

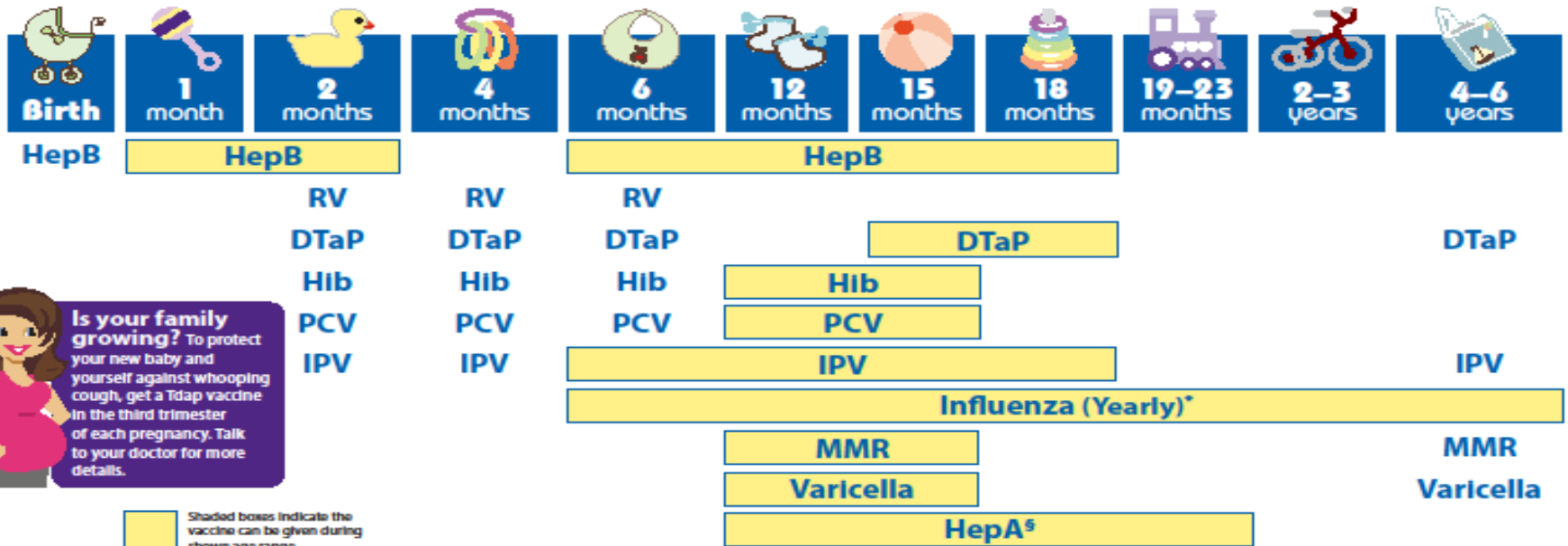
“Vaccines: Misconceptions”

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CDC Guidelines/Recommendations

2014 Recommended Immunizations for Children from Birth Through 6 Years Old



Is your family growing? To protect your new baby and yourself against whooping cough, get a Tdap vaccine in the third trimester of each pregnancy. Talk to your doctor for more details.

NOTE: If your child misses a shot, you don't need to start over, just go back to your child's doctor for the next shot. Talk with your child's doctor if you have questions about vaccines.

FOOTNOTES:

- * Two doses given at least four weeks apart are recommended for children aged 6 months through 8 years of age who are getting a flu vaccine for the first time and for some other children in this age group.
- § Two doses of HepA vaccine are needed for lasting protection. The first dose of HepA vaccine should be given between 12 months and 23 months of age. The second dose should be given 6 to 18 months later. HepA vaccination may be given to any child 12 months and older to protect against HepA. Children and adolescents who did not receive the HepA vaccine and are at high-risk, should be vaccinated against HepA.

If your child has any medical conditions that put him at risk for infection or is traveling outside the United States, talk to your child's doctor about additional vaccines that he may need.

SEE BACK PAGE FOR MORE INFORMATION ON VACCINE-PREVENTABLE DISEASES AND THE VACCINES THAT PREVENT THEM.

