What Is Vaccine Confidence and Why Is It Necessary?1

- Vaccine confidence is trust in the:
  - Safety and efficacy of immunizations
  - Reliability and competence of the HCPs who administer vaccines
  - Motivations of policy makers who decide which immunizations are needed and when they should be administered
- Vaccine confidence increases the likelihood of our achieving and maintaining high immunization rates
  - Left unchecked, declines in vaccine confidence ultimately lead to increasingly widespread vaccine refusal


Factors Leading to a Decline in Vaccine Confidence

- Increase in:
  - Number of new vaccines for various diseases
  - State-level school entry immunization mandates
- Continued success of vaccines in controlling diseases that parents and patients no longer remember and rarely see
- Rise in consumerism, which has:
  - Encouraged parents and patients to shop around for an HCP and actively search for information about vaccines
  - Eroded parents’ and patients’ trust in HCPs
- Spread of misinformation via mass media, social media, and the internet
- Growing willingness to question the integrity of scientists, public health officials, and anyone else involved in formulating immunization policies


Impact of Non-Medical Exemptions on Vaccination Rates

- Overall mean state-level rates of non-medical exemptions have increased; pace of that increase has accelerated1,3
- Vaccination coverage rates are lower in states with personal belief exemptions (PBEs) than in states permitting only religious exemptions1,3
- Children with non-medical exemptions tend to aggregate within states and communities1,4
- Vaccine-preventable diseases tend to cluster in areas where exemption rates are highest1-6


Role of PBEs in the Resurgence of Pertussis: California, 20101

- In 2010, the incidence of pertussis was higher in PBE clusters than in areas outside those clusters
- From 2005–2010, the mean census tract-level rate of PBEs had increased among the state’s incoming kindergartners

High Incidence of Measles in States That Allow PBEs: US, 2011

Red check marks indicate states that allow PBEs and had a high incidence of measles during 2011.1,2

Import-associated a Unknown source

* Import-associated describes cases brought into the US from other countries; cases linked epidemiologically to importations of measles into the US; cases with virologic evidence suggesting recent importation; and cases linked to patients with virologic evidence of recent importation. Map reproduced from CDC.1


Types of Vaccine-Hesitant Parents1,2

- Uninformed but educable
  - Want education to counter anti-vaccine information
- Misinformed but correctable
  - Need information about vaccine benefits
- Well-read and open-minded
  - Want to intelligently discuss pros and cons
- Strongly vaccine-hesitant
  - Willing to listen but not likely to change their mind right away
- Strong-willed and committed against vaccines
  - Want to sway the HCP to their line of thinking

Tips for Handling Vaccine Hesitancy

• Take a (or another) deep breath
  – Listen to the parents and patients
  – Identify their questions or problems
  – Make no assumptions
• Have a plan
  – What is your practice philosophy?
  – Will you see families who outright refuse all vaccines for their children?
• Tailor your advice to each individual parent and patient, based on his or her concerns

Tips for Handling Vaccine Hesitancy (cont)

• Document your discussion with the parent and patient
• Revisit the discussion at each subsequent visit
  – Inform the parent and patient that you will be doing so
• For parents and patients who refuse, provide the Vaccine Information Statement and consider using a Refusal to Vaccinate form
• For unimmunized or partially immunized patients, flag the chart for the benefit of yourself and other HCPs, in the event that those patients require sick visits
• Be direct, clear, and authoritative with respect to your office’s philosophy and policy vis-à-vis a parent’s or patient’s ongoing refusal to vaccinate
  – Know the plan, and maintain a consistent approach within your practice

Concerns That Have Been Raised Regarding Vaccines

• “Overloading of the immune system”¹,²
• “Autism or other neurologic side effects”¹
• “Mercury exposure and brain damage”¹,³
• “Aluminum toxicity and brain damage”¹,³
• “Formaldehyde injection”³

References:

Key Facts About Multiple Vaccines and the Immune System

• An infant’s immune system has the capacity to respond to thousands of antigens at any given time¹
  – Immune system is constantly replenished; it cannot be overloaded by the antigens (ie, proteins and polysaccharides) in vaccines¹
  – In fact, children are exposed to thousands of antigens every day (on toys, doorknobs, and playground equipment)²
• Although the number of recommended vaccines has increased over the years, children today typically receive fewer antigens than their parents did in the past¹,²
• The response to multiple vaccines given during a single visit is similar to the response that occurs when individual vaccines are administered separately³

References:
Concerns That Have Been Raised Regarding Vaccines

- "Overloading of the immune system"\textsuperscript{1,2}
- "Autism or other neurologic side effects"\textsuperscript{1}
- "Mercury exposure and brain damage"\textsuperscript{1,3}
- "Aluminum toxicity and brain damage"\textsuperscript{1,3}
- "Formaldehyde injection"\textsuperscript{3}


