

# Vaccine Hesitancy: Initiating Crucial Conversations

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Dean A. Blumberg, MD, FAAP

- ◆ **Disclosure**

- speakers bureau: sanofi pasteur, Merck

- ◆ **Discussion**

- vaccines not approved by FDA
- “off label” use of FDA approved vaccines

# Vaccine Hesitancy: Initiating Crucial Conversations

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- ◆ **Vaccines and public health**
- ◆ **Vaccine safety concerns**
  - overwhelm the immune system
  - thimerosal
  - aluminum
  - autism
- ◆ **Addressing vaccine hesitancy**

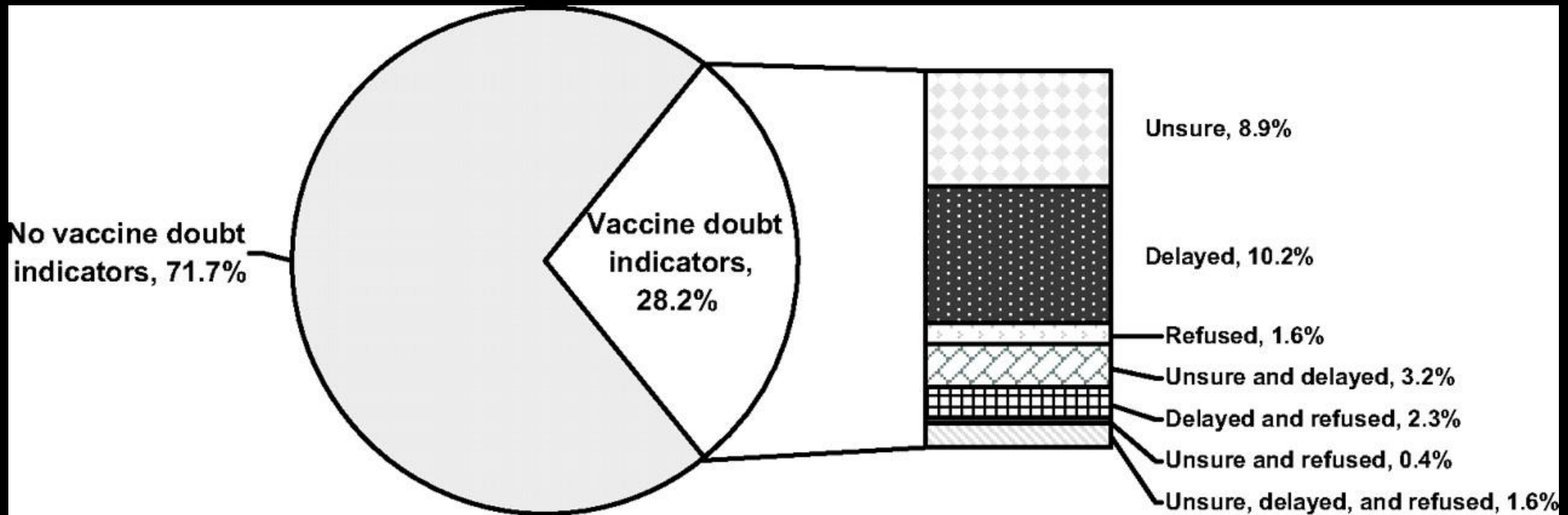
# Vaccine-Preventable Diseases: Baseline 20th Century & Current Morbidity

Disease	Number of Cases		% Decrease
	Baseline	2015*	
Smallpox	48,164	0	100.00
Diphtheria	175,885	0	100.00
Measles	503,282	188	99.96
Mumps	152,209	1,057	99.31
Pertussis	147,271	18,166	87.66
Polio (par.)	16,316	0	100.00
Rubella	47,745	5	99.99
CRS	823	1	99.88
Tetanus	1,314	25	98.10
Hib	20,000	25	99.88

provisional

MMWR 2016;94:48:245, 2016;64(52)