For more information, call toll free 1-800-CDC-INFO (1-800-232-4636) or visit <http://www.cdc.gov/vaccines>



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention





American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN


CDC Guidelines/Recommendations

2014 Recommended Immunizations for Children from 7 Through 18 Years Old

7-10 YEARS	11-12 YEARS	13-18 YEARS
Tdap ¹	Tetanus, Diphtheria, Pertussis (Tdap) Vaccine	Tdap
MCV4	Human Papillomavirus (HPV) Vaccine (3 Doses) ²	HPV
	Meningococcal Conjugate Vaccine (MCV4) Dose 1 ³	MCV4 Dose 1 ³ Booster at age 16 years
Influenza (Yearly) ⁴		
Pneumococcal Vaccine ⁵		
Hepatitis A (HepA) Vaccine Series ⁶		
Hepatitis B (HepB) Vaccine Series		
Inactivated Polio Vaccine (IPV) Series		
Measles, Mumps, Rubella (MMR) Vaccine Series		
Varicella Vaccine Series		

 These shaded boxes indicate when the vaccine is recommended for all children unless your doctor tells you that your child cannot safely receive the vaccine.

 These shaded boxes indicate the vaccine should be given if a child is catching-up on missed vaccines.

 These shaded boxes indicate the vaccine is recommended for children with certain health conditions that put them at high risk for serious diseases. Note that healthy children can get the HepA series⁶. See vaccine-specific recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm.

FOOTNOTES

¹ Tdap vaccine is combination vaccine that is recommended at age 11 or 12 to protect against tetanus, diphtheria and pertussis. If your child has not received any or all of the DTaP vaccine series, or if you don't know if your child has received these shots, your child needs a single dose of Tdap when they are 7-10 years old. Talk to your child's health care provider to find out if they need additional catch-up vaccines.

² All 11 or 12 year olds – both girls and boys – should receive 3 doses of HPV vaccine to protect against HPV-related disease. Either HPV vaccine (Cervarix[®] or Gardasil[®]) can be given to girls and young women; only one HPV vaccine (Gardasil[®]) can be given to boys and young men.

³ Meningococcal conjugate vaccine (MCV) is recommended at age 11 or 12. A booster shot is recommended at age 16. Teens who received MCV for the first time at age 13 through 15 years will need a one-time booster dose between the ages of 16 and 18 years. If your teenager missed getting the vaccine altogether, ask their health care provider about getting it now, especially if your teenager is about to move into a college dorm or military barracks.

⁴ Everyone 6 months of age and older—including preteens and teens—should get a flu vaccine every year. Children under the age of 9 years may require more than one dose. Talk to your child's health care provider to find out if they need more than one dose.

⁵ A single dose of Pneumococcal Conjugate Vaccine (PCV13) is recommended for children who are 6-18 years old with certain medical conditions that place them at high risk. Talk to your healthcare provider about pneumococcal vaccine and what factors may place your child at high risk for pneumococcal disease.

⁶ Hepatitis A vaccination is recommended for older children with certain medical conditions that place them at high risk. HepA vaccine is licensed, safe, and effective for all children of all ages. Even if your child is not at high risk, you may decide you want your child protected against HepA. Talk to your healthcare provider about HepA vaccine and what factors may place your child at high risk for HepA.

For more information, call toll free 1-800-CDC-INFO (1-800-232-4636) or visit <http://www.cdc.gov/vaccines/teens>



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STRONG MEDICINE FOR AMERICA

Concerns Regarding Vaccines

- Overloading of the immune system
- Autism
- Ingredients:
 - Mercury exposure
 - Aluminum toxicity
 - Formaldehyde

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Common Questions

“Won’t giving my baby so many vaccines overwhelm his/her immune system?”

“Why doesn’t the CDC recommend spacing out vaccines using an alternative schedule?”

Immune System and Multiple Vaccines

- Infant's immune system
 - Capacity to respond to thousands of antigens at any given time
 - Immune system is constantly replenished
 - Children are exposed to thousands of antigens daily
- Children today typically receive fewer antigens than their parents did
- The response to multiple vaccines given during a single visit is similar to the response that occurs when individual vaccines are administered separately

Immune System and Multiple Vaccines

- Delaying/Spacing Out Vaccines
 - Increases time of susceptibility
 - 222 cases of measles in US in 2011
 - At least 2/3 hadn't been vaccinated
 - Current measles outbreak in NY and NJ
 - Increases stress and fear on child
 - Increases chances for missed opportunities
 - No evidence that it decreases the risk of adverse reactions

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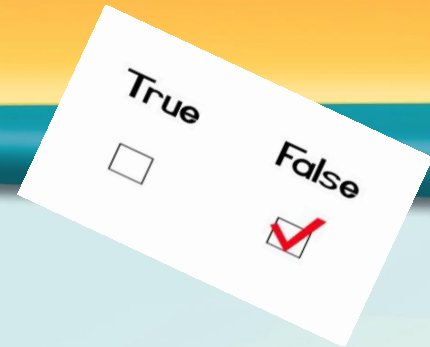
Common Questions



“Wasn’t there a study that proved MMR vaccine causes autism?”

