Michigan Department of Health & Human Services

Vaccine Conversations

Building Trust and Acceptance

Fall Immunization Conference 2023

Thank you to:

- Dr. Darr
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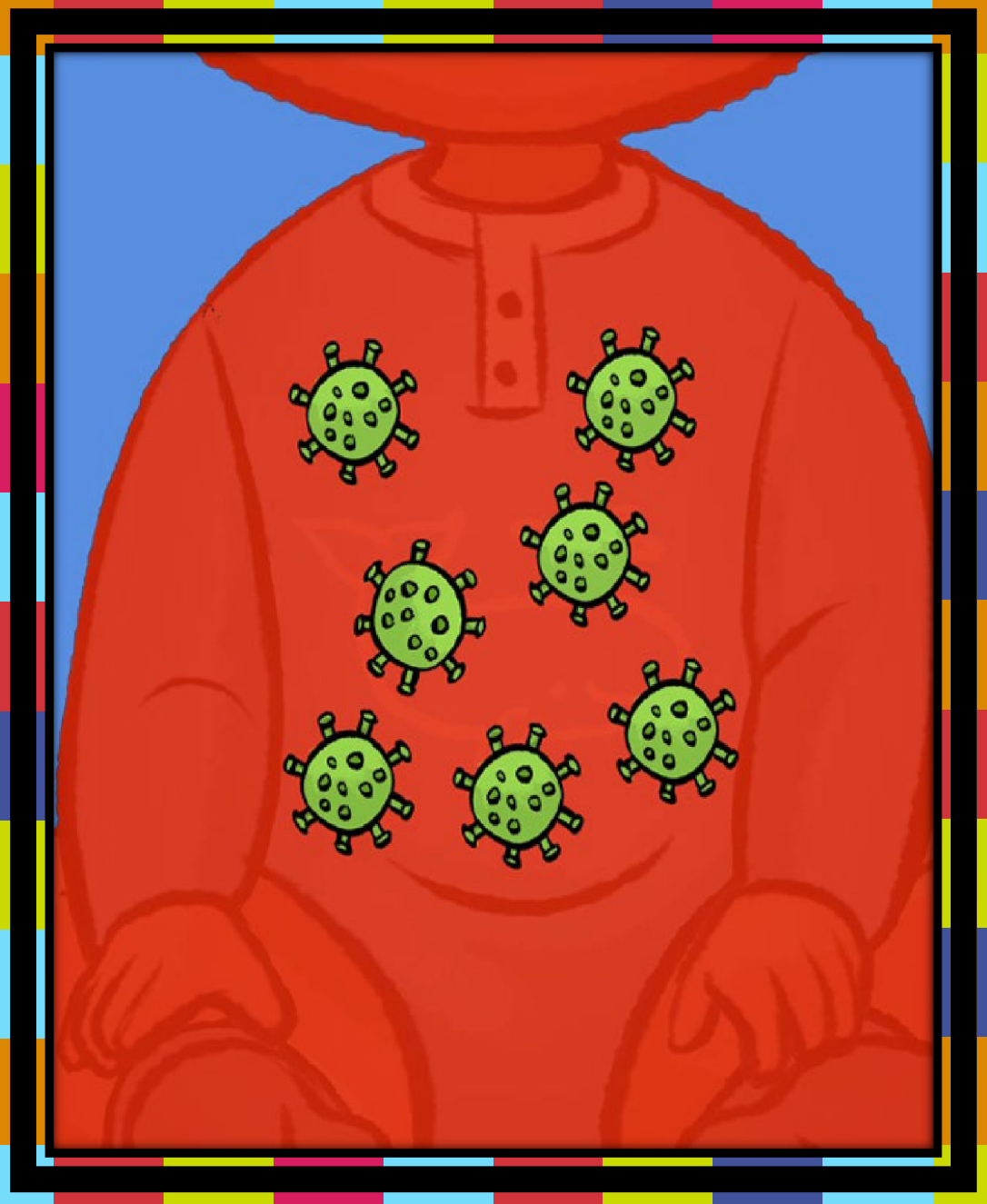


Too Many Shots!

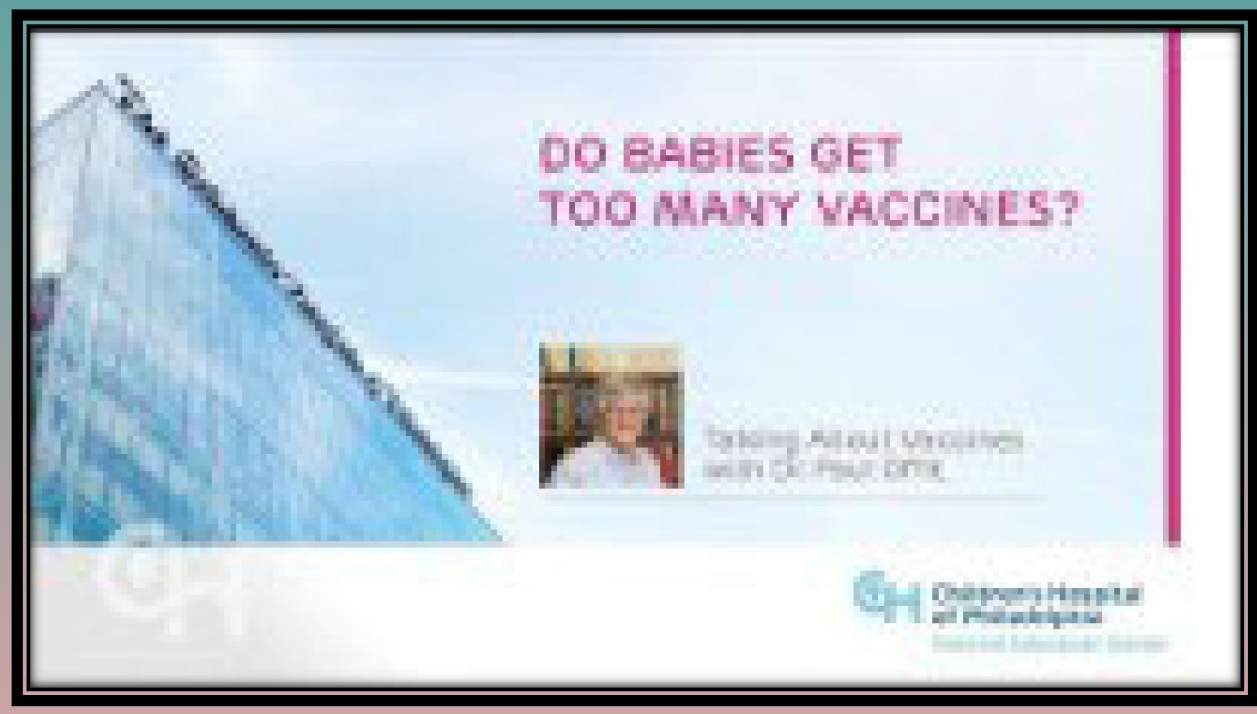
Does giving so many shots at one time confuse a child's immune system? Is this safe for my baby?

Are we overwhelming the immune system by giving too many vaccines?

MARK SAWYER, MD: You sometimes hear that maybe we give too many vaccines and that they actually overwhelm the immune system and there's no reason to think that that's really the case. For me, the best evidence for that is that after we give all those vaccines, children aren't more susceptible to getting infection. When your immune system is overwhelmed, you then get other infections because you can't fight them off. That doesn't happen in children after they've been vaccinated. Your immune system can handle many, many more vaccines than we actually give at one time.

PAUL A. OFFIT, MD: When a child is in the womb, they're in a sterile environment. When they enter the birth canal and the world, they're not. And very quickly they have living on the surface of their body trillions and trillions of bacteria to which they make an immune response. I mean, babies will make grams of immunoglobulins every day to try and meet the challenges in their environment. The food they eat isn't sterile; the dust they inhale isn't sterile. Let me put it to you this way: if the 14 different vaccines that we gave to children in the first few years of life were overwhelming their immune system, the species wouldn't survive given that, frankly, those vaccines are a drop in the ocean, a literal drop in the ocean, of what children typically encounter and manage every day.

Vaccinate Your Family



CHOP Video: Do Babies Get Too Many Vaccines?

Q&A TOO MANY VACCINES? WHAT YOU SHOULD KNOW

Volume 4
Winter 2018

Today, young children receive vaccines to protect them against 14 different diseases. Because some vaccines require more than one dose, children can receive as many as 27 inoculations by 2 years of age and five shots at one time. For this reason, some parents ask their doctors to space out, separate or withhold vaccines. The concern that too many vaccines might overwhelm a baby's immune system is understandable, but the evidence that they don't is reassuring.

Q. What are the active components in vaccines?
A. Vaccines contain parts of viruses or bacteria that induce protective immune responses. These active ingredients are called immunological components.

Vaccines that protect against bacterial diseases are made from either inactivated bacterial proteins (e.g., diphtheria, tetanus and pertussis [whooping cough]) or bacterial sugars called polysaccharides (e.g., *Haemophilus influenzae* type b [Hib] and pneumococcus). Each of these bacterial proteins or polysaccharides is considered an immunological component, meaning that each evokes a distinct immune response.

Vaccines that protect against viral diseases (e.g., measles, mumps, rubella, polio, rotavirus, hepatitis A, hepatitis B, chickenpox and influenza) are made of viral proteins. Just like bacterial proteins, viral proteins induce an immune response.

Q. Do children encounter more immunological components from vaccines today than they did 30 years ago?
A. No. Although children receive more vaccines now than ever before, most people would probably be surprised to learn that the number of immunological components in vaccines has dramatically decreased.

In the late 1980s and early 1990s, children received vaccines that protected against eight diseases: measles, mumps, rubella, diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b and polio. The total number of bacterial and viral proteins contained in these vaccines was a little more than 3,000.

Today, children receive vaccines that protect against 14 diseases, but the total number of immunological components in these vaccines is only about 150. This dramatic reduction is the result of scientific advances in protein chemistry and protein purification that have allowed for purer, safer vaccines.

Q. Can too many vaccines overwhelm an infant's immune system?
A. No. Compared with the immunological challenges that infants handle every day, the challenge from the immunological components in vaccines is minuscule. Babies begin dealing with immunological challenges at birth. The mother's womb is a sterile environment, free from viruses, bacteria, parasites and fungi. But after babies pass through the birth canal and enter the world, they are immediately colonized with trillions of bacteria, which means that they carry the bacteria on their bodies but aren't infected by them. These bacteria live on the skin, nose, throat and intestines. To make sure that colonizing bacteria don't invade the bloodstream and cause harm, babies constantly make antibodies against them.

Colonizing bacteria aren't the only issue. Because the food that we eat, the water that we drink and the dust that we inhale contain bacteria, immunological challenges from the environment are unending. Viruses are also a problem. In the first few years of life, children are constantly exposed to a variety of different viruses that cause runny noses, cough, congestion, fever, vomiting or diarrhea.

Given that infants are colonized with trillions of bacteria, that each bacterium contains between 2,000 and 6,000 immunological components, and that infants are infected with numerous viruses, the challenge from the 150 immunological components in vaccines is minuscule compared to what infants manage every day. Indeed, a scraped knee is probably a greater immunological challenge than all childhood vaccines combined.

continued »

Children's Hospital of Philadelphia®
Vaccine Education Center

Learn more: vaccine.chop.edu

CHOP: Too Many Vaccines

CDC Multiple Vaccines at Once

Multiple Vaccinations at Once

Print

Questions and Concerns

Early vaccination is important to prevent diseases

Vaccines are the best defense against infections that may have serious complications such as pneumonia, meningitis, cancer, and even death. CDC recommends vaccinations before the age of two years to protect children against 14 infectious diseases: measles, mumps, rubella (German measles), varicella (chickenpox), hepatitis A, hepatitis B, diphtheria, tetanus, pertussis (whooping cough), *Haemophilus influenzae* Type b (Hib), polio, influenza (flu), rotavirus, and pneumococcal disease.

Children are given shots (vaccines) at a young age because this is when they are at highest risk of getting sick or dying if they get these diseases. Newborn babies are immune to some diseases because they have antibodies they get from their mothers, usually before they are born. However, this immunity lasts a few months. Most babies do not get protective antibodies against diphtheria, whooping cough, polio, tetanus, hepatitis B, or Hib from their mothers. This is why it's important to vaccinate a child before she or he is exposed to a disease.

Vaccines contain weakened or killed versions of the germs that cause a disease. These elements of vaccines, and other molecules and micro-organisms that stimulate the immune system, are called "antigens." Babies are exposed to thousands of germs and other antigens in the environment from the time they are born. When a baby is born, his or her immune system is ready to respond to the many antigens in the environment and the selected antigens in vaccines.

Different childhood vaccines can be given at the same time.

Many vaccines are recommended early in life to protect young children from dangerous infectious diseases. In order to reduce the number of shots a child receives in a doctor's visit, some vaccines are offered as combination vaccines. A combination vaccine is two or more different vaccines that have been combined into a single shot. Combination vaccines have been in use in the United States since the mid-1940s. Examples of combination vaccines are: DTaP (diphtheria-tetanus-pertussis), trivalent IPV (three strains of inactivated polio vaccine), MMR (measles-mumps-rubella), DTaP-Hib, and Hib-Hep B.

Often, more than one shot will be given during the same doctor's visit, usually in separate limbs (e.g. one in each arm). For example, a baby might get DTaP in one arm or leg and IPV in another arm or leg during the same visit.

Giving a child several vaccines during the same visit offers two advantages.

First, children should be given their vaccines as quickly as possible to give them protection during the vulnerable early months of their lives. Second, giving several shots at the same time means fewer office visits. This saves parents time and money, and can be less traumatic for the child.

Getting multiple vaccines at the same time has been shown to be safe.

Isn’t natural immunity better?

Vaccine Safety: Immune System and Health

Some concerns about vaccine safety relate to how vaccines interact with the immune system (e.g., too many vaccines) or even how the immune system functions in different situations (e.g., natural infection versus immunization). While it is fair to consider these concerns, it is important to understand them in the context of how the immune system works.

