

Translating Research into Practice in the Development of CDC's Childhood Immunization Campaign

Jenny Mullen, CDC/NCIRD

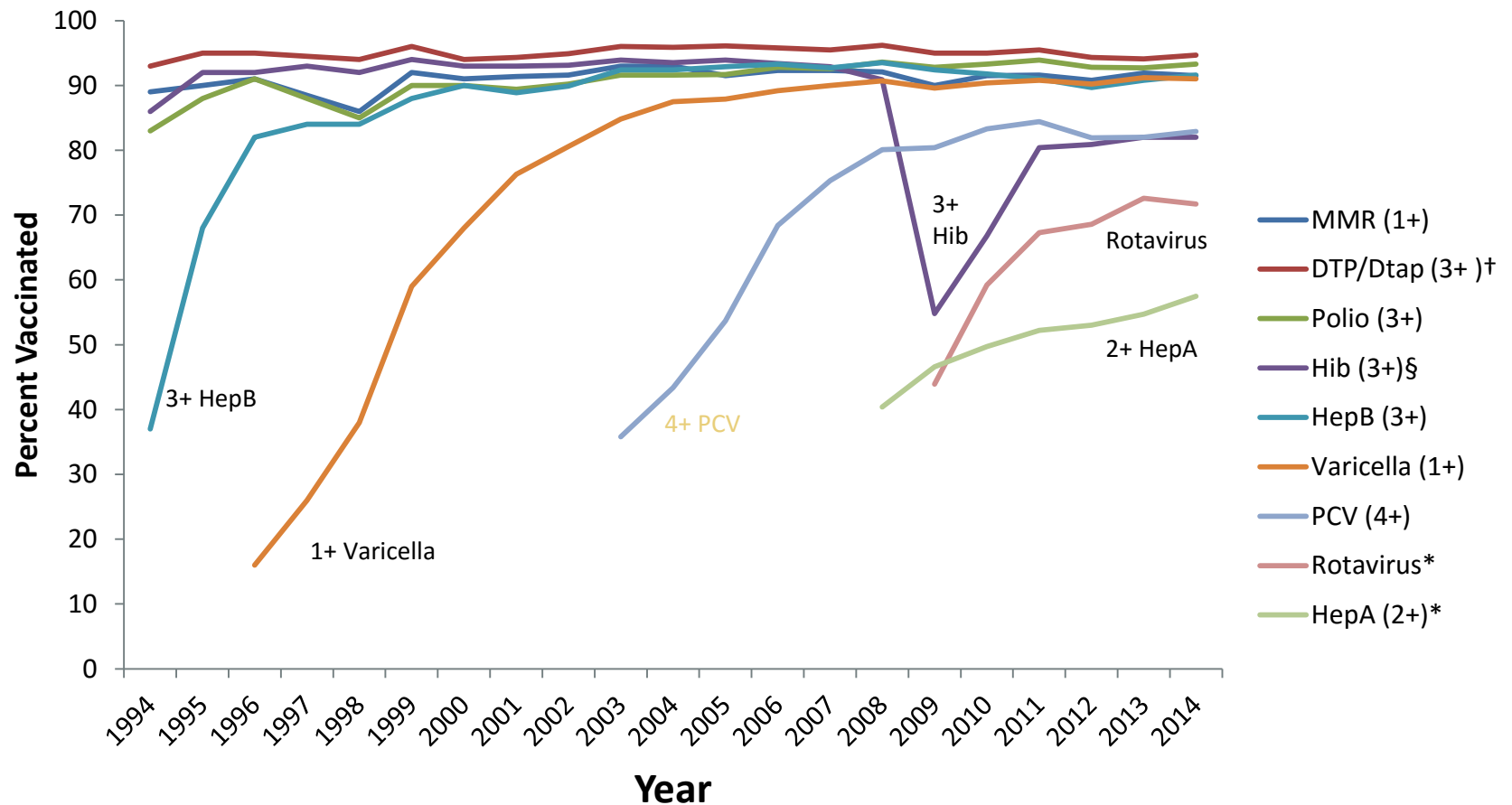
National Conference for Immunization Coalitions and Partnerships

May 27, 2016

Indianapolis, Indiana

VACCINATION COVERAGE IN THE UNITED STATES

Vaccine-specific Coverage* among Children 19-35 Months, National Immunization Survey, United States, 1994-2014



* The *Healthy People* 2020 target for coverage is 90% for all vaccines with the exception of rotavirus (80%) and HepA (85%).

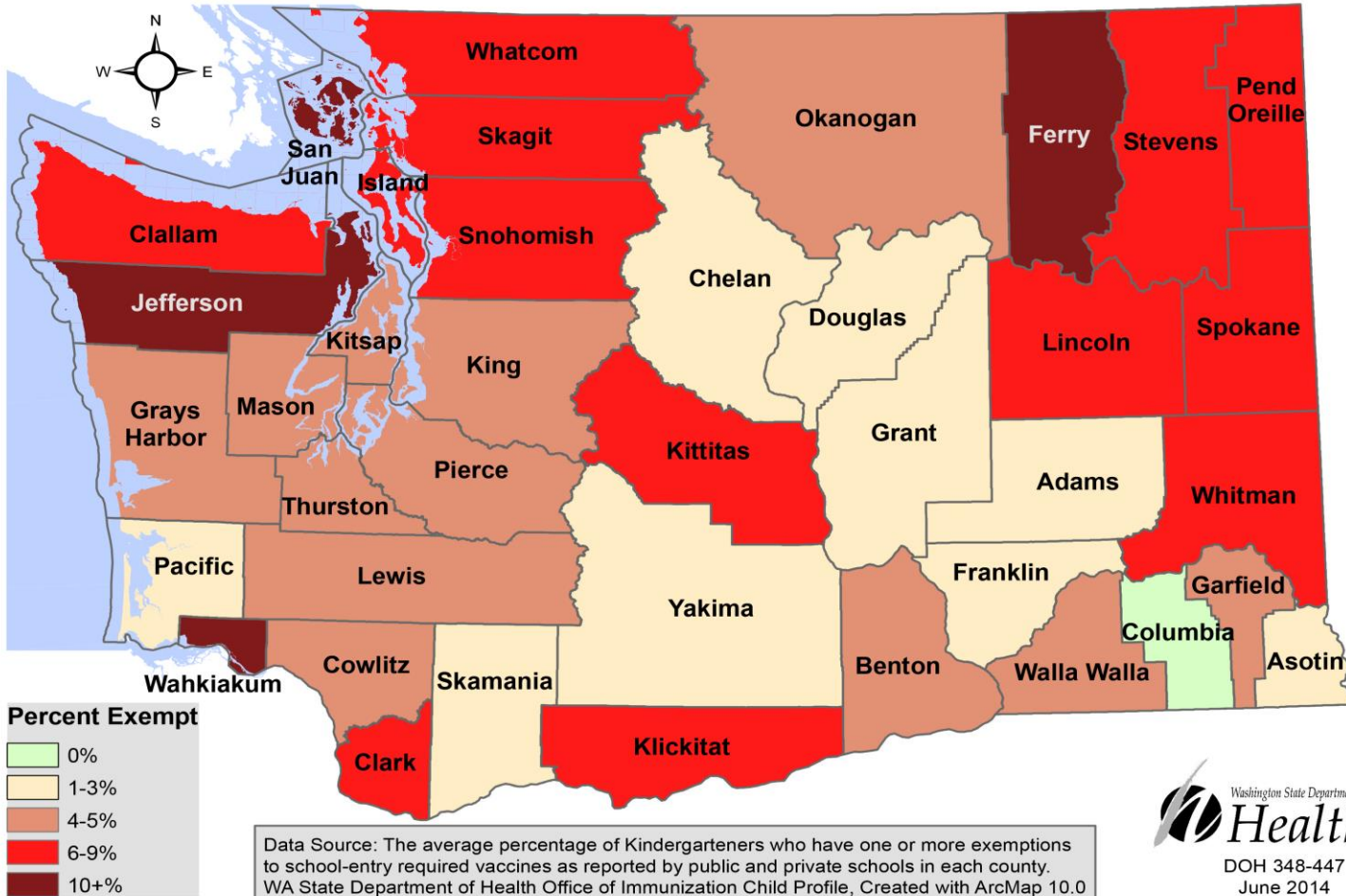
† DTP (3+) is not a Healthy People 2020 objective. DTaP (4+) is used to assess Healthy People 2020 objectives.