“Wouldn’t it be safer to receive MMR as three separate shots?”

Autism and Vaccines



- 1998 study by Andrew Wakefield
 - Study based on 12 children
 - In 2004, 10 of the 13 authors retracted the study's interpretation
 - U.K.'s General Medical Council ruled that the primary author's conduct regarding his research was "dishonest" and "irresponsible" and that he had shown a "callous disregard" for the suffering of children involved in his studies
 - On 2/2/2010, editors of The Lancet retracted the paper
 - In January 2011, the BMJ published a series of articles showing Wakefield's work was not just bad science, but deliberate fraud

Autism and Vaccines

- Studies have demonstrated no link exists between MMR and autism
- Vaccines are given at around the same time that autism becomes apparent
 - No causality proven
 - Analogy of the rooster that crows every morning
 - The sun will rise whether or not the rooster crows
- Signs of autism in a child may predate a vaccination but not be noticed
- Increased number of vaccines recommended for children has *not* resulted in a higher prevalence of neuro-developmental problems

So, How About Administering MMR in 3 Separate Doses?



- No evidence that dividing the vaccine would provide any benefit
- Requiring more doses
 - Leaves child potentially susceptible
 - Increases the number of Dr. visits, costs, and discomfort for child
 - Manufacturer has stopped producing single antigen measles, mumps, and rubella vaccines

Concerns Regarding Vaccines

- Overloading of the immune system
- Autism
- **Ingredients:**
 - **Mercury exposure**
 - **Aluminum toxicity**
 - **Formaldehyde**

Common Questions

“Hasn’t the mercury in vaccines been shown to cause autism?”

“Don’t the ingredients found in vaccines hurt children?”



Mercury

- Thimerosal: a mercury-containing preservative that helps prevent bacterial or fungal contamination in vaccines
- Form of mercury found in thimerosal is ethylmercury, **NOT** methylmercury
 - Methylmercury shown to cause damage to the nervous system
- No scientific evidence that links thimerosal with autism
 - Symptoms of mercury poisoning differ from those of autism

Mercury

- MMR vaccine never contained thimerosal
- Studies have shown that thimerosal in vaccines does not cause autism when comparing vaccinated and unvaccinated children
- In 2001, thimerosal was removed from nearly all routinely recommended childhood vaccines (except multi-dose and some influenza)
 - Incidence of neuro-developmental problems has continued to rise
- When comparing the incidence of autism before and after thimerosal was removed from vaccines, studies found no decrease in autism with the use of thimerosal-free vaccines

Aluminum Salts

- Used to enhance the immune response
- Can allow for use of less antigen
- Safety is well established
- Aluminum is the most common metal found in nature
 - Air
 - Food
 - Drink
 - All infants are exposed to aluminum in the environment (eg, breast milk, infant formulas)
- Most of the aluminum in the body is quickly eliminated

Formaldehyde

- Is used to inactivate:
 - Viruses that cause influenza and polio
 - Tetanus and diphtheria toxins
- Is diluted during the manufacturing process
 - Tiny amount that may be left in vaccine is safe
- Humans normally have formaldehyde in the blood stream at levels higher than in vaccines
 - Quantity of formaldehyde found naturally in an infant's blood is 10-fold greater than that contained in any individual vaccine

Miscellaneous

- Antibiotics are present in some vaccines to prevent bacterial contamination when the vaccine is made
- Additives such as gelatin, albumin, sucrose, lactose, MSG, and glycine help the vaccine stay effective while being stored
- These ingredients keep vaccines safe and effective

Some other Misconceptions:

- “Most people who get a disease have been vaccinated against it”
- “Isn’t better sanitation really the reason for the drop in disease rates?”
- “The VAERS data prove that vaccines are dangerous”
- “Hasn’t it been proven that there are dangerous ‘hot lots’ of vaccines?”
- “Natural infection is better than immunization”
- “Didn’t the courts decide that vaccines cause autism?”