On this page

More information about the following can be found on this page:

- Natural infection versus immunization
  - Is natural infection better than immunization? (Includes list of vaccines that cause greater immune responses than natural infection)
  - Are vaccines natural?
  - Are nosodes viable alternatives to vaccination?
- Impact of vaccines on the immune system
  - Do vaccines overwhelm the immune system? ("Too many vaccines?")
  - Number of immunogenic proteins in vaccines (Includes infographic)
  - Do vaccines weaken the immune system?
  - Can sick children receive vaccines?
  - Are children too young to receive vaccines?
  - Can children manage so many vaccines?
- Vaccine viruses: Impact on other people's immune systems
  - Viral shedding after receipt of live viral vaccines
- References

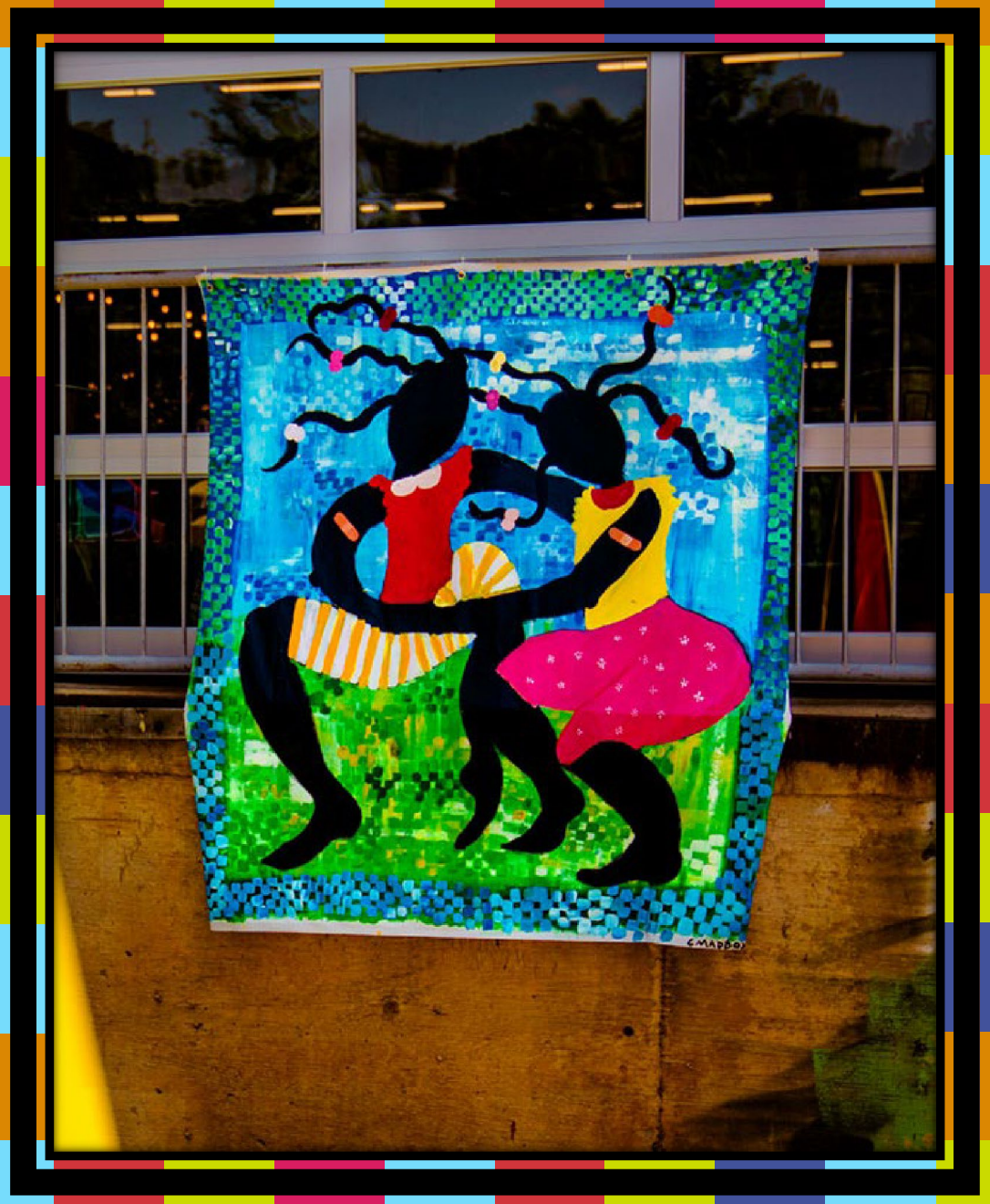
For more information about the immune system and how it works, visit the website section

CHOP Video: Is natural infection better than vaccination?

CHOP: Vaccine Safety: Immune System and Health

Vaccinate Your Family Video: Natural vs. Vaccine Immunity: Which Is Better?

CDC: Infographic



I heard that vaccines could cause autism. Is that something I should be worried about?

Vaccines and Autism

The Wakefield studies

Two studies have been cited by those claiming that the MMR vaccine causes autism. Both studies are critically flawed.

First study

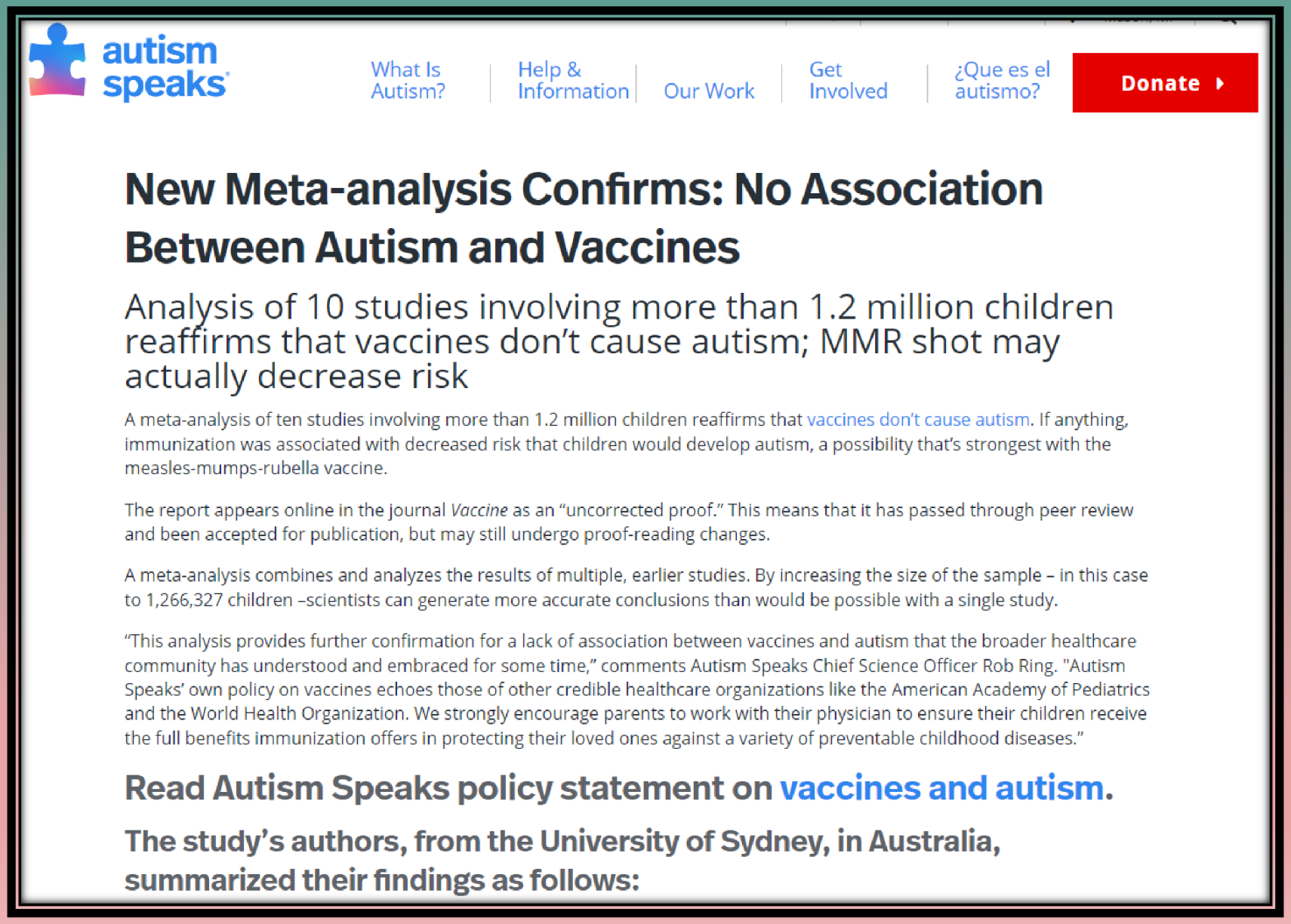
In 1998, Andrew Wakefield and colleagues published a paper in the journal *Lancet*. Wakefield's hypothesis was that the measles, mumps and rubella (MMR) vaccine caused a series of events that include intestinal inflammation, entrance into the bloodstream of proteins harmful to the brain, and consequent development of autism. In support of his hypothesis, Dr. Wakefield described 12 children with developmental delay — eight had autism. All of these children had intestinal complaints and developed autism within one month of receiving MMR.

The Wakefield paper published in 1998 was flawed for two reasons:

1. About 90% of children in England received MMR at the time this paper was written. Because MMR is administered at a time when many children are diagnosed with autism, it would be expected that most children with autism would have received an MMR vaccine, and that many would have received the vaccine recently. The observation that some children with autism recently received MMR is, therefore, expected. However, determination of whether MMR causes autism is best made by studying the incidence of autism in **both** vaccinated and unvaccinated children. This wasn't done.
2. Although the authors claim that autism is a consequence of intestinal inflammation, intestinal symptoms were observed **after**, not before, symptoms of autism in all eight cases.

CHOP Video: Do Vaccines Cause Autism?

CHOP: Vaccines and Autism



Autism Speaks: No Association Between Autism and Vaccines

MMR Vaccine Does Not Cause Autism

Examine the evidence!

Scientific evidence confirms that MMR and autism are unrelated. The question about a possible link between MMR vaccine and autism has been extensively reviewed by independent groups of experts in the United States, including the National Academy of Sciences' Institute of Medicine (now named the National Academy of Medicine). These reviews have concluded that the epidemiologic evidence shows that MMR vaccine does not cause autism.

Rumors about the safety of MMR vaccine arose in 1998 after a British physician (a gastroenterologist, not trained in vaccine sciences or neurology) claimed he had found virus from measles vaccines lingering in the intestines of 12 autistic children. He believed this accounted for their autism.

Other researchers, however, were never able to replicate these results, implying the gastroenterologist's conclusions were wrong. Later, an investigation revealed that this doctor had falsified patient data and relied on laboratory reports that he had been warned were incorrect. The journal that originally published his study took the unusual step of retracting it from the scientific literature because it was the product of dishonest and irresponsible research. British authorities revoked the doctor's license to practice medicine.

RETRACTED: Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children. Wakefield AJ et al. Lancet 1998; 351(9103):637–41. Subjects: 12 children with chronic enterocolitis and regressive developmental disorder.

"A Statement by the Editors of the Lancet," Lancet 2010; 363(9411):820–1, **The editors fully retract this paper from the published record:** www.thelancet.com/journals/lancet/article/PIIS0140673697110960/fulltext

The following list of articles published in peer-reviewed journals is provided so that parents and practitioners can themselves compare the balance of evidence about MMR vaccine and autism.

More than 25 articles refute a connection between MMR vaccine and the development of autism

1. ***Measles, Mumps, Rubella Vaccination and Autism – A Nationwide Cohort Study.*** Hviid A et al. Ann Intern Med 2019; 170(8):513–520. This nationwide cohort study included all 657,461 children born 1/1999–12/2010 in Denmark. With this many study participants, the researchers were able to look at vaccinated vs not vaccinated children, including 6,517 children with a diagnosis of autism.
   CONCLUSION: The findings strongly support that MMR vaccination does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination.
   LINK: www.ncbi.nlm.nih.gov/pubmed/30831578
2. ***The MMR Vaccine and Autism.*** DeStefano F., Shimabukuro TT. Annu Rev Virol. 2019;6:585–600.
   CONCLUSION: Several epidemiologic studies have not found an association between MMR vaccination and autism, including a study that found that MMR vaccine was not associated with an increased risk of autism even among high-risk children whose older siblings had autism.
   LINK: pubmed.ncbi.nlm.nih.gov/30986133/
3. ***Early Exposure to the Combined Measles-Mumps-Rubella Vaccine and Thimerosal-containing Vaccines and Risk of Autism Spectrum Disorder.*** Uno Y et al. Vaccine 2015;33(21):2511–6. This case-control study investigated the relationship between the risk of Autism Spectrum Disorder (ASD) onset, and early exposure to MMR vaccine and thimerosal measured from vaccinations in the highly genetically homogenous Japanese population.
   CONCLUSION: No convincing evidence was found in this study that MMR vaccination and increasing thimerosal dose were associated with an increased risk of ASD onset.
   LINK: www.ncbi.nlm.nih.gov/pubmed/25562790
4. ***Autism Occurrence by MMR Vaccine Status among US Children with Older Siblings with and without Autism.*** Jain A et al. JAMA 2015;313(15):1534–40. The objective of this study was to investigate Autism Spectrum Disorder (ASD) occurrence by MMR vaccine status in a large sample of US children who have older siblings with and without ASD.
   CONCLUSION: In this large sample of privately insured children with older siblings, receipt of the MMR vaccine was not associated with increased risk of ASD, regardless of whether older siblings had ASD. These findings indicate no harmful association between MMR vaccine receipt and ASD even among children already at higher risk for ASD.
   LINK: www.ncbi.nlm.nih.gov/pubmed/25898051
5. ***Vaccines Are Not Associated with Autism: An Evidence-based Meta-analysis of Case-control and Cohort Studies.*** Taylor LE et al. Vaccine 2014;32(29):3623–9. A meta-analysis to summarize

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Immunize.org
FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org
www.immunize.org/catg.d/p4026.pdf
Item #P4026 (5/22/2023)
Scan for PDF

MMR Vaccine Does Not Cause Autism: Immunize.org

Autism and Vaccines

Vaccines and Autism: CDC

Print

Questions and Concerns

Autism spectrum disorder (ASD)is a developmental disability that can cause significant social, communication, and behavioral challenges. Recent estimates from CDC's Autism and Developmental Disabilities Monitoring Network found that about 1 in 44 children have been identified with ASD in communities across the United States. CDC is committed to providing essential data on ASD, searching for causes of and factors that increase the risk for ASD, and developing resources that help identify children with ASD as early as possible.

Vaccines do not cause autism.

Some people have had concerns that ASD might be linked to the vaccines children receive, but studies have shown that there is no link between receiving vaccines and developing ASD. The National Academy of Medicine, formerly known as Institute of Medicine, reviewed the safety of 8 vaccines to children and adults. The review found that with rare exceptions, these vaccines are very safe.

Source: Adverse Effects of Vaccines: Evidence and Causality [Institute of Medicine. 2012]

A CDC study published in 2013 added to the research showing that vaccines do not cause ASD. The study focused on the number of antigens given during the first two years of life. Antigens are substances in vaccines that cause the body's immune system to produce disease-fighting antibodies. The results showed that the total amount of antigen from vaccines received was the same between children with ASD and those that did not have ASD.

Source: Increasing exposure to antibody-stimulating proteins and polysaccharides in vaccines is not associated with risk of autism [*J Pediatr.* 2013]

Vaccine ingredients do not cause autism.

One vaccine ingredient that has been studied specifically is thimerosal. Thimerosal is a mercury-based preservative used to prevent germs (like bacteria and fungi) from contaminating multidose vials of vaccines. Research shows that thimerosal does not cause ASD. In fact, a 2004 scientific review by the IOM concluded that "the evidence favors rejection of a causal relationship between thimerosal-containing vaccines and autism."