# Parents: Doubts About Vaccines

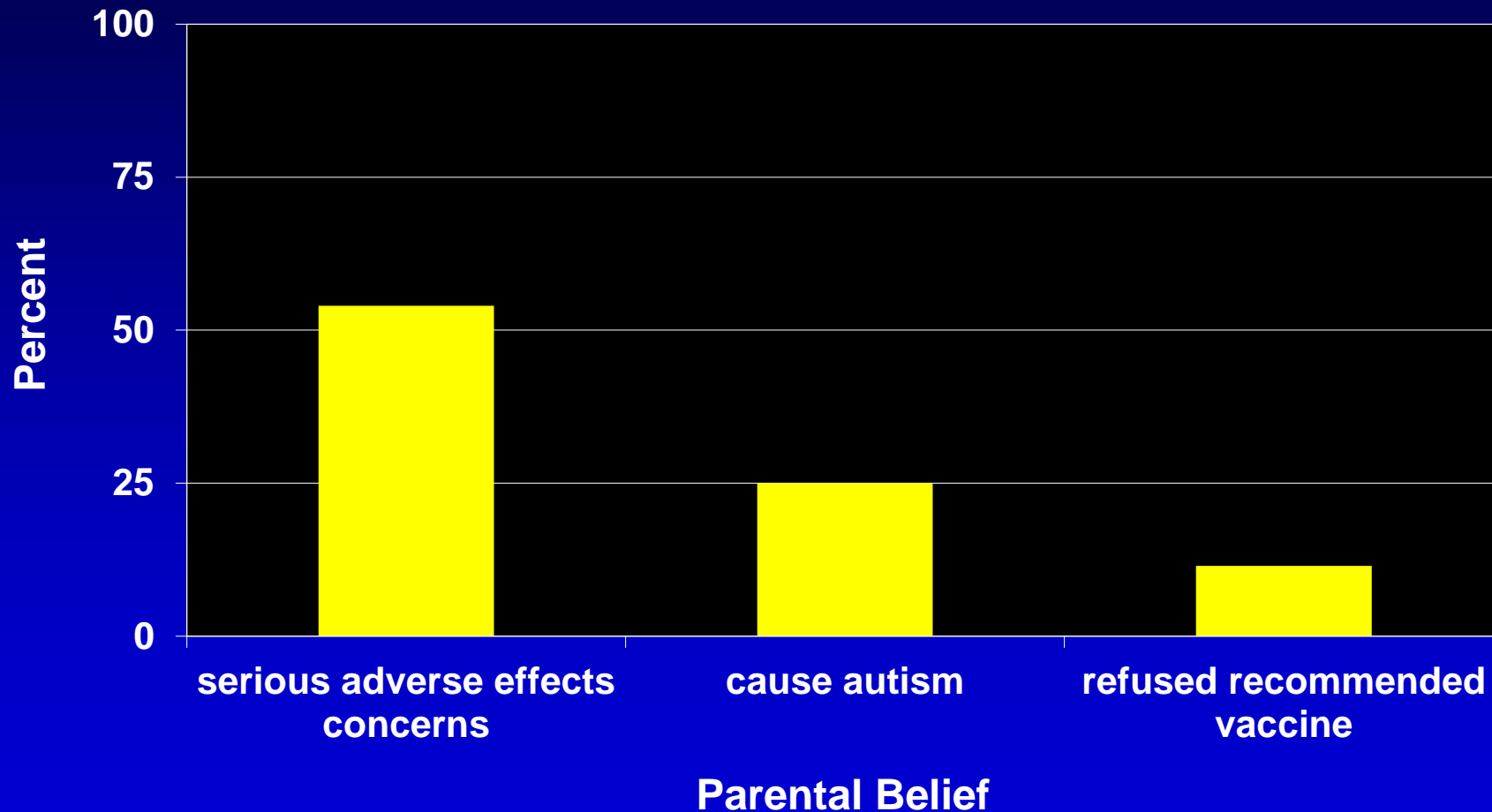


# Vaccine Adverse Event Myths

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- ◆ **No credible scientific evidence that vaccines cause:**
  - autism
  - multiple sclerosis
  - diabetes
  - asthma
  - inflammatory bowel disease
  - SIDS
  - overwhelm immune system

# Parental Vaccine Safety Concerns



# Alternative Vaccination Schedule Preferences Among Parents of Young Children

*Pediatrics* 2011;128:848–856



**WHAT'S KNOWN ON THIS SUBJECT:** Increasing numbers of parents are following alternative vaccination schedules that differ from the recommended vaccination schedule for their young children. Following an alternative schedule leads to undervaccination and increases the risk of contracting vaccine-preventable diseases.



**WHAT THIS STUDY ADDS:** This is one of the first studies to detail alternative vaccination schedule use among parents of young children nationally and to delineate the “malleability” of parent’s attitudes regarding their vaccination schedule choices.