Some Other Misconceptions:



- “Vaccines are encouraged and pushed only because drug companies make big profits from them”
- “Aren’t abortions required to make vaccines?”
- **“Most of the Vaccine-preventable Diseases Don’t Even Exist Anymore”**

“Most people who get a disease have been vaccinated against it”

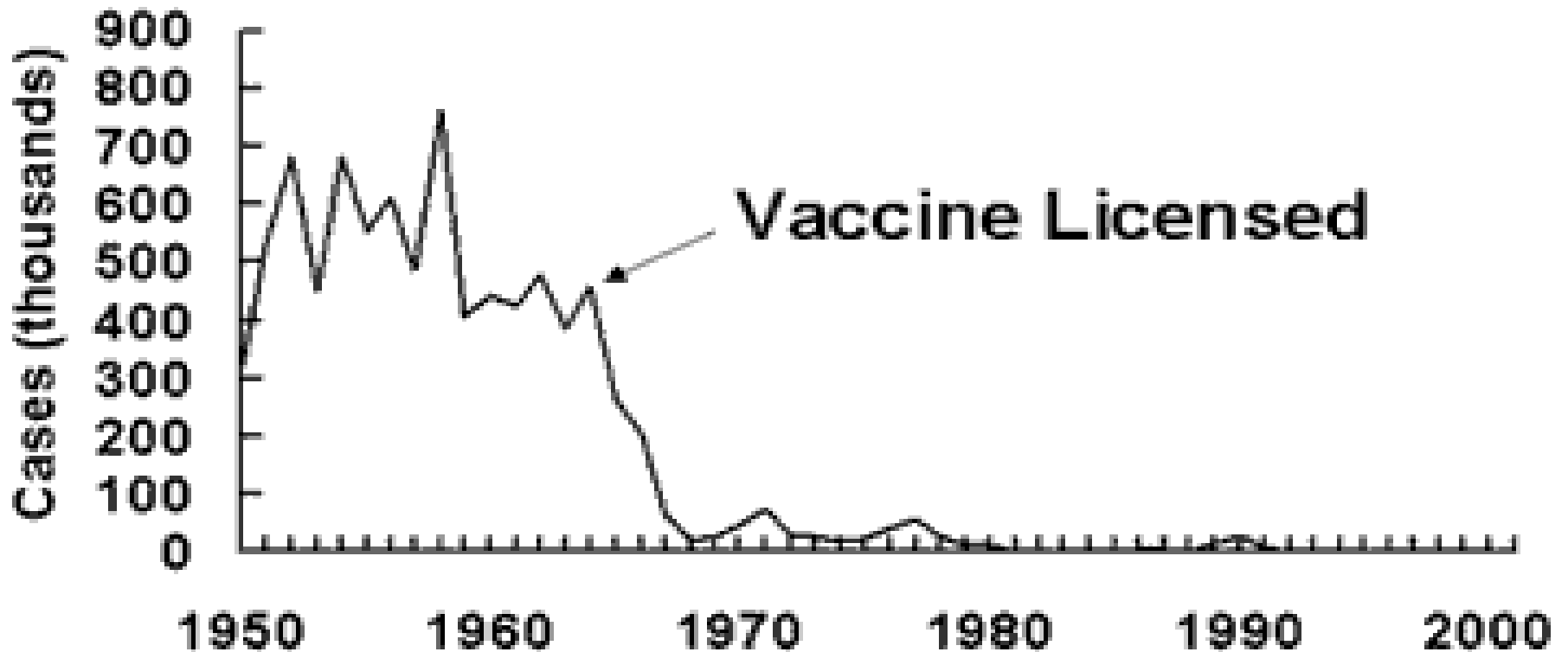
Why this occurs:

- Almost everyone is vaccinated
- No vaccine is 100% effective
- During an outbreak
 - NUMBER of vaccinated people who get a disease will be greater than the number of unvaccinated people
 - PERCENTAGE of vaccinated people getting the disease will be tiny, whereas the percentage of unvaccinated people getting the disease will be close to 100%.