Source: Immunization Safety Review: Vaccines and Autism [The National Academies Press. 2004]

Since 2003, there have been nine CDC-funded or conducted studies that have found no link between thimerosal-containing vaccines and ASD. These studies also found no link between the measles, mumps, and rubella (MMR) vaccine and ASD in children. Learn more about the CDC Studies on Thimerosal in Vaccines [PDF – 2 pages].

Even before studies showed that thimerosal was not harmful, there was a national effort to reduce all types of mercury exposures in children. As precaution, thimerosal was removed or reduced to trace amounts in all childhood vaccines between 1999 and 2001. Currently, the only type of vaccine that contain thimerosal are flu vaccines packaged in multidose vials. There are thimerosal-free alternatives available for flu vaccine. For more information, see the Timeline for Thimerosal in Vaccines.

VACCINE FAQ

Do Vaccines Cause Autism?

Vaccine FAQ

Do Vaccines Cause Autism?

Have I Been Vaccinated?

Top 20 Questions About Vaccination

Vaccination Exemptions

Vaccine Side Effects and Adverse Events

Vaccines for Children

Vaccines for Adults

Autism rates in developing countries have risen remarkably in the past 20 years. According to the Centers for Disease Control and Prevention (CDC), about 1 in 150 children born in 1992 would be diagnosed with **autism spectrum disorder** (ASD). For children born in 2004, about 1 in 68 children would receive an ASD diagnosis.[1] For children born in 2010, **the prevalence was 1 in 44**. It is difficult to compare autism rates from the 1990s and later with rates from the 1940s through the 1980s, because, in earlier years, autism was associated primarily with severely affected individuals, and the rate of autism was estimated to be only about 1 in 10,000.[2] Beginning in the 1990s, our understanding of how autism presents has expanded greatly, and now individuals who would likely previously not have been thought of as autistic could be diagnosed with one of various ASDs.[3]

Whether the high rates of autism today are due to increased diagnosis and reporting, changing definitions of autism, or an actual increase in development of ASD is unknown.[4],[5] Regardless, researchers and worried parents alike have speculated about causes of autism, and the issue has been widely studied. The role of vaccines has been questioned, along with other possible risk factors for ASD, such as genetic predisposition, advanced parental age, and other environmental factors. Vaccines have perhaps received more scrutiny than any other speculated cause of ASD, and most scientists, physicians, and public health researchers have come to the conclusion that there is no association between vaccines and autism.[6] Some, however, still question whether vaccines play a role in ASD development. And so, public health and medical establishments continue to address these concerns.

Evidence Shows Vaccines Unrelated to Autism

Erroneous claims that vaccines cause autism have led some parents to delay or refuse vaccines for their children. Some of the claims are that autism is caused by measles-mumps-rubella (MMR) vaccine, vaccines that contain thimerosal, or by too many vaccines. Many studies have been done to test these claims. None has shown that vaccines cause autism. The real causes of autism are not fully known, but the past decade of research supports the role of genetics in an autism diagnosis. In fact, no scientific question into the causes of autism has been better researched, tested, and examined as the role of vaccines in autism. Volumes of evidence show no link between the two.
This sheet lays out the facts to help parents understand why experts do not think vaccines cause autism.

Medical and legal authorities agree that no evidence exists that vaccines cause autism.

The Institute of Medicine is an impartial group of the world's leading experts that advises Congress on science issues. After reviewing more than 200 studies in 2004 and more than 1,000 studies in 2011, their report strongly stated that the evidence did not show a link between vaccines and autism.

In 2014, researchers from the RAND Corporation published an update to the 2011 Institute of Medicine's report. In a systematic review of the evidence published on vaccine safety to date, they found the evidence was strong that MMR vaccine is not associated with autism.

In 2009, the U.S. federal court reviewed 939 medical articles in their hearings. The court found the evidence was "overwhelmingly contrary" to the theory that autism is linked to MMR vaccine, thimerosal, or a combination of the two. Since then, additional scientific evidence adds evidence to the conclusion that neither vaccines, nor the thimerosal in vaccines, was linked to autism.

Based on the research, the World Health Organization, the European Medicines Agency, Health Canada, and other national and international health groups have concluded that no link can be found between vaccines and autism.

REFERENCES

Institute of Medicine. *Adverse Effects of Vaccines: Evidence and Causality*. National Academies Press. 2011. www.ncbi.nlm.nih.gov/books/NBK190024/

Institute of Medicine. *Immunization Safety Review: Vaccines and Autism*. National Academies Press. 2004. www.ncbi.nlm.nih.gov/pubmed/20669467

Maglione MA, Das L, Raaen L, et al. Safety of Vaccines Used for Routine Immunization of U.S. Children: A Systematic Review. Pediatrics. 2014; 134(2):325–337. https://pediatrics.aappublications.org/content/134/2/325

AUTISM SCIENCE FOUNDATION
autismsciencefoundation.org

Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

The causes of autism are not fully understood, but the evidence does not point toward vaccines.

Parents often first notice the behaviors of autism when their child is 18–24 months old — the age by which most childhood vaccines have been given. Because of this, many parents incorrectly associate vaccination with the onset of autism. Developmental specialists, however, can identify early signs of autism in children when they are much younger. This research supports the scientific consensus that, in most cases, the precursors of autism are present before a child is born. Eric Courchesne and his colleagues at the University of California, San Diego, have confirmed that the brains of children with autism have distinct patches of architectural disorganization in their prefrontal and temporal cortical tissue. Because the organization of the cortex begins in the second trimester of pregnancy, the researchers conclude that the events leading to the malformation of the cortex must begin around this time or earlier, certainly well before a child is born or ever receives a vaccine.

The influence of vaccines on a child cannot explain the measurable differences in brain structure and brain function that exist between autistic and non-autistic children. Starting in the first six months of life, many autistic children experience unusually rapid growth in areas of the brain that are responsible for the skills typically impaired in autism. Researchers have used "functional" MRI scans to study the connections of nerve cells within the brains of autistic individuals. These scans show — in very young autistic infants and toddlers — abnormal connections in areas of the brain that control language, social, and emotional processes, suggesting that these abnormalities contribute to the development of autism. The results of these and other studies provide promising clues for future research on the causes of autism and emphasize that finding its causes will not be as simple as pointing to vaccines as the cause.

What is known with great certainty is that genetics play a major role in determining whether a child will be autistic. The study of twins bears this out. Identical twins have 100% of

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www.immunize.org/catg.d/p4028.pdf
Item #P4028 (6/19/2023)

Video: Autism Society Vaccine Education Initiative

Evidence Shows Vaccines Unrelated to Autism: Immunize.org

Why should my child get COVID-19 vaccine? I heard kids don't get sick from it.

Recent news from the American Academy of Pediatrics 09.19.2023

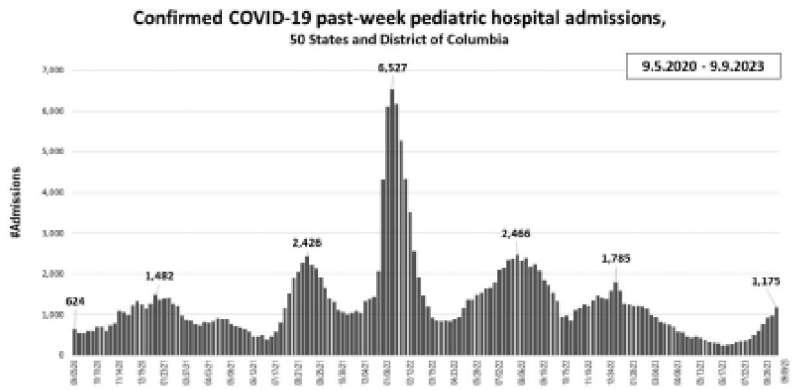
COVID-19 hospital admissions among children rising again

September 19, 2023
from AAP Research
Article type: News
Topics: COVID-19, Infectious Diseases, Vaccine/Immunization

Editor's note: *For the latest news on COVID-19, visit http://bit.ly/AAPNewsCOVID19.*

In the past three months, the number of children with confirmed COVID-19 at hospital admission has risen consistently, with children under 5 years at highest risk. These findings come from an AAP analysis of data gathered by the U.S. Department of Health and Human Services (HHS).

Recent analysis of the data shows the number of children under age 18 with confirmed COVID-19 at hospital admission increased nearly five-fold from 237 new admissions the week ending June 17 to 1,175 in the week ending Sept. 9 (see Figure 1). June had the lowest level of pediatric COVID-19 hospital admissions since data collection began in 2020.



Source: AAP analysis of COVID-19 pediatric admissions based on the "COVID-19 Reported Patient Impact and Hospital Capacity by State Timeseries" published by the U.S. Department of Health & Human Services

[AAP News: COVID-19 hospital admissions among children rising again]

2023-2024 COVID-19 vaccine is recommended for ages *6 months and up!*

Both the Pfizer and Moderna 2023-2024 updated COVID-19 vaccines are authorized for children 6 months and older. For more information on the COVID-19 vaccine talk to your health care provider.

Many providers across Michigan can administer the updated COVID-19 vaccine, including:

1. Family physicians and pediatricians
2. Local health departments
3. Federally qualified health centers
4. Some pharmacies (ages 3+)

You can also visit Vaccines.gov to find a vaccine.

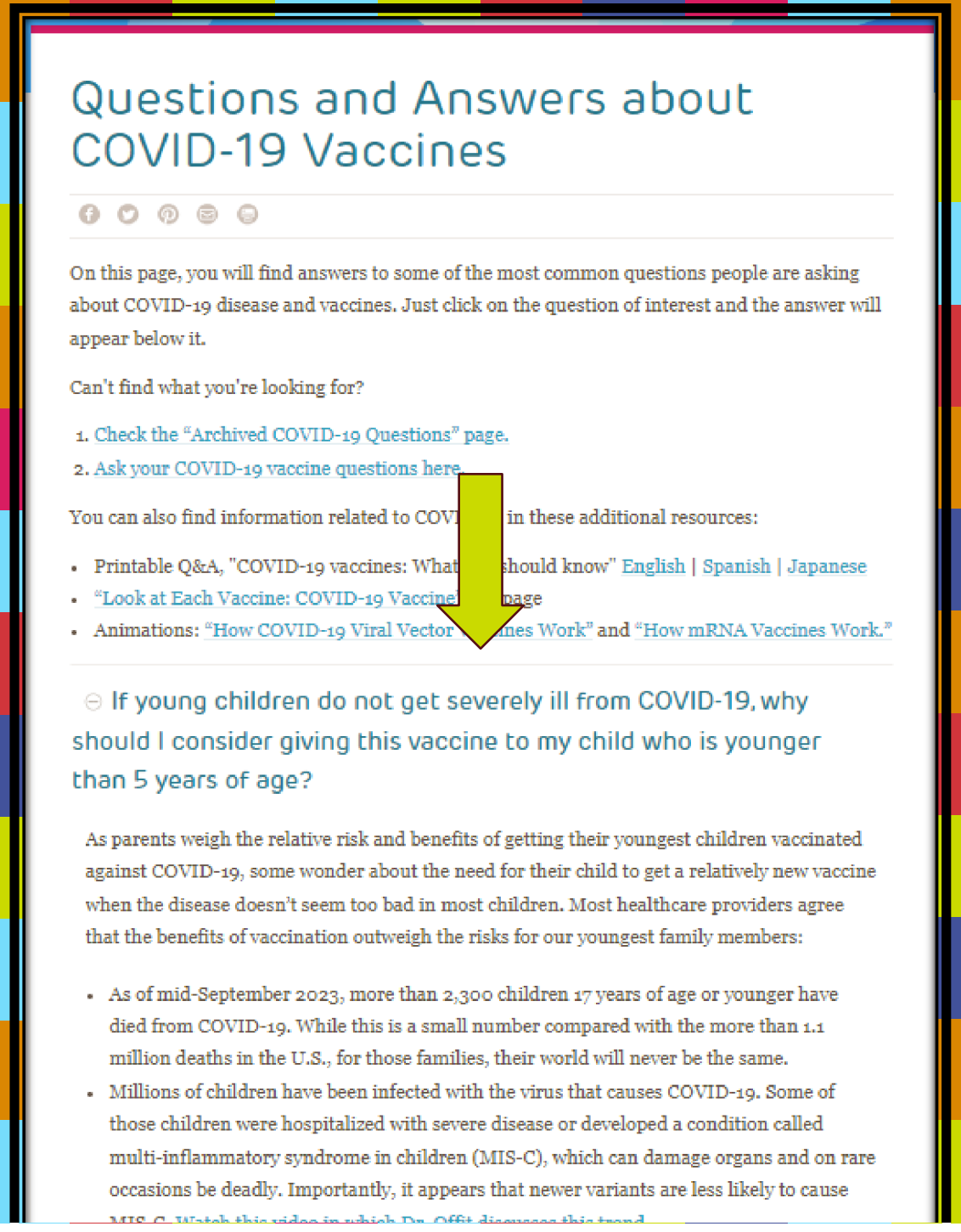
MDHHS Michigan Department of Health & Human Services

For more information, visit Michigan.gov/KidsCOVIDvaccine.

Kids COVID Vaccine

WE CAN DO THIS!

HHS: Why Your Child Needs to Stay Up to Date With Their COVID Vaccine



Questions and Answers about COVID-19 Vaccines

On this page, you will find answers to some of the most common questions people are asking about COVID-19 disease and vaccines. Just click on the question of interest and the answer will appear below it.

Can't find what you're looking for?