§ Reflects 3+ doses through 2008, and Full Series (3 or 4 doses depending on type of vaccine received) 2009 and later.

Very few US toddlers have received no vaccines at all



WA State Kindergarten Immunization Exemption Rates by County School Year 2013-2014



DOH 348-447
June 2014

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

COMMUNICATION CONTEXT

Used to look a lot like this...

ARE WE OVER-VACCINATING OUR KIDS?

Since 1993, the number of vaccines the Centers for Disease Control recommends for our kids has more than tripled. During this same time period, we've seen an explosion in neurological disorders like ADHD and autism, particularly with our boys, who represent 4 out of 5 cases.

Are these increases related? Can there be too much of a good thing? Until now, no one could know for sure, because no study had ever been done to compare the rate of neurological disorders between vaccinated and unvaccinated children.

A NEW SURVEY OF KIDS IN CALIFORNIA AND OREGON

GENERATION RESCUE
www.generationrescue.org

CDC Mandatory Vaccine Schedule Comparison
Comparison: 1993 to 2008

1993	2008
MMR	MMR
MMR-2	MMR-2
MMR-3	MMR-3
MMR-4	MMR-4
MMR-5	MMR-5
MMR-6	MMR-6
MMR-7	MMR-7
MMR-8	MMR-8
MMR-9	MMR-9
MMR-10	MMR-10
MMR-11	MMR-11
MMR-12	MMR-12
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MMR-91	MMR-91
MMR-92	MMR-92
MMR-93	MMR-93
MMR-94	MMR-94
MMR-95	MMR-95
MMR-96	MMR-96
MMR-97	MMR-97
MMR-98	MMR-98
MMR-99	MMR-99
MMR-100	MMR-100

We commissioned a market research firm to survey more than 17,000 children in California and Oregon. We

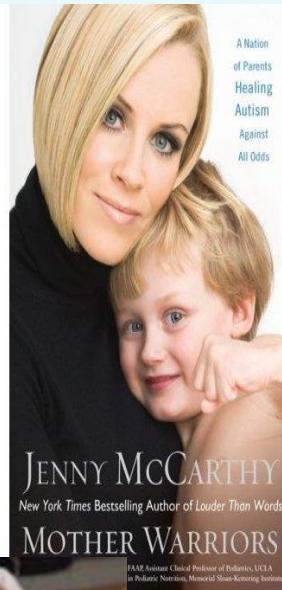
as find helpful info your child more as
www.generation



The Vaccine Book

Making the Right Decision for Your Child

Robert W. Sears, MD, FAAP



MERCURY POISONING AND AUTISM

It isn't a coincidence.

SYMPTOMS OF MERCURY POISONING IN CHILDREN

Loss of Speech
Social Withdrawal
Reduced Eye Contact
Repetitive Behaviors
Hand-flapping, Toe-walking
Temper Tantrums
Sleep Disturbances
Seizures

From: Robert W. Sears, M.D., & David Kirby, M.D. (2008)

...to fetuses' and infants' nervous systems. . . Mercury has
...such as autism. . . Senator John F. Kerry (D-MA)
...and presented credible, peer-reviewed research studies that
...of mercury, a widely known neurotoxin, and the increasing
...m. . . Congressman Dan Burton (R-IN)

"Mounting evidence suggests that Thimerosal, a mercury-based preservative in children's vaccines,
...may be responsible for the exponential growth of autism and other childhood neurological
...disorders now epidemic in the United States." - Robert F. Kennedy, Jr.

GREEN OUR VACCINES

TOO MANY TOO SOON

Recommended Immunization Schedule for Persons Aged 0-6 Years—UNITED STATES • 2008

For those who fall behind or start late, see the catch-up schedule

Vaccine	Age	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19-23 months	2-3 years	4-6 years
Hepatitis B ¹	HepB	HepB	HepB	HepB	HepB	HepB	HepB	HepB	HepB	HepB	HepB	HepB
Diphtheria, Tetanus, Pertussis ²	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP	DTaP
Poliovirus ³	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV	IPV
Measles, Mumps, Rubella ⁴	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR	MMR
Varicella ⁵	Var	Var	Var	Var	Var	Var	Var	Var	Var	Var	Var	Var
Hepatitis A ⁶	HepA	HepA	HepA	HepA	HepA	HepA	HepA	HepA	HepA	HepA	HepA	HepA
MMRV ⁷	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV	MMRV

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 0 through 6 years. Additional information is available at www.cdc.gov/vaccines/imz/immunization. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccine may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the local and state health departments for their use of the vaccine. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for high-risk conditions: <http://www.cdc.gov/vaccines/imz/immunization>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete VAERS form is available at www.vaers.hhs.gov or by telephone, 800-625-1362.



...but recently, we have seen some shifting



HEALTH

It's Uncool to Refuse Vaccines

1 MAY 9, 2014 2:19 PM EDT
By Lisa Beyer

Lisa Beyer writes editorials on international affairs. She was previously at Time, where she was an assistant managing editor, foreign editor, national editor and Jerusalem bureau chief. She also worked at the International AIDS Vaccine Initiative. [Read more.](#)



oceans initiative @oceansresearch · Apr 6
Chili's cancels plans to fundraise for #antivaccine group
huffingtonpost.com/2014/04/06/chi...

Expand

HuffPostBiz

Jenny McCarthy says she isn't anti-vaccine. Here are some other things she has said about vaccinations.

BY MARK BERMAN April 16 at 3:20 pm



Editorial Blame Disneyland measles outbreak on anti-science stubbornness



Dear parents, you are being lied to.