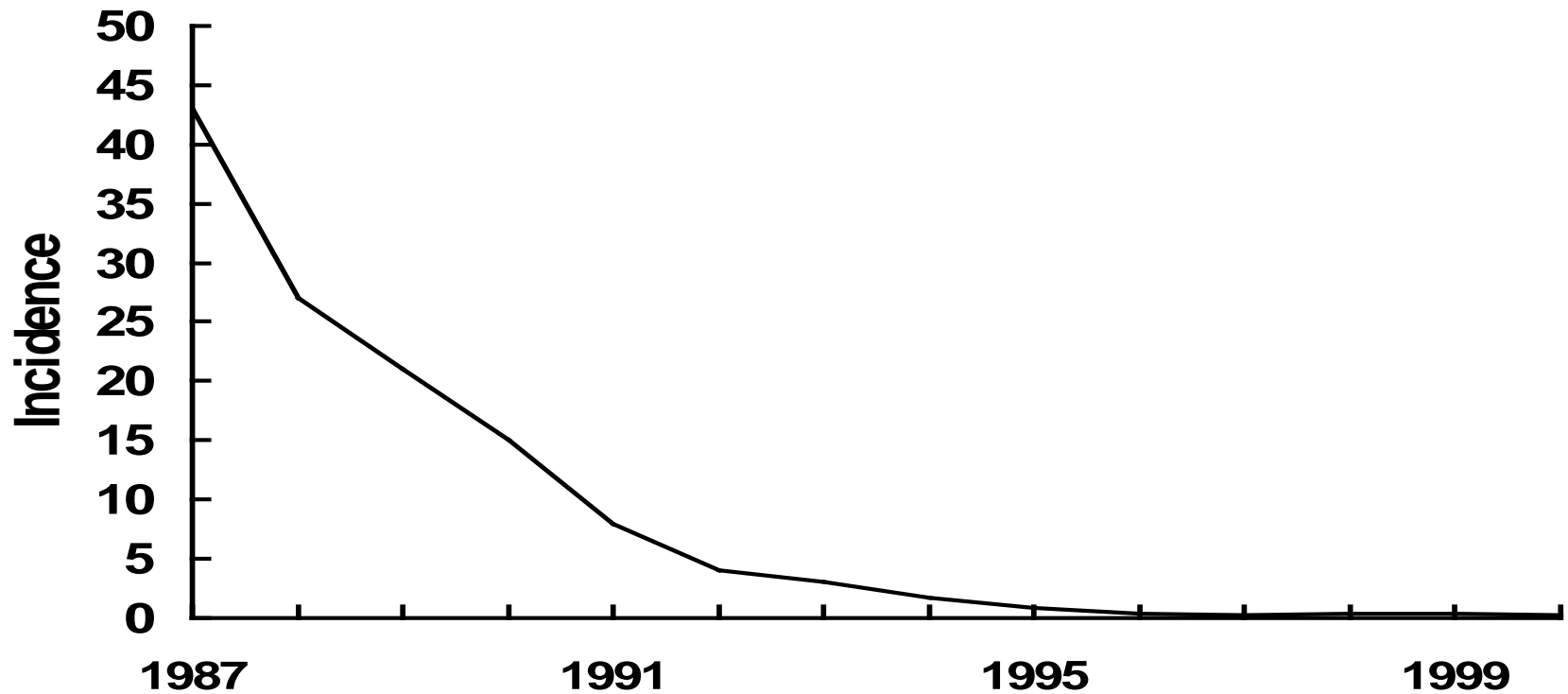
“Isn’t better sanitation really the reason for the drop in disease rates?”

- Decrease in a VPD has occurred after the introduction of a vaccine to prevent it.
- True for newer vaccines like Hib (1987) and varicella (1995), which were introduced during times of modern hygiene.
- When developed countries (U.K., Sweden, Japan) stopped using DTP vaccine, their pertussis rates jumped dramatically.
- Several recent outbreaks of measles, pertussis, and varicella in the U.S. have been traced to pockets of unvaccinated children in states that allow personal belief exemptions.

Measles—United States, 1950-2001



Estimated Incidence* of Invasive Hib Disease, 1987-2000



*Rate per 100,000 children <5 years of age

“The VAERS data prove that vaccines are dangerous”

VAERS data does not “prove” vaccine not safe:

- Anyone can report anything... no proof of causality is required
- Only reports of special interest (e.g., hospitalizations) are verified
- Reports include many non-serious reactions

“Hasn’t it been proven that there are dangerous ‘hot lots’ of vaccines?”