1. Check the "Archived COVID-19 Questions" page.
2. Ask your COVID-19 vaccine questions here.

You can also find information related to COVI in these additional resources:

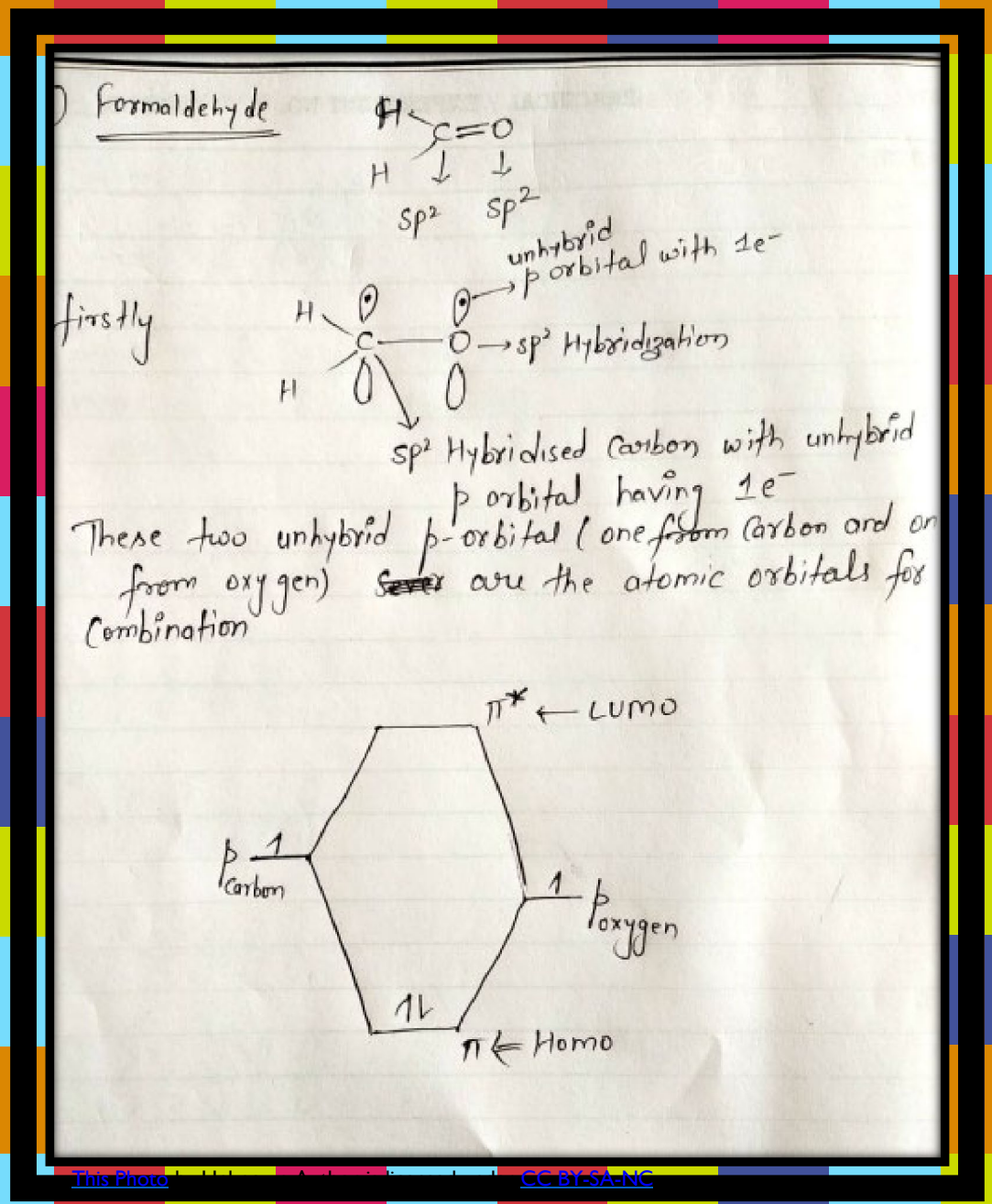
- Printable Q&A, "COVID-19 vaccines: What should know" English | Spanish | Japanese
- "Look at Each Vaccine: COVID-19 Vaccine page
- Animations: "How COVID-19 Viral Vector ines Work" and "How mRNA Vaccines Work."

If young children do not get severely ill from COVID-19, why should I consider giving this vaccine to my child who is younger than 5 years of age?

As parents weigh the relative risk and benefits of getting their youngest children vaccinated against COVID-19, some wonder about the need for their child to get a relatively new vaccine when the disease doesn't seem too bad in most children. Most healthcare providers agree that the benefits of vaccination outweigh the risks for our youngest family members:

- As of mid-September 2023, more than 2,300 children 17 years of age or younger have died from COVID-19. While this is a small number compared with the more than 1.1 million deaths in the U.S., for those families, their world will never be the same.
- Millions of children have been infected with the virus that causes COVID-19. Some of those children were hospitalized with severe disease or developed a condition called multi-inflammatory syndrome in children (MIS-C), which can damage organs and on rare occasions be deadly. Importantly, it appears that newer variants are less likely to cause MIS-C. Watch this video in which Dr. Offit discusses this trend.

CHOP: Questions and Answers about COVID-19 Vaccines



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Why do they put ingredients like aluminum, formaldehyde, and mercury in vaccines?

Vaccine Ingredients

Antigens

Antigens can be considered the active ingredients in vaccines because they are the parts of the vaccine to which an immune response is generated. Most often these components are whole viruses or bacteria, parts of the viruses or bacteria, or products made by bacteria, called toxins. Some vaccines against COVID-19 also use nucleic acids. Learn more about how vaccines are made.

Adjuvants

Stabilizers

Preservatives

Manufacturing byproducts

CDC's Pink Book - Vaccine Ingredients

References

Reviewed by Paul A. Offit, MD on July 18, 2023

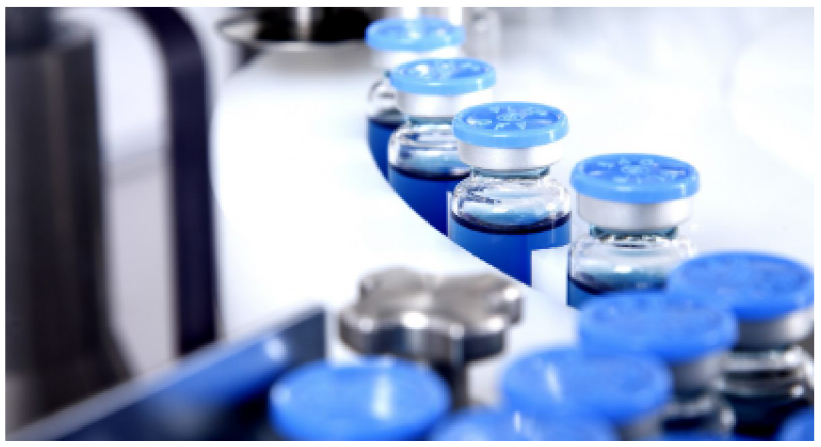
CHOP Vaccine Ingredients

What's in Vaccines?

Español (Spanish) | Print

CDC What's in Vaccines?

Today's vaccines use only the ingredients they need to be as safe and effective as possible.



On This Page

Every ingredient serves a purpose

Ingredients found in some vaccines

Ingredients in specific vaccines

Every vaccine ingredient serves a purpose

To provide immunity
We become immune to (or protected from) a disease when our bodies create specific antibodies to fight that disease. Vaccines contain ingredients that help your body build this immunity.

To keep the vaccine safe and long-lasting
Vaccines need to be safe and effective. Certain ingredients help keep vaccines safe from contamination and toxins. Others, like stabilizers, help vaccines stay effective for a long time.

To make the vaccine more effective
All vaccine ingredients help to make a vaccine as effective as possible, while being safe. Ingredients like aluminum salt help boost the body's response to the vaccine.

Q&A VACCINE INGREDIENTS: WHAT YOU SHOULD KNOW

Volume 6
Summer 2023

Some parents are concerned about ingredients in vaccines, such as aluminum, mercury, gelatin and antibiotics. Parents can be reassured by two facts. First, the quantities of each ingredient are minimal. Second, only necessary ingredients are used, and any ingredients present are tested as part of the vaccine during safety studies. This sheet describes some of the ingredients used in vaccines and why they are necessary.

Q. Why is aluminum in vaccines?

A. Aluminum is used in vaccines as an *adjuvant*. Adjuvants enhance the immune response by allowing for lesser quantities of active ingredients and, in some cases, fewer doses. Until recently, aluminum salts were the only class of adjuvants approved for use in the United States.

Aluminum

Aluminum salts have been used as adjuvants in vaccines in the United States since the 1930s. Some people wonder whether aluminum in vaccines is harmful — the facts are reassuring.

First, vaccines are not the only way we are exposed to aluminum. It is present in our environment — in the air we breathe, the water we drink, and the food we eat.

Second, the quantity of aluminum in vaccines is small. For example, in the first six months of life, babies receive about 4 milligrams* of aluminum if they get all of the recommended vaccines. However, during this same period, they will consume about 10 milligrams of aluminum if they are breastfed, 40 milligrams if they are fed regular infant formula, and up to 120 milligrams if they are fed soy-based infant formula. Even though the amounts of aluminum in a baby's food are larger than those from vaccines, these quantities are all very small and, therefore, safe.

Some people wonder about the difference between aluminum injected in vaccines versus aluminum consumed in food. Typically, infants have between 1 and 5 nanograms (billionths of a gram) of aluminum in each milliliter of blood. Researchers have shown that after vaccines are injected, the quantity of aluminum detectable in an infant's blood does not change and that when we are exposed to aluminum, about half is eliminated from the body within one day. In fact, aluminum causes harm only when kidneys are not functioning properly, or at all (so aluminum cannot be effectively eliminated), AND large quantities of aluminum, such as those in antacids, are administered.

Other adjuvants

Monophosphoryl lipid A
Monophosphoryl lipid A was isolated from the surface of bacteria and detoxified so that it cannot cause harm. This adjuvant has been tested for safety in tens of thousands of people and was approved for use in the United States in 2009.

QS21
This soap-based molecule was isolated from the bark of *Quillaja saponaria* trees.

MF59
This substance is a mix of an oil, called squalene, and water. Squalene is found in people, animals and plants.

CpG
This substance is a mix of two nucleic acids that make up DNA, known as cytosine and guanine.

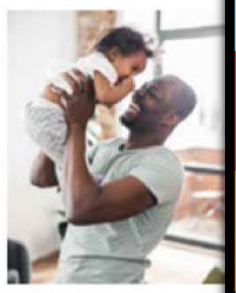
**A milligram is one-thousandth of a gram, and a gram is the weight of about one raisin.*

Q. Why is formaldehyde in vaccines?

A. Formaldehyde is a byproduct of vaccine production. Formaldehyde is used during the manufacture of some vaccines to inactivate viruses (like polio and hepatitis A viruses) or bacterial toxins (like diphtheria and tetanus toxins). While most formaldehyde is purified away, small quantities remain.

Because formaldehyde is associated with the preservation of dead bodies, its presence in vaccines seems inappropriate. However, it is important to realize that formaldehyde is also a byproduct of protein and DNA synthesis, so it is commonly found in the bloodstream. The quantity of formaldehyde found in blood is 10 times greater than that found in any vaccine.

Q. Why is gelatin in vaccines?



A. Gelatin is used in some vaccines as a *stabilizer*. Stabilizers are added to vaccines to protect the active ingredients from degrading during manufacture, transport and storage. Gelatin, which is made from the skin or hooves of pigs, is concerning because some people (about 1 of every 2 million) might have a severe allergic reaction to it.

Also, because religious groups, such as Jews, Muslims and Seventh Day Adventists, follow dietary rules that prohibit pig products, some parents are concerned about using vaccines that contain gelatin. However, all religious groups have approved the use of gelatin-containing vaccines for their followers for several reasons. First, vaccines are injected, not consumed (except the rotavirus vaccine, which does not contain gelatin). Second, gelatin in vaccines has been highly purified and hydrolyzed (broken down by water), so it is much smaller than that found in nature; therefore, religious leaders believe it to be different enough that it does not break the religious dietary laws. Finally, leaders from these religious groups believe that the benefits of receiving vaccines outweigh adherence to religious dietary laws.

Q. Why is mercury in vaccines?

A. Mercury is contained in some multi-dose preparations of influenza vaccine as a *preservative*. Preservatives prevent contamination with bacteria. Early in the 20th century, most vaccines were packaged in vials that contained multiple doses. Doctors and nurses would draw up a single dose and place the remaining vaccine back in the refrigerator. Unfortunately, sometimes bacteria would inadvertently enter the vial, contaminating the remaining doses of vaccine. When another patient received vaccine from that vial, they might also be injected with the contaminant, occasionally causing abscesses at the site of injection or bloodstream infections that could be fatal. Preservatives, originally added in the 1930s, solved this problem.

The most common preservative used was thimerosal, a mercury-containing compound. As more vaccines were given, children received greater quantities of thimerosal. By the late 1990s, the American Academy of Pediatrics and the Public Health Service requested that mercury be removed from vaccines to make "safe vaccines safer." No evidence existed to suggest that thimerosal was causing harm, but they wanted to be cautious. Unfortunately, their caution worried parents who wondered whether mercury in vaccines was causing subtle signs of mercury poisoning or autism. Addressing these concerns, scientists performed several studies, all of which showed that thimerosal at the level contained in vaccines hadn't caused harm. Today, the only routinely recommended childhood vaccine that contains thimerosal is some preparations of influenza vaccine.

Because mercury is a naturally occurring element found in the earth's crust, air, soil and water, we are all exposed to it regardless of whether it is contained in vaccines. In fact, infants who are exclusively breastfed consume more than twice the quantity of mercury than was previously contained in vaccines. Today, breastfed infants consume 15 times more mercury in breast milk than is contained in the influenza vaccine.

continued ›

Children's Hospital of Philadelphia
Vaccine Education Center

Learn more: vaccine.chop.edu

[CHOP Vaccine Ingredients: What You Should Know]

[CHOP Video: Is the Aluminum in Vaccines Safe?]

Why is HPV vaccine given at such a young age?

Technically Speaking: Why HPV Vaccination Before Age 11 Years Is a Good Idea

Published on Jan 26, 2023

Vaccine Update for Healthcare Providers

In the United States, vaccination recommendations for children and adolescents are developed through collaboration of two groups of experts: the American Academy of Pediatrics (AAP) Committee on Infectious Diseases (COID) and the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP). While the recommendations are usually "harmonized," meaning the same or nearly so, the recommendations about human papillomavirus (HPV) vaccine differ in an important way.

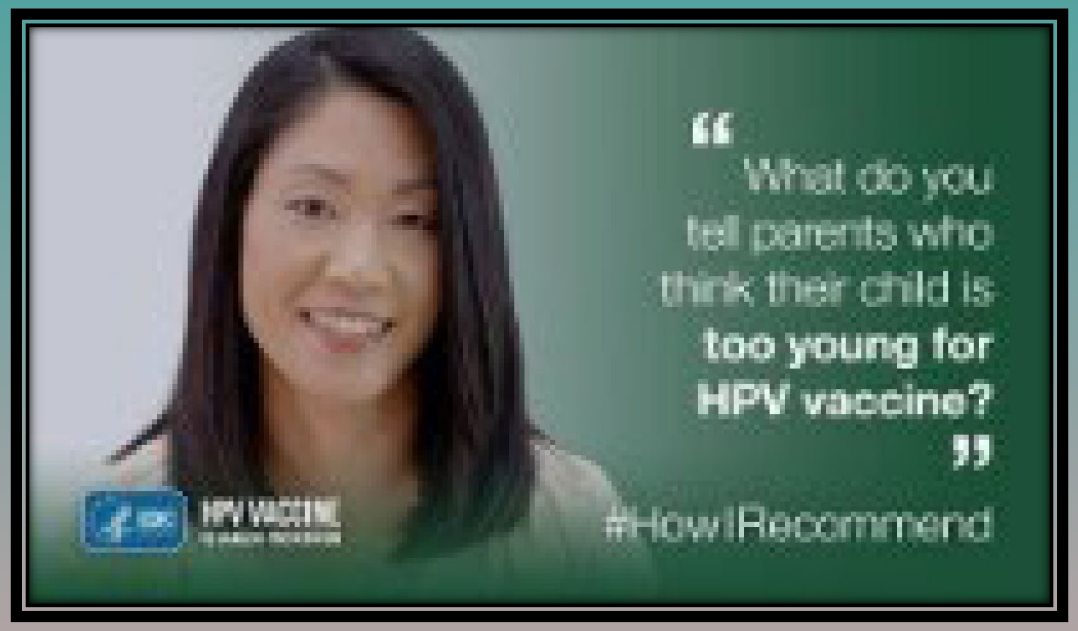
During this Cervical Health Awareness Month, we asked Dr. Sean O'Leary, Chair of AAP's COID, to explain the "what" and "why" related to this recommendation difference.