Jennifer Raff — March 25, 2014 — 4,213 Comments



The Daily Show

An Outbreak of Liberal Idiocy

Samantha Bee discovers an epidemic of science denial coming not from conservative climate change skeptics but from educated, upper middle class liberals. (5:20)

[View on web](#)



Live News

SHARE TWEET

Anti-Vaxxers Are Responsible for the Worst Outbreaks America Has Seen in Years

By Jenna Kagel June 1, 2014



The news: There have been a whopping 288 cases of measles in the U.S. between Jan. 1 and May 23 of this year. That's the largest outbreak in the first five months of a year the nation has seen since 1994.



The Centers for Disease Control and Prevention (CDC) released a [report](#) on May 29 detailing the 20-year inflated high. The worst part is that there is now direct evidence that anti-vaccine trutheers are causing these outbreaks.

Most U.S. health care providers have little experience treating the disease because of the nation's strong vaccination efforts. Measles is highly contagious but rarely deadly in the U.S., and is more prevalent in Asia, Africa, Europe and the Pacific. Every year, 20 million people are infected with the disease and roughly 122,000 of them die. However, in 2000, the U.S. declared that measles was eliminated in America because there hadn't been any continuous transmissions in more than a year.

Measles, U.S., 2001-2014*

NHL Mumps Outbreak Has NFL And NBA On High Alert

158 SHARES



Immunization – A Complex Communication Environment

- **Low disease awareness = increased focus on vaccine risks**
- **Low tolerance for vaccine risks**
- **Full and complicated immunization schedule**
- **Time is often limited**
- **Many places to find and get information**

AUDIENCE RESEARCH

Research with Health Care Professionals

❑ Completed

- **2008 in-depth interviews with pediatricians and family physicians**
- **2009 survey of pediatricians and family physicians (partnership with U of Colorado)**
- **2010 pilot evaluation of educational materials with WA state health care professionals**
- **2010 in-depth interviews (IDIs) to discuss provider resources**

Research with Healthcare Professionals

□ Guiding Principles and Lessons Learned

- Strong support among healthcare professionals for the existing immunization schedule
- Bottom line is that kids are getting immunized but discussion and education are taking longer than in the past
- Healthcare professionals are still the most trusted source of vaccine information and advice for most parents
- Educational materials should supplement—not replace—conversations between healthcare professionals and parents

Research with Parents

❑ Completed

- 2008, 2009, 2010 HealthStyles mail surveys
- 2008 and 2009 focus group research with moms
- 2008 online testing of draft educational materials with moms
- 2010, 2012, and 2014 national polls of vaccine attitudes and behaviors
- 2010 cognitive interviews and focus groups with moms to test readability of Vaccine Information Statements
- 2011 focus groups and intercept interviews with parents to discuss vaccination barriers and facilitators, and to test message concepts
- 2011, 2012, 2015 ConsumerStyles Internet survey

Research with Parents

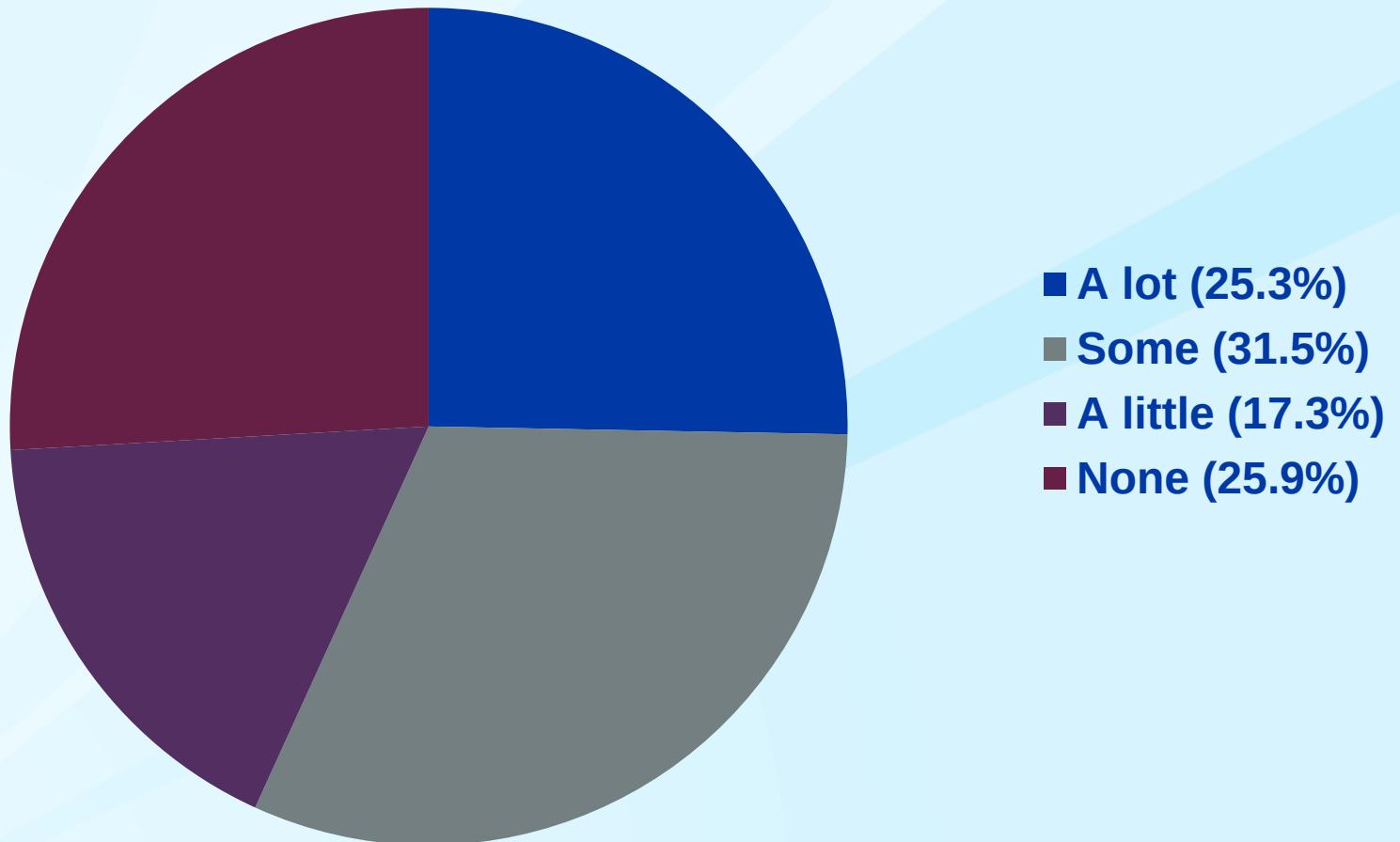
□ Guiding principles and lessons learned

- Most parents nationally are confident in vaccine safety, and either have already vaccinated or plan to fully vaccinate their child
- Many parents have at least some questions or concerns about infant immunization (pain, side effects, number, and timing are consistently the most common)
- A child's healthcare provider is generally the most important source of vaccine information; however, moms want to hear consistent things from multiple sources they deem credible
- Educational materials with personal stories and information about vaccine preventable diseases are well-received

Quantitative and Qualitative Research Show

- **Most parents are generally confident in:**
 - **The safety of vaccines**
 - **The effectiveness of vaccines**
 - **The benefits of vaccines**
 - **The number of vaccines their child gets in the first 2 years of life**
- **But, they may still be anxious about shot visits**
 - **About 25% of parents report having at least a little anxiety**
- **And, they may still have questions**
- **Questions may not be the same as concerns**
- **Questions and concerns may vary by disease and vaccine**

Thinking about your youngest child, in general, how much vaccine information did you try to find before his or her vaccination visits?