The Food and Drug Administration regulates the production of vaccines carefully

- The concept of “hot lots” is based on the presumption that more reports to VAERS mean that a vaccine lot is more dangerous
- As the size of vaccine lots varies widely (a lot may vary from several hundred thousand to several million), it’s not unexpected that some lots would generate more reports (i.e., the larger lots)

“Natural infection is better than immunization”

- Infection usually *does* cause better immunity than vaccination
- But, natural disease can include paralysis, retardation, liver cirrhosis/cancer, deafness, blindness, pneumonia, or death

“Didn’t the courts decide that vaccines cause autism?”

- The Vaccine Injury Compensation Program awarded ONE family a monetary settlement for a very specific situation
- The child, Hannah Poling, was born with mitochondrial disorder- a rare genetic disorder
- In this case, the government concluded that vaccines aggravated a rare underlying metabolic condition in one child, not that vaccines cause autism in general, or even that vaccines are contraindicated for all children with mitochondrial disorder

“Vaccines are encouraged and pushed only because drug companies make big profits from them”

- 2003 Data:
 - Vaccine sales: \$2 billion vaccine sales
 - Prescription sales: \$243 billion
- Used to be 25 companies producing vaccines- now only 4 companies produce almost all of the U.S. childhood vaccines

“Aren’t abortions required to make vaccines?”

- Yes, it is true that production of varicella, rubella, rabies, and hepatitis A vaccines involves growing the viruses in human cell culture.
- Two human cell lines provide these cultures; they were developed from two legally aborted fetuses in the 1960s.
- The donor fetuses were not aborted for the purpose of obtaining these cells.
- The same cell lines have been used for 35 years– no new fetal tissue is required.

“Most of the Vaccine-preventable Diseases Don’t Even Exist Anymore”

- Vaccine-preventable diseases may return if high immunization rates are not maintained
- Consider recent outbreaks

Vaccine Hesitancy

- Misconceptions
- Some vaccine-hesitant parents will allow their children to be immunized anyway
- Hesitant parents are at risk for skipping or delaying other vaccines down the road
- Steps to minimize the impact
 - Establish trusting relationships with parents/patients
 - Provide appropriate educational materials

Not a New Problem

- 19th century: Vaccination is introduced in the United States
- 1809: Massachusetts is the first state to mandate smallpox vaccination
- 1850s: US anti-vaccination movement arises in response to the proliferation of smallpox vaccination mandates
 - Activists object to regulations requiring submission to a procedure that involves “discomfort and that might not be safe”
- 1870s: Smallpox re-emerges in the US, as a result of a decline in vaccination rates
- Opposition to vaccination increases as new laws are passed and old ones are reinforced

Impact of Non-medical Exemptions

- Rates of non-medical exemptions have increased
- Vaccination coverage rates are lower in states with personal belief exemptions (PBEs) than in states permitting only religious exemptions
- Children with non-medical exemptions tend to aggregate within schools and communities
- Vaccine-preventable diseases tend to cluster in areas where exemption rates are highest

Factors That Contribute to Vaccine Hesitancy

- Increase in:
 - Number of new vaccines for various diseases
 - State-level school entry immunization mandates
- Continued success of vaccines in controlling diseases
- Rise in consumerism, which has:
 - Encouraged parents/patients to shop around for an HCP and actively search for information about vaccines
- Spread of misinformation via mass media and the internet

Vaccine-Hesitant Parents

- Uninformed but can be educated on importance of vaccination
 - Want education to counter anti-vaccine information
- Misinformed but correctable
 - Need information about vaccine benefits
- Well-read and open-minded
 - Want to intelligently discuss pros and cons

Vaccine-Hesitant Parents

- Strongly vaccine-hesitant
 - Willing to listen but not likely to change their mind right away
- Strong-willed and committed against vaccines
 - Want to sway the HCP to *their* line of thinking

Tips for Handling Vaccine Hesitancy

- Listen to the parents/patients
- Identify *their* questions or problems
- Make no assumptions
- Have a plan
 - What is your practice philosophy?
 - Will you see families who outright refuse all vaccines for their children?
- Tailor your advice to each individual parent/patient, based on his or her concerns

During the Discussion

- Effective, empathetic communication
- Parents should be helped to feel comfortable voicing any concerns or questions they have about vaccination, and providers should be prepared to listen and respond effectively.
- “A successful discussion about vaccines involves a two-way conversation, with both parties sharing information and asking questions.”