For HPV vaccination, in what way is the ACIP recommendation different from that of AAP?

In short, AAP emphasizes series initiation at an earlier age, as the 2018-2021 AAP *Red Book* first spelled out:

> "The AAP and the ACIP on behalf of CDC recommend routine HPV vaccination for females and males. The AAP recommends starting the series between 9 and 12 years, at an age that the provider deems optimal for acceptance and completion of the vaccination series. The ACIP recommends starting the series at age 11 or 12 years and states that vaccination can be administered starting at 9 years."

Both recommendations seem to support routine universal HPV vaccination. Is that correct?



CDC Video: How I Recommend: Why HPV Vaccine is Recommended for Preteens

CHOP: Technically Speaking: Why HPV Vaccination Before Age 11 Years Is a Good Idea

Human Papillomavirus: What You Need to Know

Q&A HUMAN PAPILLOMAVIRUS: WHAT YOU SHOULD KNOW

Volume 7
Winter 2023

Human papillomavirus (HPV) is a virus that can lead to genital warts and various forms of cancer, including those of the cervix and other reproductive organs as well as cancers of the head and neck. HPV is the most common sexually transmitted infection in the United States and around the world. In fact, each year, about 300,000 women around the world die from cervical cancer caused by HPV. In the U.S., almost 36,000 people are diagnosed with HPV-related cancers, and about 4 of every 10 of these are diagnosed in males.

Q. What is human papillomavirus?
A. Human papillomavirus (HPV) is a family of more than 100 viruses that commonly infect the surface layer of cells in the reproductive tract, oral cavity and skin. Types that affect the skin can cause warts, most often on the hands and feet, and some types of HPV can cause warts in the genital areas of men and women. Genital warts can be unsightly and emotionally debilitating, but the most concerning types of HPV are those that can cause cancer. Cancers caused by HPV can occur in the cervix, anus, vulva, penis, vagina, or head and neck.

Q. How common is HPV?
A. HPV is the most common sexually transmitted infection in the U.S. and around the world. About 8 of every 10 sexually active people will be infected with HPV at some time in their lives. About 79 million Americans are currently infected with HPV, and another 14 million become infected every year. Many of those newly infected with HPV are in their late teens or early 20s.

Q. Is HPV dangerous?
A. Yes. Most of the time, HPV goes away on its own and doesn't cause any health problems, but sometimes HPV can linger and lead to cancer. Sometimes the lag period from infection to cancer can be as long as 20 to 25 years. Every year in the U.S., approximately 36,000 men and women develop cancers caused by HPV. Cervical cancer is one of the most common cancers in women, killing about 300,000 every year worldwide.

Q. How do you get HPV? How can you avoid it?
A. HPV in the genital area is passed from one person to another through genital contact, most often, but not always, during sex. The best way to avoid HPV infection is to abstain from any sexual activity. You can also lower your chance of getting HPV by having sex with only one person who isn't infected with HPV. Because most people with HPV don't know they are infected, HPV can be difficult to avoid. Although condoms are recommended as a way of decreasing sexually transmitted infections, they don't offer complete protection against HPV.

Q. Can't women avoid cervical cancer by getting routine Pap tests?
A. Not always. Once, cervical cancer was the most common cause of U.S. cancer deaths. The Pap test changed that. HPV infection causes changes in the cervix that can result in cancer. The Pap test is performed by scraping cells from the cervix and examining them to see whether they show changes consistent with the early development of cancer (called precancerous changes). If these changes are detected, the doctor can perform surgery on the affected areas before cancer develops. Typically, the length of time from infection with HPV to development of cervical cancer is decades. So, although most HPV infections occur in teenagers and young adults, cervical cancer is more common in women during their 40s and 50s.

The Pap test is one of the most effective cancer screening tests. While the test has dramatically reduced the incidence of cervical cancer in the U.S., it isn't entirely predictive of cancer and not all women get tested as often as they should. Further, the Pap test will not detect cancer caused by HPV in areas other than the cervix.

Q. Is there a vaccine to prevent HPV?
A. Yes. Gardasil® 9 protects against nine types of HPV. Studies in thousands of girls and young women found the vaccine to be safe and effective in preventing persistent infections caused by HPV. Studies in boys and young men found that the HPV vaccine was safe and prevented anal and genital warts. An 11-year study of more than 1.6 million girls and women in Sweden also showed a decrease in cervical cancer among those who were vaccinated.

The vaccine is given as a series of two or three shots depending on the age of the recipient. Those who are younger than 15 years old should get two doses separated by six to 12 months. Those 15 years and older or any recipient with a compromised immune system should get three doses. The second shot should be given one or two months after the first, and the third shot should follow six months after the first.

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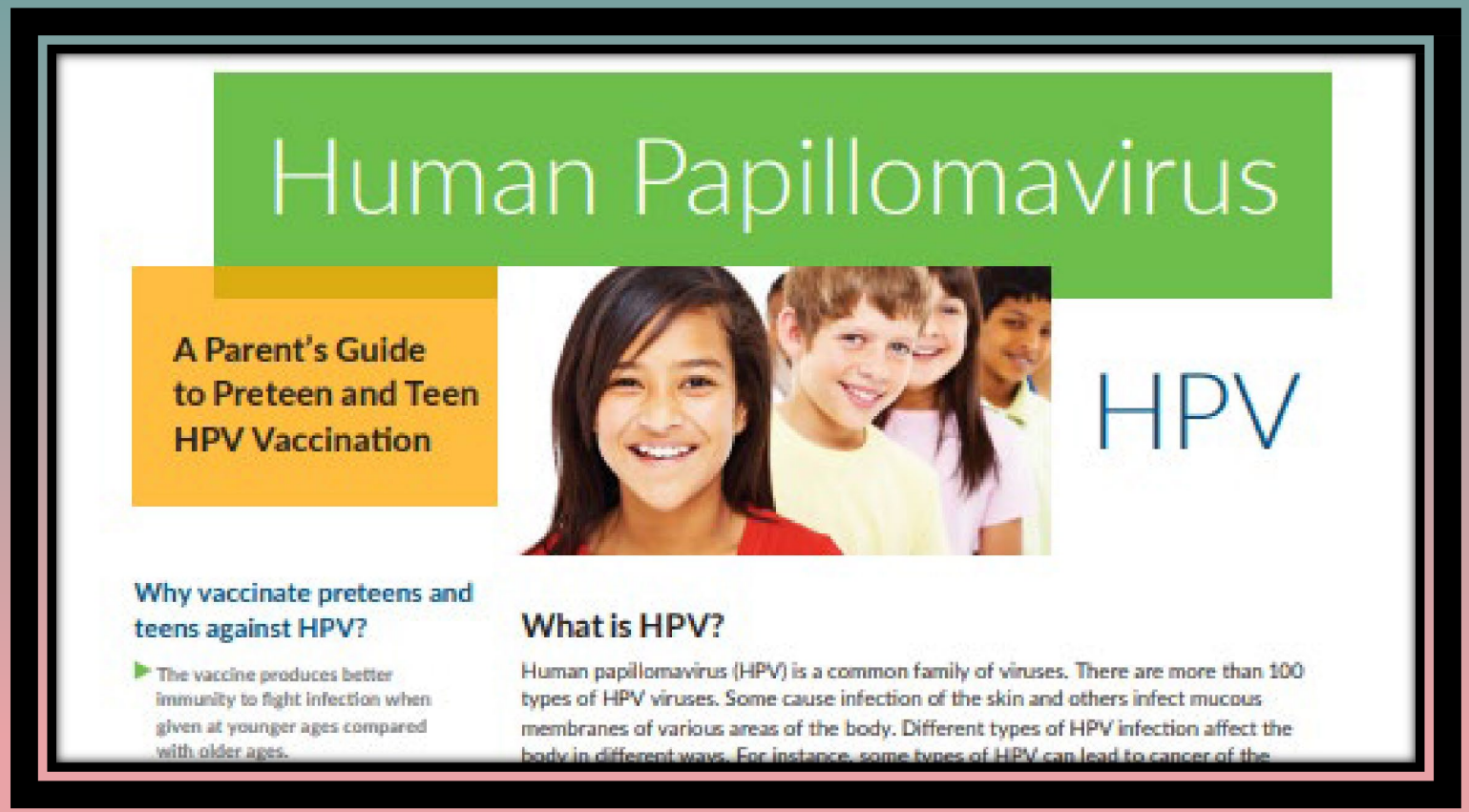
Vaccine Education Center

Learn more: vaccine.chop.edu

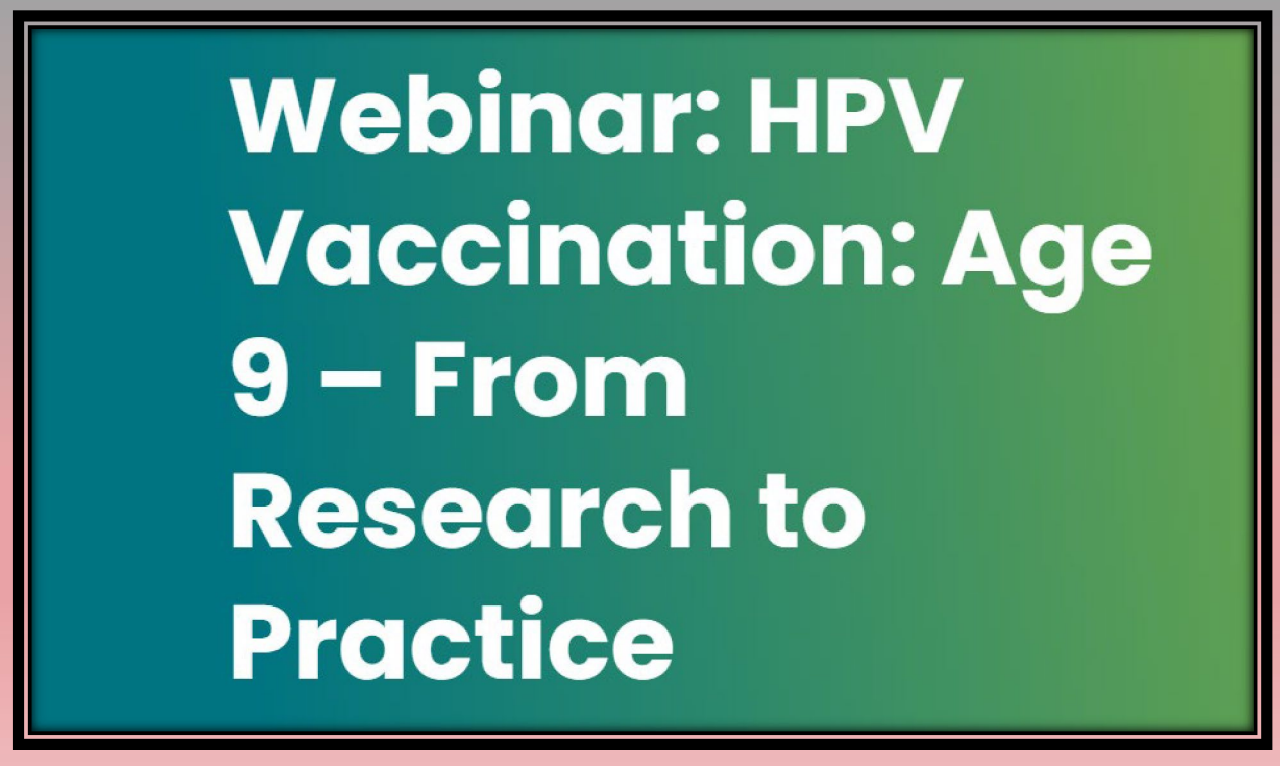
Immunize.org: A Parent's Guide to Preteen and Teen HPV Vaccination

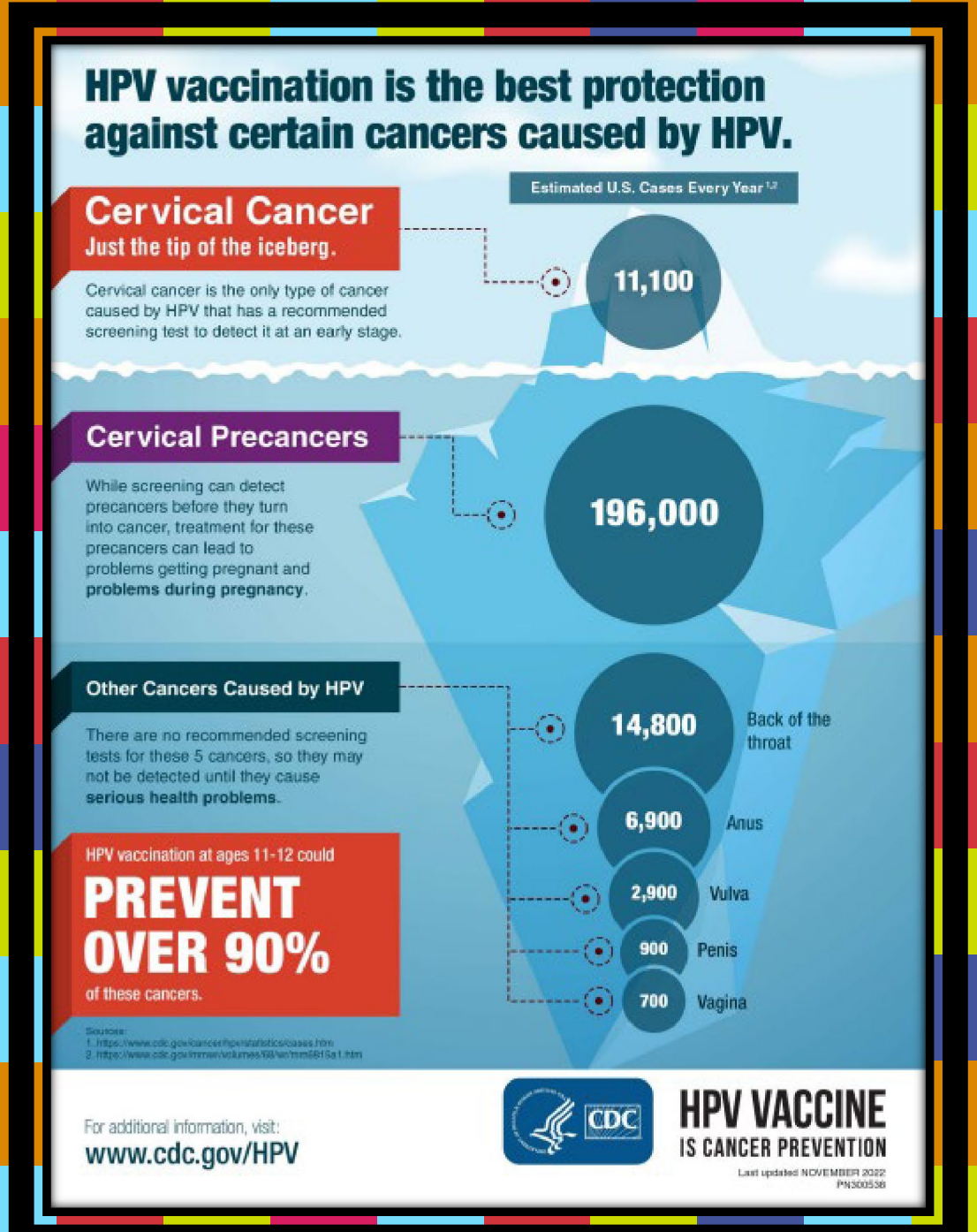


Webinar: HPV Vaccination: Age 9 – From Research to Practice

Register Here!