Key Drivers to Communication Planning

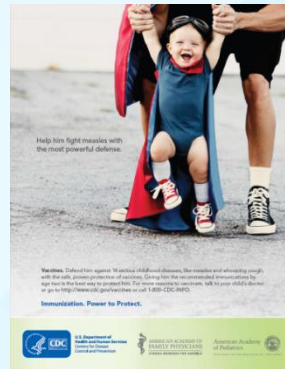
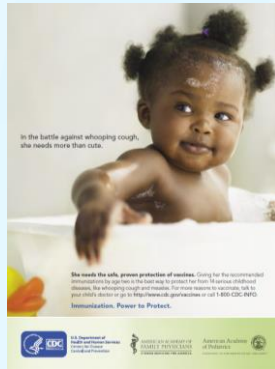
- ❑ **There is a spectrum of parental attitudes, beliefs, and behaviors requiring some tailoring and layering of communication practices and materials.**
 - Questions and concerns do not always equal lack of confidence.
- ❑ **Reinforcing the social norm around vaccination is important.**
- ❑ **Recommendations from providers are persuasive, but we can't ignore other social influences.**
 - The facts don't speak for themselves. Personal accounts from peers or health care professionals are persuasive and memorable.
 - Vaccine safety issues are a concern for many parents. Risk communication approach is needed to maintain trust.
- ❑ **There is no quick fix message**

TARGET AUDIENCE: PARENTS

Goals of Parent Campaign

- **Reinforce the social norm to vaccinate**
- **Increase awareness of vaccine-preventable diseases**
- **Increase awareness of disease protection benefits of vaccines**
- **Empower parents to make the choice to immunize their children**

English Campaign: *Immunization. Power to Protect.*



Spanish Campaign: *Con salud, todo es posible. Vacune a sus hijos.*



www.cdc.gov/vaccines/parents/resources

Parents Use Digital Information

- **Digital Channels**
- **Social Media**
- **Mobile Access**

Digital Communication Activities to Reach Parents

- **Amplify messaging in digital space**
- **Partnerships to reach parents**
- **Digital tools and conversations**

Vaccine Website for Parents

For Parents: Vaccines for Your Children



[<< Back to Vaccines Home](#)



Immunization Schedules for Babies, Kids, and Teens



Test Your Knowledge

1 of 1

Question 1

Vaccines protect babies against how many serious childhood diseases? Select one and click the "Next" button.

- 4 diseases
- 8 diseases
- 14 diseases
- 20 diseases

Vaccination is one of the best ways parents can protect infants, children and teens from 16 potentially harmful diseases. Vaccine-preventable diseases can be very serious, may require hospitalization, or even be deadly - especially in infants and young children.

PROTECT YOUR CHILD AT EVERY AGE.

Find age-specific vaccine information for your child from birth through 18 years.

RECORDS & REQUIREMENTS

Learn about immunization records and state vaccine requirements for child care and school.

MAKING THE VACCINE DECISION

Learn about how vaccines work, vaccine safety and risks, and answers to common questions.

IMMUNIZATION COVERAGE IN THE U.S.

Review estimates of the number of babies and teens who have received recommended vaccines.

YOUR CHILD'S VACCINE VISIT

Find out what to do before, during and after your child's vaccine visit.

TRAVEL AND VACCINES

Find out which vaccines your family needs if you are traveling to another country.

DISEASES THAT VACCINES PREVENT

Review the 16 diseases prevented by vaccines recommended for children and teens.

VACCINE RESOURCES FOR PARENTS

Find fact sheets, links to videos, and additional educational resources.

www.cdc.gov/vaccines/parents

Parent Friendly Resources

THE JOURNEY of YOUR CHILD'S VACCINE

Before a vaccine is used in the United States, it must go through a long process of testing and review. This process is designed to ensure that the vaccine is safe, effective, and of high quality.

HOW A NEW VACCINE IS DEVELOPED, APPROVED AND MANUFACTURED

Developing a new vaccine is a long and complex process. It involves several stages of testing and review by the FDA and CDC.

PHASE 1

20-100 healthy adults

Goal: Determine if the vaccine is safe and if it causes any side effects.

PHASE 2

100-1,000 healthy adults

Goal: Determine if the vaccine is safe and if it causes any side effects. Also, determine if the vaccine is effective.

PHASE 3

1,000-10,000 healthy adults

Goal: Determine if the vaccine is safe and if it causes any side effects. Also, determine if the vaccine is effective.

PHASE 4

After the vaccine is approved, it is used in the general population. The FDA and CDC continue to monitor the vaccine's safety and effectiveness.

HOW A VACCINE IS ADDED TO THE U.S. RECOMMENDED IMMUNIZATION SCHEDULE

The Advisory Committee on Immunization Practices (ACIP) is responsible for recommending which vaccines should be included in the U.S. Recommended Immunization Schedule. The ACIP is made up of experts in vaccine science, public health, and clinical medicine.

HOW A VACCINE'S SAFETY CONTINUES TO BE MONITORED

The FDA and CDC continue to monitor the safety of vaccines after they are approved. They do this through a system called the Vaccine Adverse Event Reporting System (VAERS).

9 THINGS TO MAKE SHOTS LESS STRESSFUL... FOR YOU AND YOUR BABY



The CDC logo is visible in the bottom left corner of the graphic.

21 MONTHS

Look at those teeth!



Look at those teeth!



Look at those teeth!



Look at those teeth!



Look at those teeth!



www.cdc.gov/vaccines/parents/resources

Parent Friendly Resources

How to Hold Your Child during Vaccinations

Parents and caregivers play an important role during an office visit when children receive vaccines. They can soothe and comfort their children, making them feel safe and secure. Parents also can help with the safe delivery of vaccines by securely holding children when shots are given.

A parent's embrace during vaccination offers several benefits. A comfortable hold:

- Safely prevents child from moving
- Avoids frightening
- Encourages parent to stay calm
- Allows the health care provider to see the child's face

Different holds are used to support their child and

1. Hold child against your chest
2. Place child's head against your shoulder
3. Use your arm to support child's back
4. Any other hold that makes you and your child comfortable

INFORMATION FOR PARENTS

Combination Vaccines

Last updated April 2015

Combination vaccines combine number of shots while protecting serious diseases.