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#### **KEY WORDS**

vaccines, immunizations, immunization schedule, parents

#### **ABBREVIATIONS**

CDC—Centers for Disease Control and Prevention

VPD—vaccine-preventable disease

[www.pediatrics.org/cgi/doi/10.1542/peds.2011-0400](http://www.pediatrics.org/cgi/doi/10.1542/peds.2011-0400)

- ◆ **13% follow an alternative vaccine schedule**

# Physician Response to Parental Requests to Spread Out the Recommended Vaccine Schedule

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PEDIATRICS Volume 135, number 4, April 2015

- ◆ **93% report requests for alternative schedule**
- ◆ **21% report >10% parents made request**



# Overwhelm Immune System?

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- ◆ **Infant immune system**
  - naïve
  - can respond to thousands of antigens simultaneously
- ◆ **Challenges other than vaccines**
  - natural environmental exposures
    - » strep throat: >50 antigens
    - » otitis media: >2,000 antigens

# Number of Immunogens in Vaccines

1900		1960		1980		2016	
Vaccine	Immunogens	Vaccine	Immunogens	Vaccine	Immunogens	Vaccine	Immunogens
Smallpox	~200	Smallpox	~200	Diphtheria	1	Diphtheria	1
		Diphtheria	1	Tetanus	1	Tetanus	1
		Tetanus	1	Pert-WC	~3000	Pert-AC	2-5
		Pert-WC	~3000	Polio	15	Polio	15
		Polio	15	Measles	10	Measles	10
				Mumps	9	Mumps	9
				Rubella	5	Rubella	5
						Hib	2
						Varicella	69
						PCV	14
						Hepatitis B	1
						Hepatitis A	1
						MCV	4
						RV	2-7
						HPV	9
						Influenza*	6-114
<b>Total</b>	<b>~200</b>	<b>Total</b>	<b>~3217</b>	<b>Total</b>	<b>~3041</b>	<b>Total</b>	<b>147-263</b>

# Thimerosal Concerns: Neurotoxin?

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- ◆ **Thimerosal**
  - preservative
  - ethylmercury
- ◆ **Toxicity data**
  - methylmercury
- ◆ **7 well done studies**
  - methods
    - » both retrospective & prospective
    - » ecological & cohort
    - » several 100,000 children
  - results: no association