(https://hpvroundtable.org/)





HPV Vaccine is Cancer Prevention

The Farrah Fawcett Foundation

Can you get the flu from flu vaccine?

[Immunize.org Ask the Experts: Some of my patients refuse influenza vaccination because they insist that they "got the flu" after receiving the injectable vaccine in the past. What can I tell them?]

[CDC Flu Vaccine Safety Information Questions & Answers]

[American Medical Association: 8 things doctors wish patients knew about flu shots]

“Trust yourself. You know more than you think you do.”

- Benjamin Spock

Consider This!

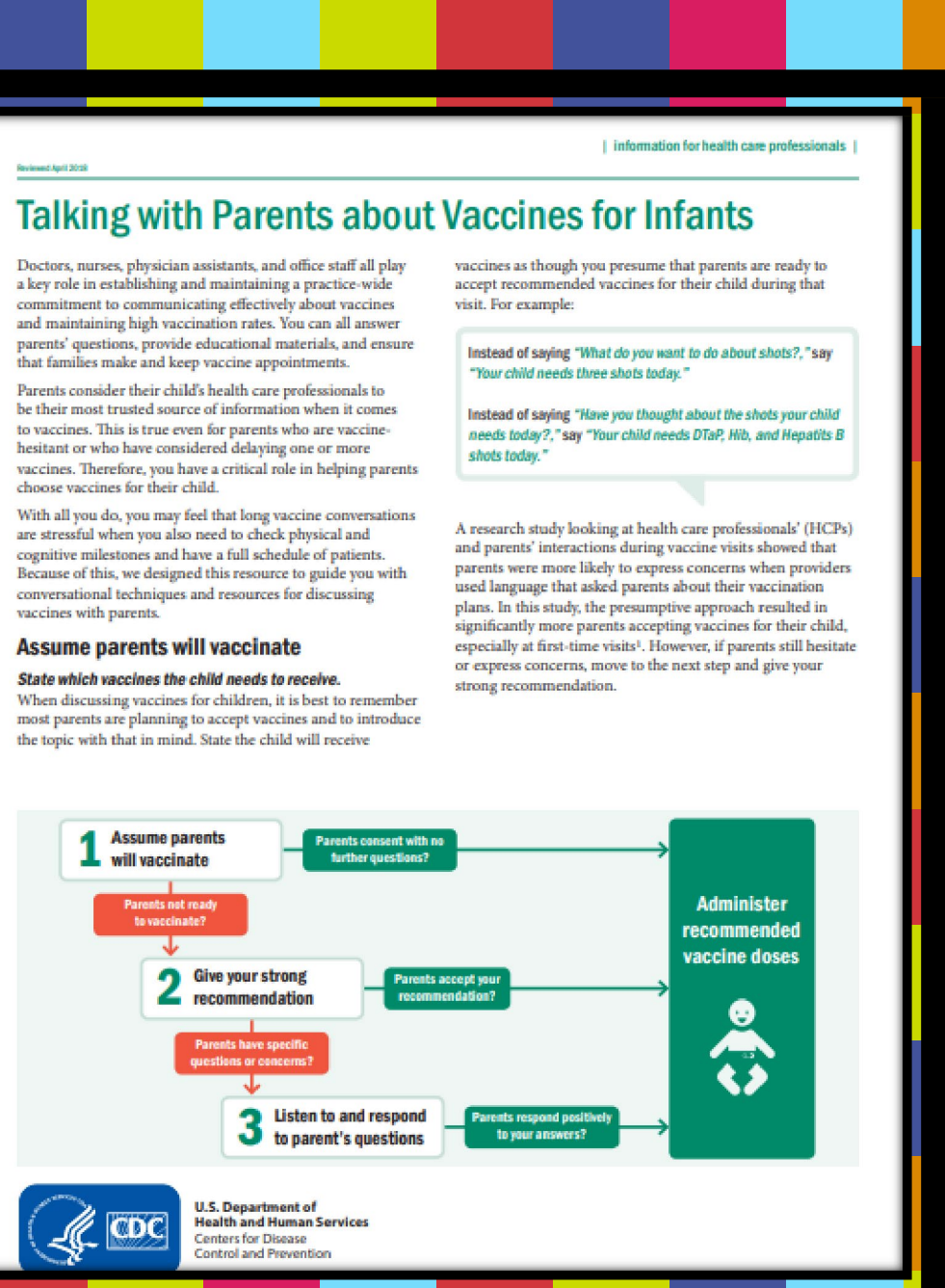
Assume parents will vaccinate!

Give your strong recommendation!

Listen to and Respond to Parent's Questions.

What If Parents Refuse to Vaccinate?

[Talking with Parents about Vaccines for Infants]



| information for health care professionals |

Reviewed April 2016

Talking with Parents about Vaccines for Infants

Doctors, nurses, physician assistants, and office staff all play a key role in establishing and maintaining a practice-wide commitment to communicating effectively about vaccines and maintaining high vaccination rates. You can all answer parents' questions, provide educational materials, and ensure that families make and keep vaccine appointments.

Parents consider their child's health care professionals to be their most trusted source of information when it comes to vaccines. This is true even for parents who are vaccine-hesitant or who have considered delaying one or more vaccines. Therefore, you have a critical role in helping parents choose vaccines for their child.

With all you do, you may feel that long vaccine conversations are stressful when you also need to check physical and cognitive milestones and have a full schedule of patients. Because of this, we designed this resource to guide you with conversational techniques and resources for discussing vaccines with parents.

Assume parents will vaccinate

State which vaccines the child needs to receive.
When discussing vaccines for children, it is best to remember most parents are planning to accept vaccines and to introduce the topic with that in mind. State the child will receive vaccines as though you presume that parents are ready to accept recommended vaccines for their child during that visit. For example:

> Instead of saying *"What do you want to do about shots?,"* say *"Your child needs three shots today."*
>
> Instead of saying *"Have you thought about the shots your child needs today?,"* say *"Your child needs DTaP, Hib, and Hepatitis B shots today."*

A research study looking at health care professionals' (HCPs) and parents' interactions during vaccine visits showed that parents were more likely to express concerns when providers used language that asked parents about their vaccination plans. In this study, the presumptive approach resulted in significantly more parents accepting vaccines for their child, especially at first-time visits[1]. However, if parents still hesitate or express concerns, move to the next step and give your strong recommendation.

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

Assume Parents will Vaccinate!

Painting by Eugène-Ernest Hillemacher

Reviewed January 2019

Preparing for Questions Parents May Ask about Vaccines

Many parents won't have questions about vaccines when you give your strong recommendation and use language that assumes parents will accept vaccines for their child.

If a parent questions your recommendation, this does not necessarily mean they will not accept vaccines. They consider you their most trusted source of information when it comes to vaccines and sometimes parents simply want your answers to their questions. This sheet outlines some of the topics most parents ask about and tips for how to answer their questions.

Questions about the vaccine schedule and number of vaccines

Some parents may be concerned that there are too many vaccines or that their child will receive too many at one time. But, they may not understand that following the recommended vaccine schedule provides the best protection at the earliest possible time against serious diseases that may affect infants early in life.

Parents may ask: ***Can it harm my child to get several vaccines at one time? Does my child need all of the vaccines recommended?***
To respond, you can:

- Share that no evidence suggests that receiving several vaccines at one time will damage or overwhelm a healthy child's immune system.
- Explain what antigens are (parts of germs) and emphasize the small amount of antigens in vaccines compared to the antigens babies encounter every day in their environment.
- Remind parents that they must start each vaccine series on time to protect their child as soon as possible and their child must complete each multi-dose series for the best protection. There are no data to support that spacing out vaccines offers safe or effective protection from these diseases.

"There's no proven danger in getting all recommended vaccines today. Any time you delay a vaccine, you leave your baby vulnerable to disease. It's really best to stay on schedule."

Questions about whether vaccines are more dangerous for infants than the diseases they prevent

Because vaccines are very effective, many parents have not seen a case of a vaccine-preventable disease firsthand. Therefore, they may wonder if vaccines are necessary and if the risks of vaccinating infants outweigh the benefits of protection from vaccine preventable diseases.

Parents may ask: ***Are these diseases that dangerous? Is it likely that my baby will catch this disease? Will ingredients in vaccines hurt my baby more than possibly getting the disease could?*** To respond, you can:

- Share your experience of how these serious diseases still exist and explain that outbreaks still occur in the U.S. For example:
  - From year to year, measles cases in the U.S. can range from roughly less than 100 to a couple hundred. However, in 2014, health departments reported cases in 667 people from 27 states.
  - Between 1970-2000, health officials reported fewer than 8,000 cases of whooping cough each year in the U.S. But since 2010, health officials have reported between 15,000 and 50,000 cases of whooping cough each year to CDC.
- Teach parents that diseases eliminated in the U.S. can infect unvaccinated babies if travelers bring the diseases from other countries. If you need up-to-date information on specific diseases, share *Disease Fact Sheets* with parents.
- Remind parents that many vaccine preventable diseases can be especially dangerous for young children and there's no way to tell in advance if their child will get a severe or mild case. Without vaccines, their child is at risk for getting seriously ill and suffering pain, disability, and even death from diseases like measles and whooping cough.

"I know you didn't get all these vaccines when you were a baby. Neither did I. However, we were both at risk of serious diseases like Hib and pneumococcal meningitis that can lead to deafness or brain damage. Today, we're able to protect your baby from 14 serious diseases before his second birthday with vaccines."

Questions about known side effects

It is reasonable for parents to be concerned about possible reactions or side effects listed on *Vaccine Information Statements*. Vaccines, like any medication, can cause some side effects. Many of these effects are minor, treatable, and last only a few days.

Parents may ask: ***Will my child be okay if she has a side effect? I know someone whose baby had a serious reaction—will my baby too?*** To respond, you can:

- Remind parents that most side effects are mild and go away within a few days.
- Reassure parents that you and your staff are prepared to deal with serious vaccine reactions.
- Encourage parents to watch for possible side effects (fussiness, low-grade fever, soreness where the shot was given) and provide information on how they should treat them and how to contact you if they observe something they are concerned about.
- Share your own experience, or lack thereof, of seeing a serious side effect from a vaccine. Explain that serious side effects are very rare.

Reassure parents that the disease-prevention benefits of getting vaccines are much greater than the risks of possible side effects.

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

"I'll worry if your child doesn't get vaccines today, because the diseases can be very dangerous—most, including Hib, whooping cough, and measles, are still infecting children in the U.S. We can look at the Vaccine Information Statements together and talk about how rare serious vaccine side effects are."

Questions about unknown serious long-term side effects

Parents who look for information about vaccine safety will likely encounter information that says vaccines can lead to serious long-term side effects. It is understandable that parents may find this alarming.

Parents may ask: ***Do vaccines cause long-term side effects? Will getting a vaccine permanently hurt my child's health?***

To respond, you can share that:

- Vaccines are not linked to increases in health problems such as autism, asthma, or auto-immune diseases.
- There is no evidence to suggest that vaccines threaten a long, healthy life. Conversely, we know lack of vaccination threatens a long and healthy life.

"We have years of experience with vaccines and no reason to believe that vaccines cause long-term harm. I understand your concern, but I truly believe that the risk of diseases is greater than any risks posed by vaccines. Vaccines will get your baby off to a great start for a long, healthy life."

Questions about vaccine ingredients

Parents may ask about the ingredients contained in vaccines. Let them know that vaccines contain very small amounts of the ingredients listed below and that all ingredients play necessary roles either in making the vaccine or in ensuring that the final product is safe and effective.

Parents may ask: ***Are the ingredients in vaccines safe? Aren't aluminum and mercury dangerous?***

- Preservatives prevent contamination of the vaccine. Thimerosal, a compound containing mercury, is a preservative only found in multi-dose vials of flu vaccine.
- Adjuvants or enhancers, such as aluminum salts, are used to help the body develop immunity and a better immune response.
- Stabilizers, such as sugars and gelatin, are used to keep the vaccine potent during transportation and storage.
- Residual cell culture materials, such as egg protein, are used to grow enough of the virus or bacteria to make the vaccine.
- Residual inactivating ingredients, such as formaldehyde, are used during the production process to kill viruses or inactivate toxins during the manufacturing process.
- Residual antibiotics, such as neomycin, are used during the vaccine manufacturing process to prevent contamination by bacteria.

"Each vaccine ingredient plays an important role in either making the vaccine or ensuring that it is safe and effective so it will

Questions about whether vaccines cause autism

Although many parents are aware that numerous studies show vaccines have nothing to do with autism, some parents have lingering questions and concerns.

Parents may ask: ***I've heard some parents say their child's behavior changed after vaccines; how do you know vaccines don't cause autism?*** Many rigorous studies show that there is no link between MMR vaccine or thimerosal and autism. If parents raise other possible hypotheses linking vaccines to autism, three items are key:

- Give patient and empathetic reassurance that you understand their infant's health is their top priority, and it also is your top priority, so putting children at risk of vaccine-preventable diseases without scientific evidence of a link between vaccines and autism is a risk you are not willing to take.
- Share that the onset of autism symptoms often coincides with the timing of vaccines but have nothing to do with vaccines.
- Give your personal and professional opinion that vaccines are very safe.

"Autism is a challenge for many families and people want answers—including me. But well designed and conducted studies that I can share with you show that MMR vaccine have nothing to do with autism."

Resources for questions about vaccines and autism:

- *Understanding Thimerosal, Mercury, and Vaccine Safety*
- *Understanding MMR Vaccine Safety*

Additional questions parents may ask

- ***Isn't natural immunity better than the kind from vaccines?***
- ***Do I have to vaccinate my baby on schedule if I'm breastfeeding him?***
- ***Why are so many doses needed for each vaccine?***

If you have additional questions from parents, reference *Infant Immunization FAQs* for regularly updated answers to common questions.

information on vaccines, vaccine safety, and vaccine preventable eases, visit: www.cdc.gov/vaccines/conversations

Preparing for Questions Parents May Ask about Vaccines

Top Ten Reasons to Protect Your Child by Vaccinating

Here are the top ten reasons to protect your child by vaccinating them against serious diseases.