Fewer Shots—Same Protection
Combination vaccines take less time to give than individual vaccines. Children get the same protection from individual vaccines given separately.

So, at a doctor's visit, your child gets fewer shots to protect him from five individual shots. Fewer shots mean less time at the doctor's office and less stress for you.



Combination vaccines combine protection into one shot.



INFORMATION FOR PARENTS

Vaccines When Your Child Is Sick

Last updated April 2015

A mild illness is usually not a reason to reschedule vaccinations. Your doctor can help you decide which vaccines your child can still receive safely.

Children with mild illness may still get vaccines—even if they have a fever

It's tempting to cancel or reschedule a doctor's appointment for vaccines when your child has the sniffles, an upset stomach, or a low-grade fever. But doctors at leading health organizations, like the Centers for Disease Control and Prevention, the American Academy of Family Physicians, and the American Academy of Pediatrics say mild illness usually is not a reason to put off vaccinations.

Your child may still be vaccinated if he or she has:

- A low-grade fever (less than 101 degrees)
- A cold, runny nose, or cough
- Ear infection (otitis media)
- Mild diarrhea

There is no health benefit to waiting to vaccinate your child if he or she has a mild illness. It's important that children get their vaccines on time—even if they don't feel well—so they're protected against serious diseases. Your child's doctor can help you determine if your child can be vaccinated if they have a mild illness.

Vaccines do not make a mild illness worse

A child's immune system is able to respond to millions of antigens every day. Antigens are things like bacteria and viruses that cause your child's body to produce antibodies against them. Vaccines have only a tiny fraction of the antigens that children encounter naturally. So, the immune system can handle getting vaccines to build immunity to diseases and fight minor illnesses at the same time.

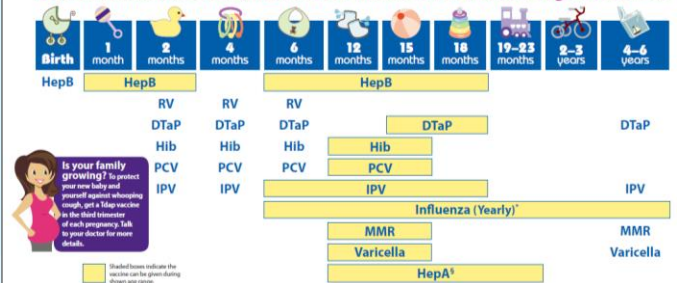
Vaccines do not make symptoms of illness worse—though they may cause mild side effects, like a mild fever or soreness or swelling where the shot was given. To help with discomfort from these side effects, put a cool, wet washcloth on the sore area or ask your child's doctor about using pain- or fever-reducing medicine.



Your child's doctor can help determine the vaccines your child can safely get at each visit.



2016 Recommended Immunizations for Children from Birth Through 6 Years Old



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: ¹ Two doses given at least four weeks apart are recommended for children aged 6 months through 6 years of age who are getting influenza flu vaccine for the first time and for some other children in this age group. ² 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 by 18 months. Some 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 or her at risk for infection as he travels outside the United States, talk to your child's doctor about additional vaccines that he may need.

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 FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN

Immunizations and Developmental Milestones for Your Child from Birth Through 6 Years Old

	Birth	1 MONTH	2 MONTHS	4 MONTHS	6 MONTHS
Recommended Immunizations	Hepatitis B HepB ¹	HepB ¹	RV DTaP Hib PCV IPV	RV DTaP Hib PCV IPV	HepB ¹ RV DTaP Hib PCV IPV
Milestones² should be achieved by the end of the age indicated. Talk to your child's doctor about age-appropriate milestones if your child was born prematurely.	- Recognizes caregiver's voice or turns head toward breast or bottle - Starts to smile - Calms down when rocked, cradled or sung to	- Laughs to smile at people - Coo, makes gurgling sounds - Attempts to follow things with eyes - Can hold head up	- Babbles with expression - Likes to play with people - Reaches for toy with one hand - Brings hands to mouth	- Knows familiar faces - Responds to own name - Brings things to mouth - Rolls over in both directions	
Growth	At each well-child visit, enter date, length, weight, and percentile information to keep track of your child's progress.	WEIGHT / PERCENTILE LENGTH / PERCENTILE HEAD CIRCUMFERENCE	WEIGHT / PERCENTILE LENGTH / PERCENTILE HEAD CIRCUMFERENCE	WEIGHT / PERCENTILE LENGTH / PERCENTILE HEAD CIRCUMFERENCE	WEIGHT / PERCENTILE LENGTH / PERCENTILE HEAD CIRCUMFERENCE

¹ Shaded boxes indicate the vaccine can be given during shown age range.

² The second dose of HepA vaccine is given at 18 months of age.

³ Two doses given at least four weeks apart are recommended for children aged 6 months through 6 years of age who are getting the vaccine for the first time and for some other children in this age group.

⁴ Hepatitis B vaccine is given in three doses. The first dose is given at birth. The second dose is given at 1-2 months of age. The third dose is given at 6-18 months of age. Some HepB vaccination may be given to any child 12 months and older to protect against HepB. Children and adolescents who did not receive the HepB vaccine and are at high-risk, should be vaccinated against HepB. If your child has any medical conditions that put him or her at risk for infection as he travels outside the United States, talk to your child's doctor about additional vaccines that he may need.

www.cdc.gov/vaccines/imz/downloads/pdf/schedule09.pdf (Immunization schedule) or www.cdc.gov/ncidod/diseases/zoonotic/diseases/hsp120809.pdf (H1N1 schedule)



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AMERICAN ACADEMY OF FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN

www.cdc.gov/vaccines/resources

Need sample tweets and posts?



Does your baby have all recommended shots? Use CDC's online tool to check.

<http://1.usa.gov/WukBI6>



Spending a lot of time talking to parents about vaccines? CDC, AAP, and AAFP have resources to help with your vaccine conversations with parents:

www.cdc.gov/vaccines/hcp/conversations

<http://www.cdc.gov/vaccines/events/niiw/>

**TARGET AUDIENCE: HEALTHCARE
PROFESSIONALS**

Provider Resources for Vaccine Conversations with Parents

- Developed with partners AAP and AAFP
- Targets healthcare professionals
- Based on formative research
- Uses risk communication principles
- Reviewed annually by subject matter experts