Safety of Thimerosal and Aluminum Salts in Vaccines

- Thimerosal: a mercury-containing preservative that helps prevent bacterial or fungal contamination in vaccines\textsuperscript{1}
  - No scientific evidence linking thimerosal with autism\textsuperscript{1,3}
  - Symptoms of mercury poisoning differ from those of autism\textsuperscript{1}
  - Measles, mumps, and rubella vaccine never contained thimerosal or any other form of mercury\textsuperscript{1}
  - As a precautionary measure, thimerosal was removed from nearly all vaccines (the exception being multidose vials) in 2001\textsuperscript{1}
  - Yet the incidence of neurodevelopmental problems has continued to rise
- Aluminum salts: an adjuvant to enhance the immune response\textsuperscript{2}
  - Safety is well established\textsuperscript{1,3}
  - All infants are exposed to aluminum in the environment (eg, breast milk, infant formulas)\textsuperscript{1}


Debunking of the “Link” Between Vaccines and Neurologic Side Effects

- In 2010, The Lancet retracted the 1998 report alleging a link between vaccines and autism\textsuperscript{1}
  - Studies have demonstrated that no such link exists\textsuperscript{1,2}
- Vaccines are given at around the same time that autism becomes apparent; however, they do not cause autism\textsuperscript{1}
  - To explain the difference between causal and temporal relations, use the analogy of the rooster that crows every morning
  - The sun will rise whether or not the rooster crows
- Signs of autism in a child may predate a vaccination but not be noticed until after a particular vaccine has been given\textsuperscript{1,3}
- The increased number of vaccines recommended for children has resulted in a higher prevalence of neurodevelopmental problems\textsuperscript{1,4}


More Childhood Vaccines—But Fewer Antigens

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<thead>
<tr>
<th>Vaccine Proteins</th>
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<td>WC pertussis ~3000</td>
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</tbody>
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Thanks to advances in technology, vaccines today contain fewer antigens. To avoid overloading the immune system, vaccines now contain fewer antigens. Even with more vaccines, the total immunologic load is much less.\textsuperscript{1,2}

Key Facts About Formaldehyde

- Used to inactivate:
  - Viruses that cause influenza and polio
  - Tetanus and diphtheria toxins
- Diluted during the manufacturing process
- Naturally occurring in all humans to synthesize thymidine, purines, and amino acids
  - Quantity of formaldehyde found in infant’s blood is 10-fold greater than that contained in any individual vaccine


Addressing Common Philosophical Objections to Vaccination

- “Too much, too soon?”
- “Natural disease provides better immunity”
- “Most of the vaccine-preventable diseases don’t even exist anymore”
- “My [fill in the blank] told me not to let you vaccinate my baby”

“Too Much, Too Soon?”

- Offer reassurance
  - Vaccines do not overload the immune system
  - Every day an infant encounters thousands of antigens (parts of germs that cause the immune system to fight disease)
- Explain why it’s best to follow the recommended immunization schedule
  - Goal: To ensure that the child is immune to diseases before he or she is most likely to be exposed
  - The vaccines have been tested at the recommended ages, so we know they’re safe, even in young children


“Natural Disease Provides Better Immunity”

- Explain that:
  - The cost of natural immunity can be severe
  - Fatal disease is not a risk worth taking
  - Not vaccinating one’s child puts his or her entire community at risk
  - Low immunization coverage rates at the local level have led to substantially decreased herd immunity
  - As a result, we see outbreaks of vaccine-preventable diseases (eg, measles)
- If possible, cite cases of disease from your own experience as an HCP


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

- Explain that once-prevalent vaccine-preventable diseases may return if high immunization rates are not maintained
  - Many parents are too young to remember the days when those diseases caused high rates of morbidity and mortality, especially among children
- Give examples of recent outbreaks
  - Measles: New York, North Carolina, and Texas in 2013; California and Ohio in 2014
  - Pertussis: California in 2010 and 2014, Washington in 2012
    - Early data from 2014 point to a national surge in reported pertussis cases
  - If possible, cite cases of vaccine-preventable disease from your own experience as an HCP


“My [Fill in the Blank] Told Me not to Let You Vaccinate my Baby”

- Ask for clarification: What are the underlying concerns of the person who gave that advice?
- Offer your recommendation, based on facts
- Recommend or provide reading material
- Refer the parent to reliable resources

Helpful CDC and AAP Resources for HCPs

- CDC resources for vaccine conversations with parents: http://1.usa.gov/18TMMbH
- AAP webpage titled Parental Refusal to Vaccinate: http://bit.ly/1H7G9MR
  - Refusal to Vaccinate form
  - AAP clinical report, titled "Responding to Parental Refusals of Immunization of Children"1,2
  - Coding resources for vaccine refusal
  - Sample office vaccine policy statement (for distribution to parents)
  - Sample office poster
  - Resources to answer questions

References:

Helpful Resources for Parents

- Vaccine Education Center at The Children’s Hospital of Philadelphia: http://bit.ly/1iFt4r4
- Sanofi Pasteur’s ImmYOUNitySM website: http://vaccines.com/about-immynunity.cfm
- Vaccinate Your Baby: http://www.vaccinateyourbaby.org

Additional Resources for HCPs and/or Parents

- Immunization Action Coalition: http://www.vaccineinformation.org
- Immunization Education Program of the AAP’s Pennsylvania chapter: http://www.paeip.org
- Institute for Vaccine Safety, Johns Hopkins Bloomberg School of Public Health: http://www.vaccinesafety.edu
- National Network for Immunization Information: http://www.immunizationinfo.org