1. Parents want to do all they can to be sure their children are healthy and protected from diseases. Vaccination is the best way to do that.

2. Vaccination protects children from serious illness. Vaccines prevent diseases that can lead to loss of an arm or leg, needing hospital care, pneumonia, hearing loss, convulsions, brain damage, and death.

3. Vaccination can prevent diseases such as measles, whooping cough, COVID-19, and influenza that are still a threat. These diseases keep harming U.S. children and leading to hospital care and deaths every year.

4. Some diseases, such as measles, are still common in other countries. A traveler can bring the disease to the U.S., or your child can get it while traveling.

5. Outbreaks of diseases that could be prevented by vaccination occur when many parents decide not to vaccinate their children.

6. Vaccination is safe and it works! Scientists, doctors, and the U.S. government do long and careful reviews of each vaccine to be sure they are safe.

7. Trusted leaders in the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all strongly support protecting children with recommended vaccinations. And, they get their own kids vaccinated!

8. Vaccination protects others you care about, including family members, friends, and community members.

9. If children aren't vaccinated, they can spread disease to others. Disease could spread to another child who is too young to be vaccinated. It could spread to a person with a weak immune system due to cancer and certain medicines. No one wants to cause these vulnerable people long-term harm or even death.

10. We all work to make our communities stronger and to protect each other and each other's children. Vaccinating our own family members is the best for them and our communities.

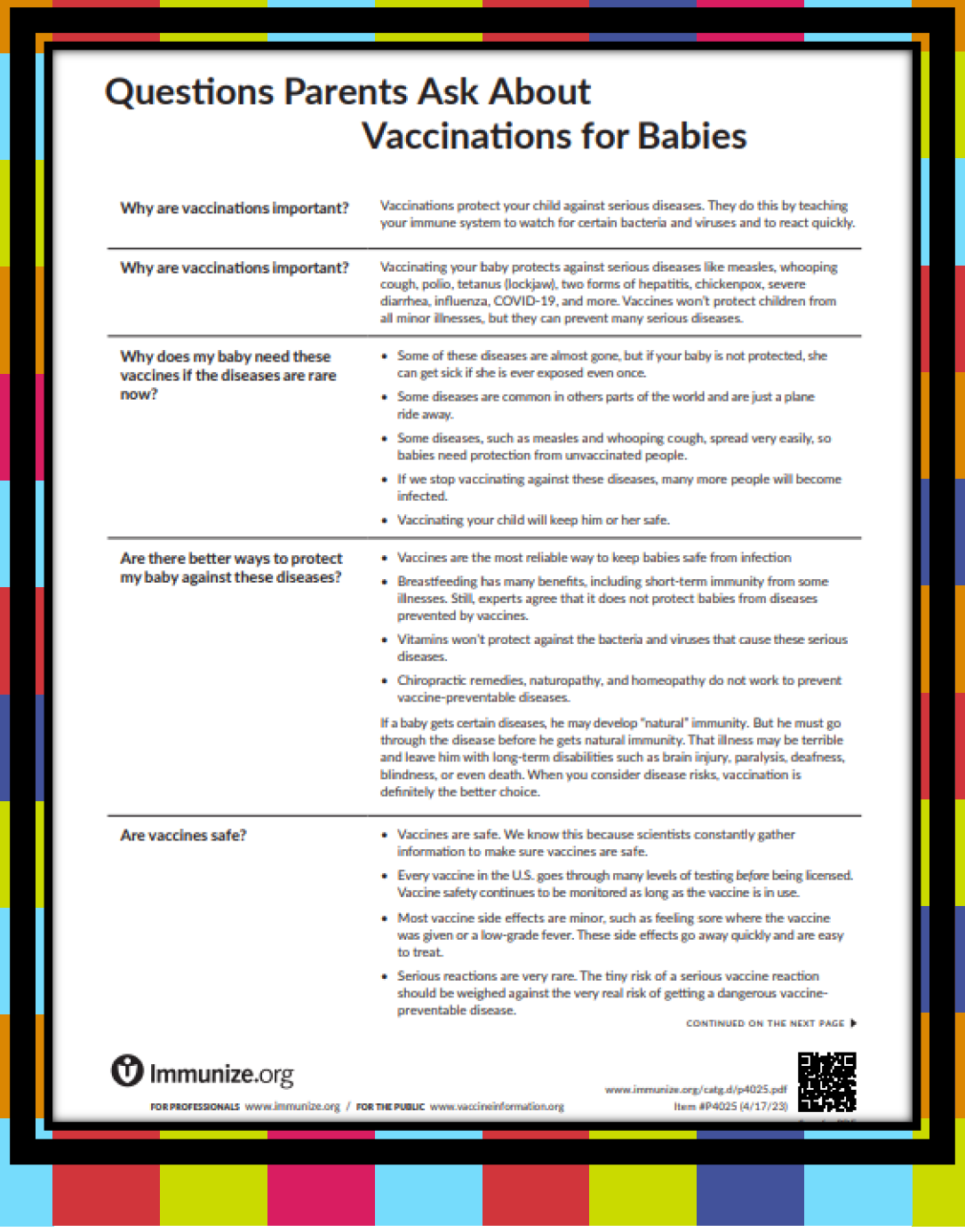
Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

www.immunize.org/catg.d/p4016.pdf
Item #P4016 (4/10/2023)

Make a Strong Recommendation!

[Top Ten Reasons to Protect Your Child by Vaccinating]



Questions Parents Ask About Vaccinations for Babies

Why are vaccinations important?	Vaccinations protect your child against serious diseases. They do this by teaching your immune system to watch for certain bacteria and viruses and to react quickly.
Why are vaccinations important?	Vaccinating your baby protects against serious diseases like measles, whooping cough, polio, tetanus (lockjaw), two forms of hepatitis, chickenpox, severe diarrhea, influenza, COVID-19, and more. Vaccines won't protect children from all minor illnesses, but they can prevent many serious diseases.
Why does my baby need these vaccines if the diseases are rare now?	• Some of these diseases are almost gone, but if your baby is not protected, she can get sick if she is ever exposed even once. • Some diseases are common in others parts of the world and are just a plane ride away. • Some diseases, such as measles and whooping cough, spread very easily, so babies need protection from unvaccinated people. • If we stop vaccinating against these diseases, many more people will become infected. • Vaccinating your child will keep him or her safe.
Are there better ways to protect my baby against these diseases?	• Vaccines are the most reliable way to keep babies safe from infection • Breastfeeding has many benefits, including short-term immunity from some illnesses. Still, experts agree that it does not protect babies from diseases prevented by vaccines. • Vitamins won't protect against the bacteria and viruses that cause these serious diseases. • Chiropractic remedies, naturopathy, and homeopathy do not work to prevent vaccine-preventable diseases. If a baby gets certain diseases, he may develop "natural" immunity. But he must go through the disease before he gets natural immunity. That illness may be terrible and leave him with long-term disabilities such as brain injury, paralysis, deafness, blindness, or even death. When you consider disease risks, vaccination is definitely the better choice.
Are vaccines safe?	• Vaccines are safe. We know this because scientists constantly gather information to make sure vaccines are safe. • Every vaccine in the U.S. goes through many levels of testing before being licensed. Vaccine safety continues to be monitored as long as the vaccine is in use. • Most vaccine side effects are minor, such as feeling sore where the vaccine was given or a low-grade fever. These side effects go away quickly and are easy to treat. • Serious reactions are very rare. The tiny risk of a serious vaccine reaction should be weighed against the very real risk of getting a dangerous vaccine-preventable disease.

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Immunize.org
FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org
www.immunize.org/catg.d/p4025.pdf
Item #P4025 (4/17/23)

Listen and Respond!

Questions Parents Ask About Vaccinations

When Parents Refuse

What If You Don't Vaccinate Your Child?

Your child is at risk for developing a vaccine-preventable disease

Vaccines were developed to protect people from dangerous and often fatal diseases. These diseases remain a threat. Vaccines are safe and effective protection.

Influenza or "flu" is a serious respiratory disease that can be deadly. Healthy babies and toddlers are especially vulnerable to complications from influenza. Every year children in the United States die from influenza.

Pertussis or "whooping cough" is an extremely dangerous disease for babies. It is not easily treated and can result in permanent brain damage or death. Whooping cough is most dangerous in children younger than one year. Many infants with whooping cough have to be hospitalized and each year some babies die. In 2019, over 15,000 cases of whooping cough were reported to public health officials in the United States. It is hard to protect unvaccinated babies from whooping cough because it is very contagious and often not recognized in adults and older children who may only have a mild cough with no fever.

Measles is a highly contagious disease that can lead to serious complications, including death. It remains common in many countries and has been brought into the United States by returning vacationers and foreign visitors. Vaccination caused measles to decline rapidly during the 1990s. Recently, vaccine hesitancy among parents in the United States and abroad has led to a growing number of children and teens who are not vaccinated and are unprotected from measles. This has led to outbreaks of measles in the United States, Canada, and other countries.

Chickenpox is very contagious. Before the development of a vaccine, chickenpox killed approximately 100 people every year in the United States. Most were previously healthy. Children infected with chickenpox must be kept out of day care or school for a week or more so they don't spread the disease to others.

Your child can infect others in the community

Children who are not vaccinated can transmit vaccine-preventable diseases at schools and in the community.

- Unvaccinated children can infect babies who are too young to be fully immunized.
- Unvaccinated children can infect people of any age who can't be immunized for medical reasons. This includes children and adults with leukemia and other cancers, immune system problems, and people of all ages receiving treatments or medications that weaken their immune systems.

Your child may have to be excluded from school or child care

During disease outbreaks, unvaccinated children may be excluded from school or child care to protect them and others. This can cause hardship for the child and parent.

Next steps…

We strongly encourage you to vaccinate your child. Please discuss any concerns you have with a trusted healthcare provider or call the immunization coordinator at your local or state health department. Your vaccination decision affects not only the health of your child, but also your family, your child's friends, their families, and your community.

► **For more information about vaccines, visit these websites:**

American Academy of Pediatrics
https://www.healthychildren.org/english/safety-prevention/immunizations/pages/default.aspx

Centers for Disease Control and Prevention
www.cdc.gov/vaccines/parents

Immunize.org
www.immunize.org

Vaccine Education Center at the Children's Hospital of Philadelphia
www.chop.edu/centers-programs/vaccine-education-center

Vaccinate Your Family
[illegible].org

Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

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Item #P4017 (3/8/2023)

Immunize.org

Record of Vaccine Declination

I am the parent/guardian of the child named at the bottom of this form. My healthcare provider has recommended that my child be vaccinated against the diseases indicated below. I have been given a copy of the Vaccine Information Statement (VIS) that explains the benefits and risks of receiving each of the vaccines recommended for my child. I have carefully reviewed and considered all of the information given to me. However, at this time I choose to refuse the vaccine(s) for my child that are shown in the table below. I have read and acknowledge the following:

- I understand that vaccine-preventable diseases can infect unvaccinated U.S. children and can result in hospitalization and even death.
- I understand that vaccine-preventable infections that are no longer common in the U.S. still occur around the world. An unvaccinated child can be infected while traveling, or through direct or indirect contact with a traveler.
- I understand that my unvaccinated child could spread disease to another child who is too young to be vaccinated or to a person whose medical condition, such as cancer, or immune system problems, prevents them from being vaccinated. This could result in health complications and even death for the other person.
- I understand that if too many parents exempted their child from vaccination, these diseases would return to our community in full force.
- I understand that my unvaccinated child may not be protected by "herd" or "community" immunity (i.e., protection that is the result of having most people in a population vaccinated against a disease).
- I understand that some vaccine-preventable diseases such as measles and pertussis are extremely infectious and have been known to infect unvaccinated people living in highly vaccinated populations.
- I understand that if my child is not vaccinated and gets infected, my child could develop serious complications. These may include pneumonia, hospitalization, brain damage, paralysis, seizures, deafness, and death.
- I understand that my child may be excluded from his or her child care facility, school, sports events, or other organized activities during disease outbreaks. This means my child and I could miss many days of school and/or work.
- I understand that the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all recommend preventing diseases through vaccination.

Vaccine / Disease	VIS given (✓)	Vaccine recommended by doctor or nurse (Dr./Nurse initials)	I decline this vaccination for my child (Initials of parent/guardian)
COVID-19			
Diphtheria-tetanus-pertussis (DTaP)			
Haemophilus influenzae type b (Hib)			
Hepatitis A (HepA)			
Hepatitis B (HepB)			
Human papillomavirus (HPV)			
Influenza			
Measles-mumps-rubella (MMR)			
Meningococcal ACWY (MenACWY)			
Meningococcal B (MenB)			
Pneumococcal conjugate (PCV)			
Polio, inactivated (IPV)			
Rotavirus (RV)			
Tetanus-diphtheria (Td)			
Tetanus-diphtheria-pertussis (Tdap)			
Varicella (Var)			

After discussion with my provider who recommends these vaccines, I acknowledge that I am declining to have my child vaccinated against one or more diseases listed above. I have placed my initials in the table above to indicate the vaccine(s) I am declining. I understand that I can change my decision in the future and have my child vaccinated.

