily shut down. The articles also stated that there were 268 confirmed measles cases in the whole city in 1990 and there were already 107 by mid-February 1991. **"State law requires immunization before a child enters school but exceptions are made for religious or medical reasons."**

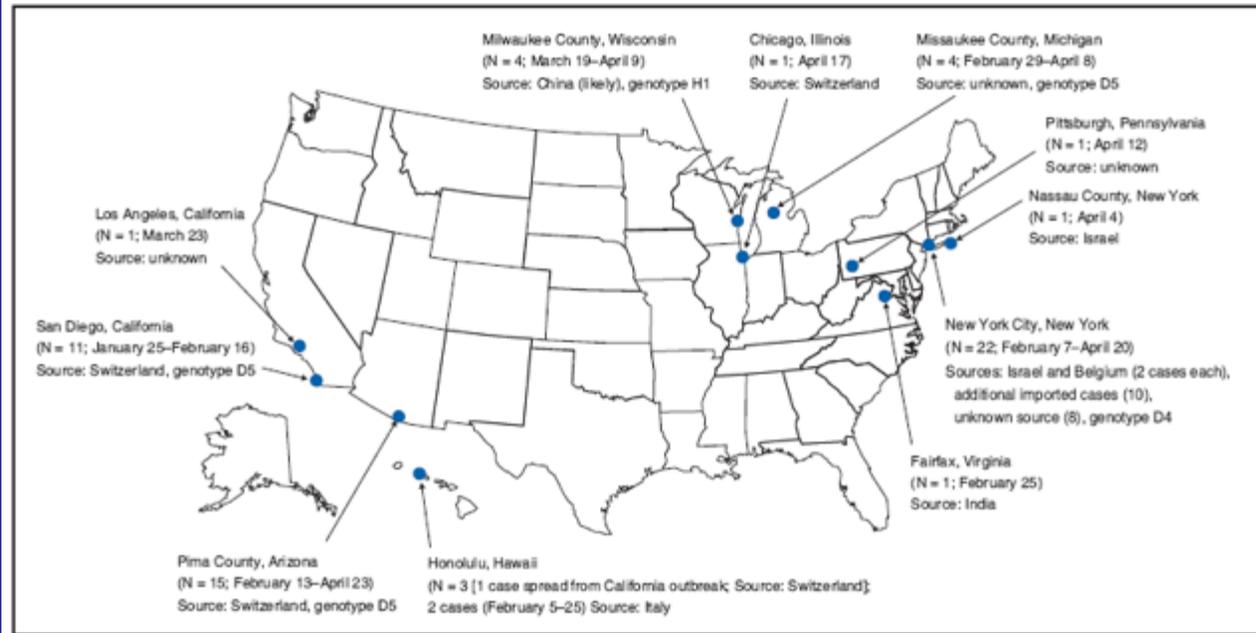
By early March 6 children from two religious schools had died of presumed measles encephalitis and a judge, medical ethicists, and law experts had taken up the question of forced immunizations.

They actually did force some to have vaccine.

Measles --- United States, January 1--April 25, 2008

Sixty-three of the 64 patients were unvaccinated or had unknown or undocumented vaccination status, and one patient had documentation of receiving 2 doses of MMR vaccine.

FIGURE. Number of reported measles cases* (N = 64) — United States, January 1–April 25, 2008



* Number of preliminary confirmed cases reported to CDC as of April 25, 2008.

TABLE. Number and percentage of reported measles cases among U.S. residents (N = 59), by age group and vaccination status — United States, January 1–April 25, 2008

Age group	Vaccination status										Total No. (%)
	Unvaccinated					Vaccinated with 2 doses	Unknown				
	Too young	Born before 1957	Nonmedical exemption*	Reason unknown	Missed opportunity						
No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)			
<12 mos	13 (22.0) [†]	—	—	—	—	—	—	—	—	13 (22.0)	
12–15 mos	—	—	0	6 (10.2) [§]	—	—	—	1 (1.7)	—	7 (11.9)	
16 mos–4 yrs	—	—	4 (6.8)	2 (3.4)	5 (8.5) [¶]	—	—	0	—	11 (18.7)	
5–19 yrs	—	—	10 (16.9)	0	0	0	0	0	—	10 (16.9)	
20–49 yrs	—	—	2 (3.4)	1 (1.7)	0	0	1 (1.7)	12 (20.3) ^{***††}	—	16 (27.1)	
≥50 yrs	—	1 (1.7)	0	0	0	0	0	1 (1.7)	—	2 (3.4)	
Total	13 (22.0)	1 (1.7)	16 (27.1)	9 (15.3)	5 (8.5)	1 (1.7)	14 (23.7)	59 (100.0)			

* Persons who claimed exemption from vaccination because of religious or personal beliefs.