The screenshot shows the CDC website for "Provider Resources for Vaccine Conversations with Parents". The header includes the CDC logo and the tagline "CDC 24/7: Saving Lives. Protecting People.™". A search bar is located in the top right. Below the header, the page title "Provider Resources for Vaccine Conversations with Parents" is displayed. The left sidebar contains a "Conversations Home" menu with links to "Talking to Parents about Vaccines", "Understanding Vaccines and Vaccine Safety", "Vaccine-preventable Diseases", "About Vaccine Conversations with Parents", "Provider Resources Web Tools", and "Resources to Share with Parents". Below this is a "Related Links" section with links to "Immunization Schedules", "NIHW Educational Resources", and "For Parents: Vaccines for Your Children". The main content area features a "Vaccines Home" section with a "Print page" button and social media sharing options (Recommend, Tweet, Share). The text explains the purpose of the resources: "Making time to talk with parents about vaccines during the well-child visit may be challenging. Here's some help: CDC, AAP, and AAFP created these materials to help you assess parents' needs, identify the role they want to play in making decisions for their child's health, and then communicate in ways that meet their needs. These resources are collectively called *Provider Resources for Vaccine Conversations with Parents*." Below this, there are two main sections: "For You and Your Practice" and "To Share With Parents". "For You and Your Practice" includes a photo of a doctor and a parent with a child, and lists resources to help strengthen communication. "To Share With Parents" includes a photo of a doctor and a parent with a child, and lists materials to download and print. At the bottom, there is a "Spread the Word" section with multimedia tools and a "Keep in Touch" section with an email update sign-up form. The right sidebar contains contact information for the Centers for Disease Control and Prevention, including the address, phone numbers, and a link to the CDC website.

Provider Resources for Vaccine Conversations with Parents

Conversations Home

- Talking to Parents about Vaccines
- Understanding Vaccines and Vaccine Safety
- Vaccine-preventable Diseases
- About Vaccine Conversations with Parents
- Provider Resources Web Tools
- Resources to Share with Parents

Related Links

- Immunization Schedules
- NIHW Educational Resources
- For Parents: Vaccines for Your Children

Vaccines Home

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Making time to talk with parents about vaccines during the well-child visit may be challenging.

Here's some help: CDC, AAP, and AAFP created these materials to help you assess parents' needs, identify the role they want to play in making decisions for their child's health, and then communicate in ways that meet their needs. These resources are collectively called *Provider Resources for Vaccine Conversations with Parents*.

For You and Your Practice

Help strengthen communication between you and parents, and get information about:

- Talking to parents about vaccines
- Understanding vaccines and vaccine safety
- Vaccine-preventable diseases
- Immunization schedules
- Research supporting these resources

To Share With Parents

Download and print these materials to help parents understand vaccine benefits and risks.

- If you choose not to vaccinate
- Vaccine-preventable disease fact sheets
- Childhood immunization schedule
- More resources

Spread the Word

Multimedia tools for sharing immunization information.

- Add a button or banner and link from your web page
- Send e-cards
- Watch/share videos

Keep in Touch

Sign up to get e-mail updates when materials are added

Contact Us:

Centers for Disease Control and Prevention
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Atlanta, GA 30333
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TTY: (888) 232-6348
Contact CDC-INFO

www.cdc.gov/vaccines/conversations

Materials: Provider Resources

- ❑ Understanding Vaccines and Vaccine Safety**
 - **How Vaccines Work**
 - **The Recommended Childhood Immunization Schedule**
 - **Ensuring the Safety of U.S. Vaccines**
 - **Understanding the Vaccine Adverse Reaction Reporting System**
 - **Understanding MMR Vaccine Safety**
 - **Understanding Thimerosal, Mercury, and Vaccine Safety**
 - **The Advisory Committee on Immunization Practices**
- ❑ Diseases and the Vaccines that Prevent Them**
 - **14 vaccine-preventable disease sheets, each with 2 versions (one for high-information seeking parents and the other with basic information); Basic sheets are also available in Spanish**
- ❑ If You Choose Not to Vaccinate, Understand the Risk and Your Responsibilities**

Provider-Targeted Materials

Understanding MMR Vaccine Safety

Last updated: October 2008

• CDC recommends two doses of the measles, mumps, and rubella vaccine—MMR vaccine—for children because it protects them against dangerous, even deadly, diseases.

• The MMR vaccine has a long record of safety. Serious risks of MMR vaccine are rare. All reputable scientific studies have found no relationship between MMR vaccine and autism.

• The routinely recommended age for the first MMR dose is 12 through 15 months. The routinely recommended age for the second MMR dose is 4 through 6 years.

• If there is an outbreak of one of the diseases, health authorities might recommend the vaccine be given earlier.

Questions and answers

Reputable scientific studies have found no link between MMR vaccine and autism. So, why do some people think that MMR vaccine causes autism?

One of the reasons for this. Some parents of children say they first noticed signs of autism a few days, months after their child received MMR vaccine. They explain that their child was developing normally, but signs of autism appeared after MMR vaccination.

Sometimes, signs of autism do not appear until around the age that the first dose of MMR is given. Some toddlers who've turned one year old—or even two or three years old—regress. That is, they lose the ability to do things that they once were able to do. If regression follows a memorable event like a trip to the doctor for vaccinations, this may seem like cause and effect.

There may be signs of autism before a child is old enough to get the first dose of MMR, at age 12 through 15 months. Parents and health care providers should work together and

meet immediately if either child development. One of a doctor's responsibilities is to monitor a child's development for any signs of problems that can be prevented or treated. Healthcare providers and parents should partner to learn the signs of normal development and to act early if they suspect there may be a problem. For more information, visit www.cdc.gov/ncbddd/autism/tutorials/default.htm.

A second reason this may cause concern is

the development of media coverage. At been in use for only the diagnosis of autism increased and parents, doctors, and scientists alike wanted to know the reason why. Since 1998, 10 of the 13 authors have withdrawn their support of the study. This study was followed rapidly by many larger population studies totaling thousands of children that found that MMR vaccine is not responsible for a rise in autism. Most recently, in 2008, a study from Columbia University did not repeat the findings of the U.K. study. The 2008 study showed no connection between MMR vaccine and autism.

What's the harm in delaying the first MMR shot until my child is age two or older?

The MMR vaccine is recommended to be given during ages 12 through 15 months. If you wait to give it later, your child could get measles, mumps, and/or rubella. All of these diseases are still out there. For example, in 2008, there were 140 measles cases in the U.S., more than any year since 1996. Seventeen were children under 12 months old—too young to be vaccinated according to the routine recommendation. Another nine were in unvaccinated 12- through 15-month-olds; this is the age when the vaccine is recommended. And 72 cases were in children and teens 16 months old through 19 years old who had not received the vaccine. Seventeen people, including six children younger than 15 months old, had hospital stays for complications from measles. Following U.S. recommendations for using MMR vaccine is the best way to protect children from these diseases and avoid outbreaks.

Topics of concern/interest to providers and parents

Summary of key points

| questions and answers | continued

How effective is MMR vaccine?

MMR vaccine is effective that the U.S. eliminated measles in 2000. That is, measles stopped in the U.S. got two doses of MMR vaccine that the disease stopped spreading here. But, measles is still common in parts of the world. Since people from the U.S. travel internationally frequently, we

Q&A format

spreading in that country.

Some people think that the vaccine preservative thimerosal is dangerous. Is there thimerosal or mercury in MMR vaccine?

No. The MMR vaccine never has contained thimerosal or any other form of mercury. Furthermore, there is no evidence that thimerosal in vaccines is harmful.