CHILD'S NAME _____ DATE OF BIRTH _____

PARENT/GUARDIAN SIGNATURE _____ DATE _____

DOCTOR/NURSE SIGNATURE _____ DATE _____

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Item #P4059 (4/17/2023)
Scan for PDF

Immunize.org

Foster Support for Vaccination in Your Practice

Make patients and parents aware of your immunization policy

Make vaccine resources easy to find

Review each patient's vaccination status and prepare them to receive vaccines

Make effective recommendations

Answer questions and address concerns

Implement procedures and policies that help staff support vaccination

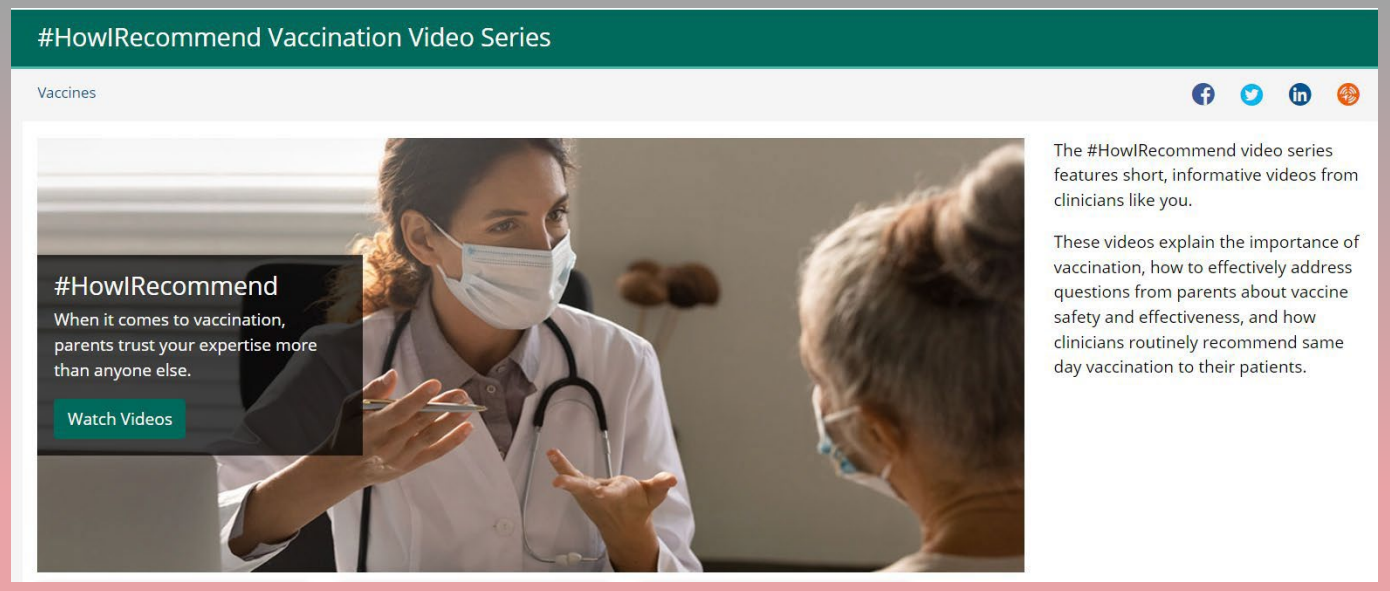
Schedule upcoming vaccinations before the patient leaves the office

Remind patients and parents about upcoming vaccination appointments and missed appointments

CDC Foster Support for Vaccination in Your Practice

Provider to Provider—CDC Communication

- Part of education is having a conversation about immunizations
- Use resources to help give guidance and gain confidence with communication strategies



CDC's #HowIRecommend Video Series:

- Short, informative videos from clinicians like you
- Explain the importance of vaccination, how to effectively address questions from parents about vaccine safety and effectiveness, and how clinicians routinely recommend same day vaccination to their patients.

www.cdc.gov/vaccines/howirecommend/index.html

Vaccine- and Vaccine Safety-Related Q&A Sheets

The Q&A sheets developed by the Vaccine Education Center can be viewed online, printed, or photocopied. Healthcare professionals can order these materials for their practice.

The information provided on each sheet addresses commonly asked questions and is meant to be informative; however, it should not be considered a replacement for actual medical advice.

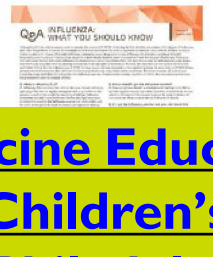
Vaccine Q&A sheets

Chickenpox
English [PDF, 579KB]
Spanish [PDF, 595KB]

COVID-19
English [PDF, 353KB]
Spanish [PDF, 353KB]

Hepatitis A
English [PDF, 586KB]
Spanish [PDF, 604KB]

Hepatitis B
English [PDF, 217KB]
Spanish [PDF, 217KB]



Vaccine Education Center—Children's Hospital of Philadelphia (CHOP)

Vaccinations Are Safe: Explaining Why

SCIENCE IS KEY

Vaccines are remarkable scientific achievements that have greatly reduced rates of death and disease around the world. This document begins to explain the science underpinning public confidence in today's vaccines. Each segment provides part of the total picture. Together, the accumulated scientific evidence explains the prudence of routine vaccination policies.

Vaccines are the safest of all medications.

- Before FDA licensing, vaccines are studied in larger populations than are other drugs.
- Once licensed and put to use, multiple layers of safety surveillance continue as long as the vaccines are distributed.

Every scientific authority recommends routine vaccination. This includes the Centers for Disease Control and Prevention, Food and Drug Administration, American Academy of Pediatrics, American Academy of Family Practitioners, American College of Obstetricians and Gynecologists, American Medical Association, American Nurses Association, American Pharmacists Association, National Academy of Medicine, and World Health Organization, plus every state health department, every city health department, and every children's hospital.

DISCUSSION POINTS

Vaccines do not cause autism.

BACKGROUND

A 1998 British journal article making a claim of a connection between the measles vaccine and the development of autism was retracted by the journal's editors, who said they had been deceived. The author was found guilty by the United Kingdom General Medical Council of dishonesty and flouting ethics protocols. As a result, they revoked his license to practice medicine.[1,2] In spite of these rebukes, the erroneous belief that vaccination causes autism took hold with a small group.

SCIENCE

- Vaccinated children develop autism at the same rate as unvaccinated children.[3,4]
- A litany of well-controlled studies show that vaccines do not cause autism.[3-8]
- Properly designed studies involving over 1.2 million children established no links between vaccines and autism or autism spectrum disorder.[4,8]
- Scientists agree: Vaccines do not cause autism.

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1 Dyer C. *Lancet* retracts Wakefield's MMR paper. *BMJ* 2010, 340: c696. www.bmj.com/content/340/bmj.c696
2 Boseley S. *Lancet* retracts 'utterly false' MMR paper. *The Guardian*. 2010 Feb 02, London.
3 Hviid A, Stellfeld M, Wohlfahrt J, Melbye M. Association between thimerosal-containing vaccine and autism. *JAMA*. 2003;290:1763–6.
4 Taylor L, Swerdfeger AL, Eslick GD. Vaccines are not associated with autism: An evidence-based meta-analysis of case-control and cohort studies. *Vaccine* 2014;32(29):3623–29.
5 DeStefano F, Price CS, Weintraub ES. Increasing exposure to antibody-stimulating proteins and polysaccharides in vaccines is not associated with risk of autism. *J Pediatr*. 2013;163:561-7.
6 CDC. Science Summary: CDC Studies on Thimerosal in Vaccines. www.cdc.gov/vaccinesafety/pdf/cdcstudiesonvaccinesandautism.pdf
7 Committee to Review Adverse Effects of Vaccines. Adverse Effects of Vaccines: Evidence and Causality. Washington, DC: Institute of Medicine, 2011. www.nap.edu/catalog/13164/adverse-effects-of-vaccines-evidence-and-causality
8 Madsen KM, Hviid A, Vestergaard M, et al. A population-based study of measles, mumps, and rubella vaccination and autism. *N Engl J Med*. 2002;347:1477–82.

#P2073 (7/21)

Immunization Action Coalition (IAC)

Clear Answers and Smart Advice About Your Baby's Shots

By Ari Brown, MD, FAAP

Dr. Brown received her medical degree from Baylor College of Medicine in Houston, Texas; she did her pediatric residency at Harvard Medical School/Boston Children's Hospital. In private practice since 1995, Dr. Brown is perhaps best known as the coauthor of the 411 parenting book series – ***Expecting 411: Clear Answers and Smart Advice for Your Pregnancy***, ***Baby 411***, and ***Toddler 411*** (Windsor Peak Press).

In response to the recent media attention given to vaccines, autism, and other controversies concerning vaccines, the Immunization Action Coalition (IAC) offers this **special excerpt from *Baby 411*** that answers these questions and more. IAC thanks Dr. Brown for this clearly written information, but mostly we are grateful for her continued advocacy for safe and effective vaccines.

It's time to jump right into a hot topic you'll find in parent circles – vaccines. Nothing seems to stir the blood these days more than a good ol' fashion debate on vaccinating your child. And after a record-breaking surge in measles cases in 2019, of which the vast majority of cases were unvaccinated children due to parental opposition to measles vaccination, the silent majority of parents who believe in vaccinations are far from silent.

A head's up: since there is so much misinformation out there on vaccines, you need to be armed with detailed, accurate information. And like the rest of this book, that is what you will get in this chapter. The information we provide is based on scientific evidence and solid peer-reviewed research. Remember our mantra: show us the science! Your child is too precious to make such important decisions on anything less. This chapter is not based on personal anecdotes, conspiracy theories, "research" done in people's basements (we are not kidding), or the crusades of B-list celebrities.

However, before we get to our take on this debate, let's go back in time a bit. Well, more than a bit. How did the human race survive when other early humans didn't? Yes, making tools and finding food most efficiently played a big role. But here's another key element: we built civilizations. And we developed a sense of responsibility – to ourselves and to our society. Every time we respond to a tragedy in our nation – whether it be 9/11, Hurricane Sandy, or the Boston Marathon bombing – we are reminded of how we are not just individuals living in our own little worlds. It's part of our civic duty to lend a hand and take care of our neighbors.

So, what's this pontificating have to do with vaccines? Again, it is our responsibility to work together as a community…this time, the subject isn't terrorism or storms, but something that can be just as terrifying: infectious diseases. Consider a bit of history: in the 1890s, people would have seven or eight children in their families and only half of them would survive childhood. Just go to an old graveyard sometime and look at the ages listed on the headstones. Many of the diseases that killed those children are now prevented by vaccination. It's a fact: vaccinations have increased the life expectancy of our nation's children. That's why our grandparents and parents embraced vaccines.

Here's a crucial point: the key to a vaccine's success is that everyone in the community gets vaccinated. Vaccines won't work if a large number of folks just choose to opt out of the system and their responsibility. Please keep this in mind as you read about vaccinations. Your decision (and every other parent's decision) affects your child. And society as a whole. Germs are rather simple creatures…they just look for a new person to infect. They don't play politics.

REALITY CHECK

The concept of "public health" has been around since antiquity. Obviously, rulers had a vested interest in keeping their subjects healthy so they had a society to rule. Through the years, governments have been responsible for managing numerous programs. The most important advances in public health have been vaccination programs, water purification, and waste disposal/sanitation systems. The only way for public health to work, though, is for all members of the community to follow the same rules.

Who came up with the idea of vaccinations in the first place?

It took centuries of observation as well as trial and error. (And sometimes, error meant death.) The first real step was describing the disease, in this case, smallpox. Smallpox was a deadly disease that, historically, wiped out entire civilizations. The earliest descriptions can be found as far back as the ninth and tenth centuries among Turks. In fact, "inoculation," or the infecting of a person with the disease in hopes of introducing a mild form and then creating immunity, was practiced first in Asia. In the 1700s an English aristocrat, Lady Mary Wortly Montagu, was living in Constantinople and learned of the practice of inoculation (known then as variolation). She had her son inoculated and subsequently, brought the practice back to England.

At about the same time, an English country doctor, Edward Jenner, made an interesting connection: milkmaids who had been exposed to cowpox (a common disease in cattle at the time) never seemed to get smallpox infections during epidemics. He began to study the idea that vaccinating humans with cowpox virus would make them immune to smallpox. In 1798 he published a paper on his idea and called it "Vaccination." Not to say, by the way, that Dr. Jenner's idea was accepted with completely open arms. In the nineteenth century there did emerge a group opposed to vaccination led by Mary C. Hume. See, even the anti-vaccination lobby has been around a long time! Of course, in those days, you could be prosecuted for refusing to vaccinate.[1]

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IAC
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Saint Paul, Minnesota • 651·647·9009 • www.immunize.org • www.vaccineinformation.org
www.immunize.org/catg.d/p2068.pdf • Item #P2068 (8/19)

All encompassing resources covering many topics we addressed today and more!

[Immunize.org: Clear Answers and Smart Advice About Your Baby's Shots]

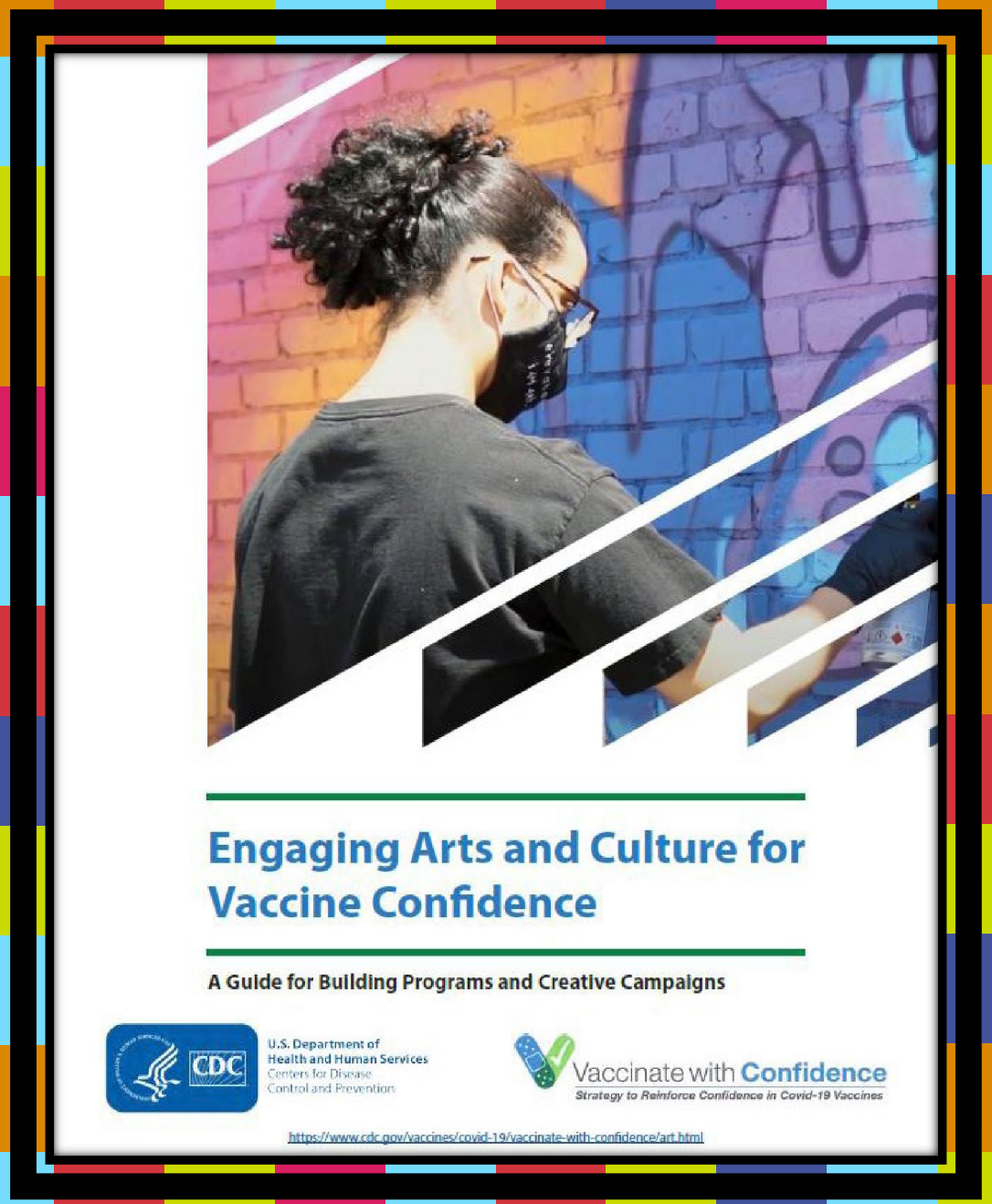
[Immunize.org: Need Help Responding to Vaccine-Hesitant Parents?]

Conversations About Vaccines

An interactive Parent FAQ brought to you by

Healthy Children.org

Endorsed by AAP



Thank you for all you do!

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