[†] One infant aged 7 months received a dose of measles, mumps, and rubella (MMR) vaccine (because of an accelerated vaccine schedule) the day before exposure.

[§] One child aged 12 months received a routine MMR vaccine dose on the day of exposure in a physician's office.

[¶] One child aged 2 years, who was unvaccinated on the day of exposure, received a dose of MMR vaccine 6 days later; the delay was attributed to a parental request for single-antigen measles vaccine because of vaccine safety concerns.

^{***} Includes two self-reports of receipt of 1 or more doses of measles vaccine.

^{††} Two adults received postexposure MMR vaccine (one on the day of exposure and one on the day after exposure).

Some Concerned Parents Have Wondered about These Five Vaccine Issues.

- The use of thimerosal (ethylmercury) as an additive in vaccines
- An unsubstantiated link between the MMR vaccine (combination for measles, mumps, and rubella) and autism
- The necessity of vaccinating children against hepatitis B
- Pneumococcal conjugate
- The relative danger of varicella (chickenpox)



Thimerosal

- Thimerosal is preservative which contains a form of mercury (ethylmercury).
- Thimerosal was used in very small amounts for over 50 years as a preservative in some vaccines.
- Thimerosal was originally added to multi-dose vials of vaccines. It protected these vaccines from bacterial contamination.
- Mercury can have toxic effects in large amounts. However, there's no evidence that the tiny amounts of thimerosal in vaccines has ever caused problems for infants receiving these vaccines.
- Today, with the exception of some flu vaccines, none of the vaccines used in the U.S. to protect preschool-aged children against 12 infectious diseases contain thimerosal as a preservative.