# Thimerosal Content: US Vaccines

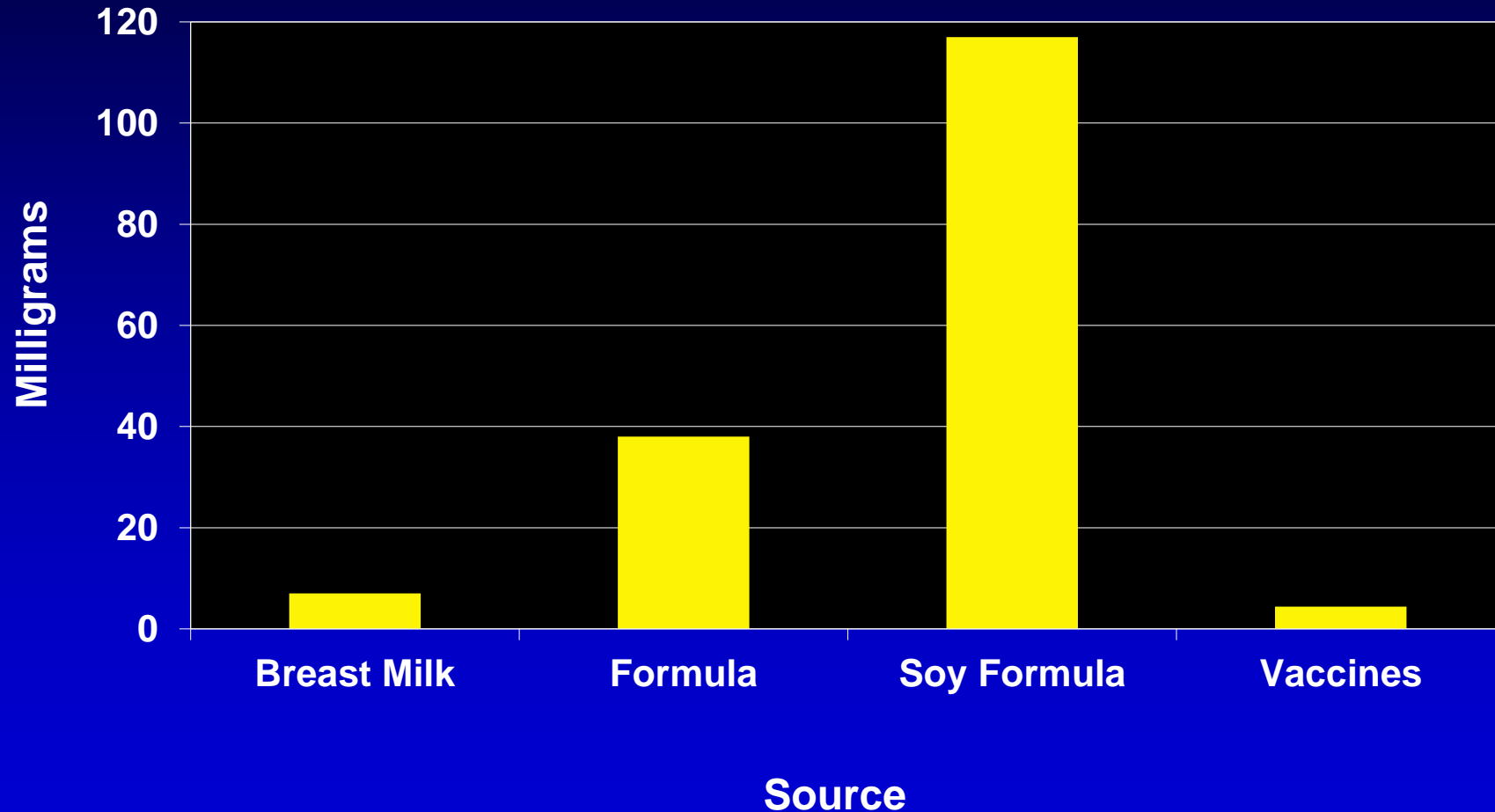
Vaccine	Trade name	Manufacturer	Thimerosal Concentration
DTaP	Tripedia <sup>®</sup>	Sanofi Pasteur	≤0.00012%
	Infanrix <sup>®</sup>	GlaxoSmithKline	0
	Daptacel <sup>®</sup>	Sanofi Pasteur	0
DTaP-HepB-IPV	Pediarix <sup>®</sup>	GlaxoSmithKline	0
Tdap	Adacel <sup>®</sup>	Sanofi Pasteur	0
	Boostrix <sup>®</sup>	GlaxoSmithKline	0
<i>Haemophilus influenzae</i> type b conjugate (Hib)	ActHIB <sup>®</sup>	Sanofi Pasteur	0
	PedvaxHIB <sup>®</sup>	Merck & Co, Inc	0
Hib/Hepatitis B combo	Comvax <sup>®</sup>	Merck & Co, Inc	0
Hepatitis B	Engerix B <sup>®</sup>	GlaxoSmithKline	0
	Recombivax HB <sup>®</sup>	Merck & Co, Inc	0
Hepatitis A/Hepatitis B	Twinrix <sup>®</sup>	GlaxoSmithKline	<0.0002%
Influenza*	Various	Various	Varies

# Aluminum Concerns

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- ◆ **Aluminum in vaccines**
  - adjuvant
  - maximum amount 0.85 mg/dose
- ◆ **Aluminum exposure**
  - deodorant
  - food
    - » adults average 7-9 mg/day
      - 200 mg in antacids
  - breast milk
    - » 0.04 mg/L
  - formula
    - » 0.225 mg/L

# Aluminum Exposure: 1<sup>st</sup> 6 Months of Life



# MMR & Autism

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- ◆ **1998: Wakefield Lancet publication**
  - case series
    - » 12 children
- ◆ **Biological plausibility: no**
- ◆ **10 well done studies**
  - methods
    - » both retrospective & prospective
    - » ecological & case control
    - » millions of children
  - results: no association

[Child Care](#)
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[College](#)
[Laws](#)


## Exemptions

[Immunization Laws](#)
[Exemptions](#)
[▶ SB277 FAQs](#)
[Conditional Admission FAQs](#)
[Handbook, Records, & Materials](#)

ShotsForSchool > Immunization Laws > Exemptions

## New Law (SB 277) Effective in 2016

Governor Brown signed Senate Bill (SB) 277 on June 30, 2015. SB 277 changes immunization requirements for children entering child care or school.