How long has MMR vaccine been in use?

The measles vaccine in MMR vaccine that we use today has been in use since 1968, the mumps vaccine since 1967, and the rubella vaccine since 1979. All of these vaccines replaced earlier vaccines. Today's versions are safer, provide longer lasting protection, and have fewer side effects.

What are the known side effects of MMR vaccine?

Mild problems include fever (about one person out of six); mild rash (about one person out of 20); and swelling of the glands in the cheeks or neck (rare). Moderate problems include seizures caused by fever (about one out of 3,000 doses); and temporary low platelet count, which rarely can cause a bleeding disorder (about one out of 30,000 doses). Severe problems are rare. Severe allergic reaction happens less than one time per million vaccine doses.

What are the causes of autism?

CDC and other agencies and organizations are conducting research to find out. Many doctors believe that genetics likely play a strong role.

Across the world, parents, doctors, and scientists are working on ways to treat autism. More research is being done to find out what causes autism.

FO (800-232-4630)

| the science |

Here is a summary of five of the more than 20 reputable studies that have found no relationship between MMR vaccine and autism. These studies were selected for this brief because they illustrate the variety of methods that have been used to investigate whether MMR vaccine is linked to autism.

Lack of Association between Measles Virus Vaccine and Autism with Enteropathy: A Case-Control Study by Mandy Haring et al. *PLoS ONE*. September 2008, Vol 3, page e3140.

This study was conducted in 2004-2008 to determine whether results from an earlier study that claimed to find measles virus RNA in the intestinal tissue of a specific group of autistic children could be confirmed. They could not, and no link between MMR vaccine and autism was found. <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0003140>.

Age at First Measles-Mumps-Rubella Vaccination in Children with Autism and School Matched Control Subjects: A Population-Based Study in Metropolitan Atlanta by Frank DeStefano et al. *Pediatrics*. February 2004, Vol 113, pages 259-266.

This study looked at 624 children who had autism and 1,804 children who did not. These children were ages three to ten in 1996, and lived in Atlanta, GA. There was no difference in MMR vaccination rates by age 18 months or age 24 months. The study concluded that getting MMR vaccine before age two is not a cause of autism. <http://pediatrics.aappublications.org/cgi/rapid/113/2/259>.

Immunization Safety Review: Vaccines and Autism.

Institute of Medicine. The National Academies Press. 2004. In 2003, CDC and the National Institutes of Health (NIH) asked the Institute of Medicine (IOM) to put together an independent expert committee to review evidence about whether vaccines cause certain health problems. One thing the committee studied was whether or not MMR vaccine causes autism. The committee issued a report in 2004; it says they found no evidence that MMR vaccine causes autism. <http://www.iom.edu/~/media/20155586vaccines-04>.

A Population-Based Study of Measles, Mumps and Rubella Vaccination and Autism by Kenneth M. Hargrett-Neale et al. *New England Journal of Medicine*. November 7, 2002, Vol 347, pages 1477-1482.

This study looked at all children born in Denmark during 1991 through 1998—more than 530,000 children. Of these, 82 percent had received MMR vaccine. There was no difference in the rate of autism in children who received MMR vaccine and those who did not. Among the vaccinated children, there was no association between the age when vaccinated with MMR or the time since vaccination and the development of an autistic disorder. <http://content.nejm.org/cgi/rapid/347/19/1477.pdf>.

Autism and Measles, Mumps, and Rubella Vaccines: No Epidemiological Evidence for a Causal Association by David Taylor et al. *The Lancet*. June 12, 1999, Vol 353, pages 2026-2029.

This study in eight health districts of the United Kingdom looked at 498 children with autism born since 1979. Autism increased steadily when measles vaccine was introduced in 1968. When measles vaccine was introduced in 1968, autism was rare. When measles vaccine was introduced in 1968, autism was rare. When measles vaccine was introduced in 1968, autism was rare. When measles vaccine was introduced in 1968, autism was rare. <http://www.lancet.co.uk/cgi/rapid/353/9202/2026.pdf>.

Co-branded with AAFP and AAP

The science



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



AMERICAN ACADEMY OF FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN



Parent-Targeted Materials

Quotes from
healthcare
professionals

Date

MEASLES

106 Degrees: A True Story

If you hear "106 degrees" you probably think "heat wave," not at a baby's temperature. But for Megan Carr, Joel's 10-month-old son, a life-threatening bout of measles sent him to the hospital and caused fevers spiking to 106 degrees.

"After taking our son up at childcare because he had a fever," says Megan, "we went straight to the pediatrician who said our baby had a fever. Two days later his fever hit 10.4 and a rash appeared on his head."

The rash quickly crept down to his arms and chest. San Diego-based Megan and husband Chris turned to the Internet. Finding pictures of measles that looked like their son's rash, they rushed him to the local children's hospital.

"No one there had seen or tested for measles for about 17 years," says Megan. "And no one expected it in the year 2008 in the U.S. The next day, an infectious disease specialist confirmed measles."

"We spent three days in the hospital fearing we might lose our baby boy. He couldn't drink or eat, so he was on an IV, but for a while he seemed to be wasting away. When he began to be able to drink again we got to take him home. But the doctors told us to expect the disease to continue to run its course, including high fever—which did spike as high as 106. We spent a week waking at all hours to stay on schedule with fever reducing medications and soothing him with damp wash cloths. Also, as instructed, we watched closely for signs of lethargy or non-responsiveness. If we'd seen that, we'd have gone back to the hospital immediately."

Thankfully, the baby recovered fully. Megan now knows that her son was exposed to measles during his 10-month check-up, when another mother brought her ill son into the pediatrician's waiting room. An investigation found that the boy and his siblings had gotten measles overseas and brought it back to the U.S. They had not been vaccinated.

"People who choose not to vaccinate their children actually make a choice for other children and put them at risk," Megan explains. "At 10 months, my son was too young to get MMR vaccine. But when he was 12 months old, we got him the vaccine—even though he wasn't susceptible to measles anymore. This way, he won't suffer from mumps or rubella, or spread them to anyone else."

DISEASES and the VACCINES that prevent them

Last updated December 2009

Measles Symptoms

Measles begins with an increasing fever, then coughing, runny nose, and watery eyes. Finally, a rash breaks out. The rash usually starts on the head and then spreads to the rest of the body. Fever can persist, reaching extremely high temperatures, rash can last for up to a week, and coughing can last about 10 days.

Measles Is Serious

According to Dr. Kathleen Gallagher of the Centers for Disease Control and Prevention (CDC), "Measles ranges from a pretty uncomfortable disease to a very serious one. For example, for every 1,000 children who get measles in a developed country like the U.S., one to three of them die, despite the best treatment. Even as recently as 2000 through 2007, one out of every four people in the U.S. who got measles had to be hospitalized." Many of these serious cases were young children.