CDC's "Talking with Parents about Vaccines for Infants" www.cdc.gov/vaccines/spec-grps/hcp/downloads/talk-infants-color-office.pdf



Ask Questions

- Evaluate whether the child has a valid contraindication to a vaccine by asking about medical history, allergies, and previous experiences.
- Assess the parent's reasons for wanting to delay or forgo vaccination in a non-confrontational manner.
 - Have they had a bad experience?
 - Obtained troubling information?
 - Do they have a conflicting religious or personal belief?

Dialogue

- If parents have safety concerns or misconceptions about vaccination ask them to identify the source(s) of those concerns or beliefs.
- Listen carefully, paraphrase to the parent what they have told you, and ask them if you have correctly interpreted what they have said.
- Provide factual information in understandable language that addresses the specific concerns or misconceptions the parent has about vaccination.

Ways You Can Encourage Discussion With Vaccine-Hesitant Parents/Patients

- “Help me understand how you came to that decision”
- “Help me understand your reasons for feeling that way”
- “What is it about vaccines that worries you?”
- “Share with me what you’ve read”
- “Share with me what you’ve heard about getting 2 or more shots at once”

Be prepared!

Don't worry about every possible question

- Be able to recommend good websites and handouts for patients/parents
- Be aware of major vaccine-critical groups and individuals and become familiar with their websites
- Be ready to answer the most common questions
- It is ok to say you'll research a question and get back with more information
- Keep in mind– people still respect the opinion of their healthcare providers



THANK YOU!!

Resources for HCPs

- ✓ CDC's vaccine web section www.cdc.gov/vaccines
- ✓ CDC's "Provider Resources for Vaccine Conversations with Parents" www.cdc.gov/vaccines/conversations
- ✓ IAC's Responding to Concerns web section www.immunize.org/concerns and Talking with Parents web section www.immunize.org/concerns/comm_talk.asp
- ✓ Vaccine Education Center www.vaccine.chop.edu
- ✓ AAP's immunization website www.aap.org/immunization
- ✓ National Network for Immunization Information www.immunizationinfo.org

Helpful Resources for Parents

- ✓ Handouts for communicating with parents and patients from IAC www.immunize.org/handouts/discussing-vaccines-parents.asp
- ✓ IAC's website for the public www.vaccineinformation.org
- ✓ CDC's "Parents Guide to Childhood Immunization" www.cdc.gov/vaccines/pubs/parents-guide
- ✓ CDC's "Provider Resources for Vaccine Conversations with Parents" www.cdc.gov/vaccines/conversations
- ✓ Every Child By Two's websites: <http://www.ecbt.org> and www.vaccinateyourbaby.org

Additional Resources for HCPs and/or Parents

- ✓ Immunization Action Coalition:
<http://www.vaccineinformation.org>
- ✓ Immunization Education Program of the AAP's Pennsylvania chapter:
<http://www.paiep.org>
- ✓ Institute for Vaccine Safety, Johns Hopkins Bloomberg School
of Public Health: <http://www.vaccinesafety.edu>
- ✓ National Association of Pediatric Nurse Practitioners:
<http://bit.ly/13f06Du>
- ✓ National Network for Immunization Information:
<http://www.immunizationinfo.org>
- ✓ Pediatric Infectious Diseases Society position statement on PBEs:
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- ❖ CDC’s Thimerosal web page www.cdc.gov/vaccinesafety/Concerns/thimerosal/index.html
- ❖ NNii’s “Mercury in Vaccines” www.immunizationinfo.org/issues/thimerosal-mercury
- ❖ IAC’s collection of related resources www.immunize.org/thimerosal
- ❖ Institute of Medicine reports on thimerosal www.nap.edu/books/030909237X/html and <http://books.nap.edu/catalog/10208.html>

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- ❖ IAC's "Adjuvants and Ingredients" web section www.immunize.org/concerns/adjuvants.asp
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www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf
- ❖ IAC's Package Inserts web section www.immunize.org/packageinserts
- ❖ IAC's "MMR vaccine does not cause autism. Examine the evidence!"
www.immunize.org/catg.d/p4026.pdf
- ❖ IAC's "Clear Answers & Smart Advice about Your Baby's Shots" by Ari Brown, MD, FAAP
www.immunize.org/catg.d/p2068.pdf
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