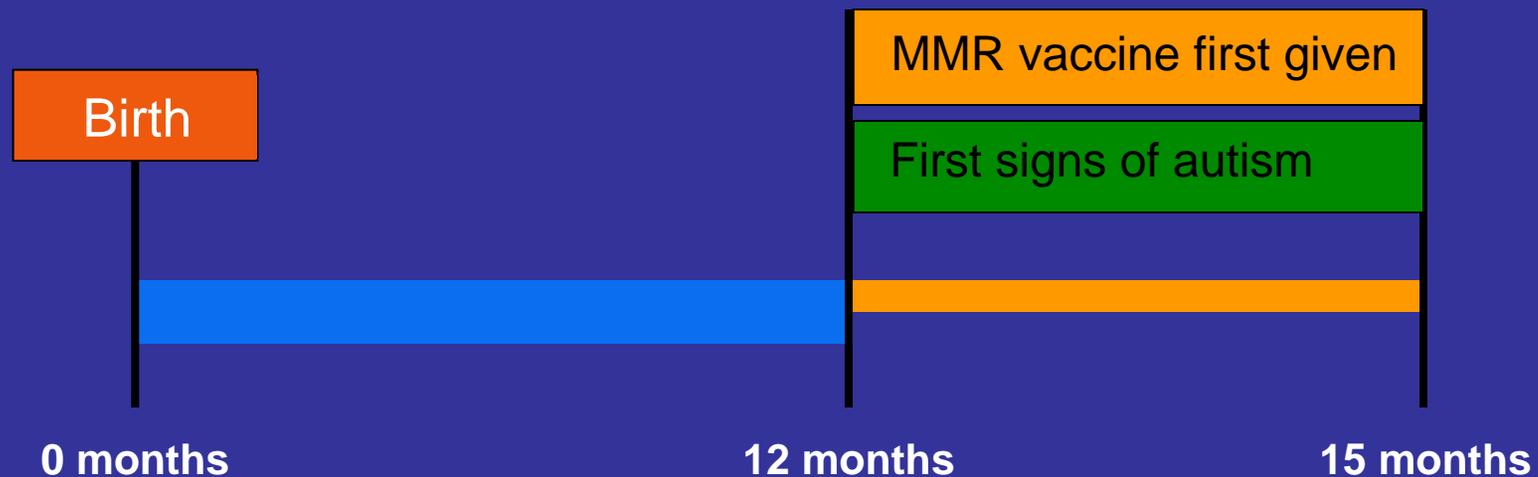


Thimerosal

- Even though there is no convincing evidence of any harm, in June, 2000, the Advisory Committee on Immunization Practices (ACIP) issued a statement saying thimerosal should be removed from vaccines as soon as possible.

MMR Vaccine: Is It Really a Factor in Autism?

- Some parents and others have expressed concern about a possible link between the MMR (measles, mumps, rubella) vaccine and the development of autism in children because:
 - MMR vaccine is first given at age 12 to 15 months.
 - The first signs of autism (poor social interaction and speech, repetitive behaviors) often appear between 12 to 18 months of age.



Independent Studies Have Found No Link between Autism and MMR.

- A United States study by Dr. Loring Dales showed that the number of autism cases in young children increased even when the number of MMR vaccines decreased over the same time period!
- A British study by Dr. Brent Taylor showed that the number of diagnosed autism cases did not increase after the MMR vaccine was introduced in 1988.
- If a link between the MMR vaccine and autism did exist, the number of autism cases would increase or decrease over time as the number of children immunized with MMR increased or decreased over the same time. No study has shown this trend.
- Additional well-designed studies in the United States and in Europe have found no association between the MMR vaccination and autism.



Promoters of accepting vaccination		Promoters and Inhibitors of Accepting Vaccination
Vaccinators		
Trusting the doctor		
Feeling satisfied by the pediatrician's discussion		
Feeling that vaccinating is the cultural norm		
Believing in the social contract		
Having positive past experiences with vaccines		
Wanting to prevent disease		
Inhibitors of accepting vaccination		
Vaccinators		
Fearing mistakes being made		
Both vaccinators and nonvaccinators		
Believing children get the disease anyway (especially chicken pox and influenza)		
Believing that vaccine-preventable diseases are not so bad (eg, chicken pox)		
Nonvaccinators		
Feeling alienated by and distrusting the pediatrician		
Having a previous negative experience with the medical establishment resulting in distrust		
Having a trusting relationship with an influential naturopath/homeopath or other person who supported not vaccinating		
Distrusting the doctor's information: doctor does not know and does not have the time		
Distrusting motives: vaccination is just a money-maker for pediatricians and vaccine industry		
Believing that diseases are not around, are not serious, or are easily treatable		
Worrying about permanent adverse effects (eg, autism)		
Feeling that since other children are vaccinated their child is not at risk ("reverse social contract")		

Qualitative analysis of mothers' decision-making about vaccines for infants: the importance of trust. Benin, A, et al. *Pediatrics* 117 .2006): p1532

Invalid Contraindications to Vaccination

- Minor illness
- Mild/moderate local reaction or fever following a prior dose
- Antimicrobial therapy
- Disease exposure or convalescence
- Pregnancy or immunosuppression in the household
- Premature birth
- Breastfeeding
- Allergies to products not in vaccine
- Family history (unrelated to immunosuppression)

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Continued **refusal** after adequate discussion should be respected unless the child is put at significant risk of serious harm (as, for example, might be the case during an epidemic). Only then should state agencies be involved to override parental discretion on the basis of medical neglect. Physician concerns about liability should be addressed by good documentation of the discussion of the benefits of immunization and the risks associated with remaining unimmunized. Physicians also may wish to consider having the parents sign a refusal waiver.

Dismissal??

In general, pediatricians should avoid discharging patients from their practices solely because a parent refuses to immunize his or her child. However, when a substantial level of distrust develops, significant differences in the philosophy of care emerge, or poor quality of communication persists, the pediatrician may encourage the family to find another physician or practice. Although pediatricians have the option of terminating the physician-patient relationship, they cannot do so without giving sufficient advance notice to the patient or custodial parent or legal guardian to permit another health care professional to be secured. Such decisions should be unusual and generally made only after attempts have been made to work with the family.