People Exposed to Measles Who Have Not Been Vaccinated Almost Always Get Measles

Measles is one of the most contagious diseases known. Measles is a virus that mainly spreads by direct contact with airborne respiratory droplets. For example, if someone who is contagious coughs or sneezes near someone who is susceptible, the susceptible person is very likely to get measles. You can catch measles just by being in a room where a person with measles has been, even if the person is gone!

Vaccine Has Made Measles Rare in U.S., but Not Worldwide

Thanks to vaccination, the number of measles cases in the U.S. reached an all-time low of 37 in 2004. But worldwide, measles still causes around 200,000 deaths each year. There is no drug to cure measles. "It's critical to remember the global picture for any vaccine-preventable disease," says the World Health Organization's Dr. Peter Strebel. "More than ever, we live in a global society where travel is common. And even if you and your family don't travel, you can come into contact with travelers anywhere in your community from the grocery store to a sporting event."



VPD
risks

Measles, Mumps, and Rubella Vaccine

The measles, mumps, and rubella vaccine (MMR) is the best way to protect against getting measles. The risk of MMR causing a serious side effect is rare. Getting MMR is much safer than getting measles. In the U.S., the first dose of MMR is recommended at ages 12 through 15 months. The vaccine is less effective if it is given earlier than age 12 months, because the antibodies that a baby receives from mom may interfere with the process of making new antibodies after getting vaccine. A second dose is recommended at ages 4 through 6 years. 99% or more of children are protected against measles after they receive two doses of MMR.

All Reputable Studies Have Found No Link Between MMR and Autism

Some parents of children with autism believe the condition is linked to vaccination because their child's diagnosis of autism came after

their child got MMR. According to Dr. Anne Schuch CDC's immunization program, "As you sort out if the MMR vaccine for your child, you should consider the possibility of a link between MMR and autism. A study since 1998—beginning immediately when the correlation came up." Adds Dr. Schuch, "Large studies of children in the U.S., the United Kingdom, and Denmark found no link between MMR and autism. CDC and its partners support continuing research to find the causes of autism. I encourage parents who are concerned about autism to visit CDC's 'Learn the Signs, Act Fast' website at www.cdc.gov/ncbddd/autism/actfast/ to find out more about child development.

"Most importantly, parents should have questions about the MMR vaccine should talk to their child's doctor."

Measles Vaccine Saves Lives

According to the American Academy of Pediatrics' Dr. Joseph Bocchini, "It's true that most people in the U.S. who get measles recover totally. Most, but definitely not all. By the late 1950s, even before the vaccine was developed, improved healthcare and nutrition had reduced the risk of measles. But getting measles is always risky—measles can result in hospitalization, life-long disability, and death."

Measles vaccine was developed in the U.S. in the early 1960s. Right before the vaccine came out, there were about 3 to 4 million measles cases annually. About 48,000 people, most of them children, were hospitalized each year with complications such as encephalitis (brain swelling) or severe respiratory illness, and there were 400 to 500 deaths from complications. Most cases were in school-age children. Measles was, and remains, most risky for children under 5 years of age.

Measles Today

In 2008, there were 140 cases of measles reported in the U.S. According to CDC's Dr. Jane Seward, a longtime leader in CDC's group that monitors vaccine-preventable viral diseases, "That's more than any year since 1996. Eight states from coast to coast were involved in seven outbreaks."

Why so many cases? According to Dr. Seward, "Measles spreads among unvaccinated people: 92% of the people with measles had not been vaccinated or did not know if they had been vaccinated."

"Seeing so many people infected is frustrating," says CDC's Dr. Kathleen Gallagher. "So is the fact that measles sent 1.7 of these people to the hospital. I say that because in 2000, experts concluded that measles was not—and could not—circulate in the U.S. because of our high immunity thanks to vaccination."

So where do measles cases come from? According to Dr. Gallagher, "These days, measles comes into the U.S. from countries where the disease still circulates, including many European countries. Some measles cases in the U.S. in 2008 were among people who visited from other countries while infected, and some cases were in U.S. travelers who returned home with measles after trips abroad. Typically, the disease spreads in stages, first from a traveler to an unvaccinated person and then from that person to other unvaccinated people."

"The best thing we can all do," says Dr. Seward, "is to be vigilant about on-time vaccination for our children, so that the disease cannot spread from person to person."

For more information on vaccines, ask your child's healthcare provider or call 800-CDC-INFO (800-232-4636) www.cdc.gov/vaccines

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Vaccine
risks and
benefits

References

Parent-Targeted Materials

- Healthcare professionals requested more plain-language pieces for parents
- More basic overview of disease and vaccine
- Most have no story (or an abbreviated version)
- Clearly shows benefits and risks
- Available in Spanish and English

INFORMATION FOR PARENTS

| DISEASES and the VACCINES THAT PREVENT THEM |

Measles and the Vaccine (Shot) to Prevent It

Last updated July 2015

The best way to protect against measles is to get the measles-mumps-rubella shot (called the MMR shot). Doctors recommend that all children get the MMR shot.

Why should my child get the MMR shot?

The MMR shot:

- Protects your child from measles, a potentially serious disease (and also protects against mumps and rubella)
- Prevents your child from getting an uncomfortable rash and high fever from measles
- Keeps your child from missing school or childcare (and keeps you from missing work to care for your sick child)

Is the MMR shot safe?

Yes. The MMR shot is very safe, and it is effective at preventing measles (as well as mumps and rubella). Vaccines, like any medicine, can have side effects. But most children who get the MMR shot have no side effects.

What are the side effects?

Most children do not have any side effects from the shot. The side effects that do occur are usually very mild, such as a fever or rash. More serious side effects are rare. These may include high fever that could cause a seizure (in about 1 person out of every 3,000 who get the shot) and temporary pain and stiffness in joints (mostly in teens and adults).

Is there a link between the MMR shot and autism?

No. Scientists in the United States and other countries have carefully studied the MMR shot. None has found a link between autism and the MMR shot.

What is measles?

Measles is a serious respiratory disease (in the lungs and breathing tubes) that causes a rash and fever. It is very contagious. In rare cases, it can be deadly.

What are the symptoms of measles?

Measles starts with a fever that can get very high. Some of the other symptoms that may occur are:

- Cough, runny nose, and red eyes
- Rash of tiny, red spots that start at the head and spread to the rest of the body
- Diarrhea
- Ear infection



Doctors recommend that your child get 2 doses of the MMR shot for best protection. Your child will need one dose at each of the following ages:

- 12 through 15 months
- 4 through 6 years

Infants 6 months to 11 months old should have 1 dose of MMR shot before traveling abroad.



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TAKE AWAY MESSAGES

Take Away Messages

- **Parents fall along a spectrum; this is not usually an “either/or” decision**
- **Questions and concerns do not always equal lack of confidence; vaccinating is still the norm**
- **Doctors and nurses are the most important source of information, but we can’t ignore other social influences**
 - Reach parents where they are spending time – including online.
 - Grassroots education and partnerships are key
- **There is no quick fix message**

For more information please contact:

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**The findings and conclusions in this report are those of the authors
and do not necessarily represent the official position of the Centers
for Disease Control and Prevention.**