Starting January 1, 2016:

- Parents or guardians of students in any school or child-care facility, whether public or private, will no longer be allowed to submit a personal beliefs exemption to a currently-required vaccine.
- Students will no longer be required to have immunizations for entry if they attend:
  - A home-based private school or
  - An independent study program with no classroom-based instruction.

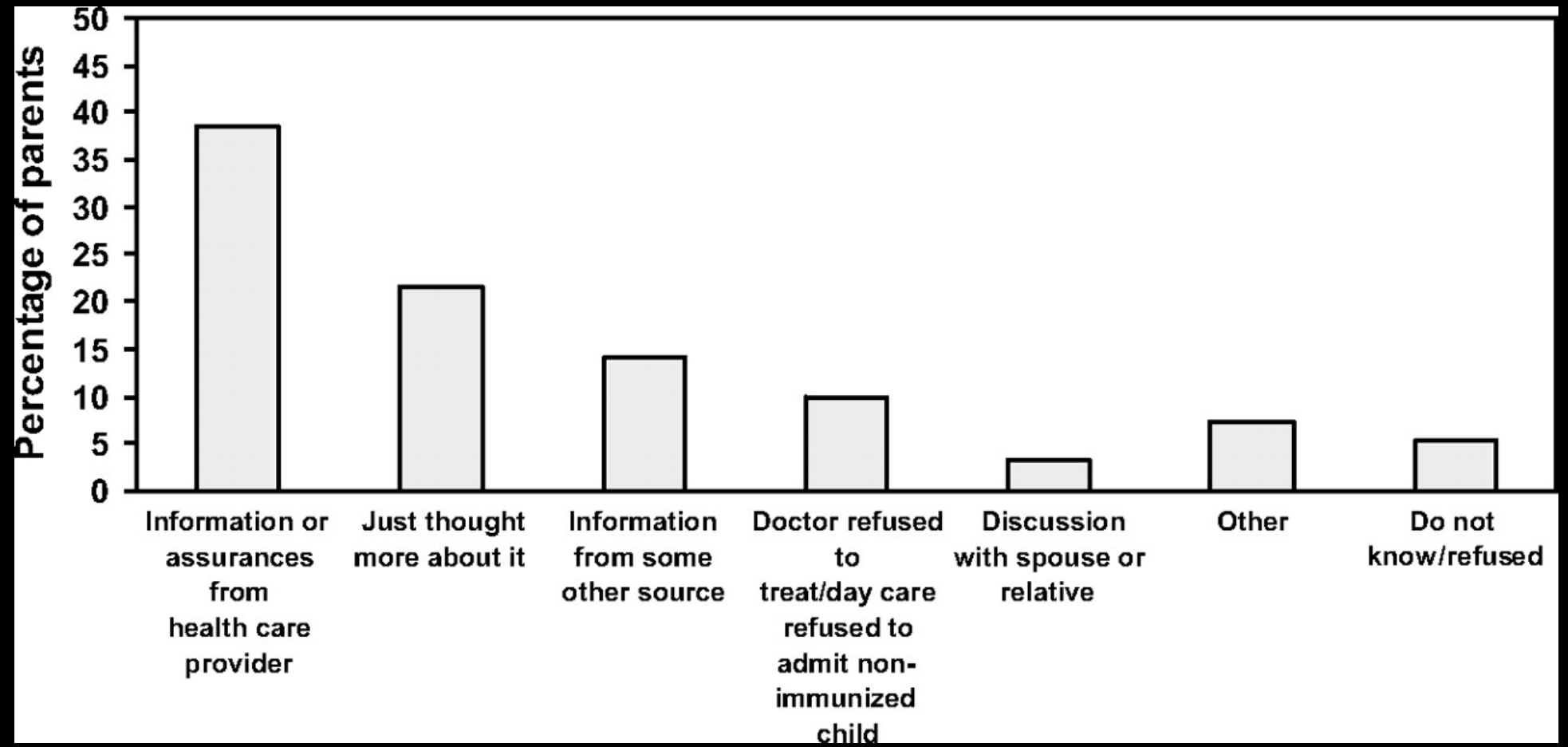
However, parents or guardians must continue to provide immunization records for these students to their schools, and schools must continue to maintain and report records of immunizations that have been received for these students.

- The immunization requirements do not prohibit pupils from accessing special education and related services required by their individualized education programs.
- Medical and personal beliefs exemptions will be allowed from any new immunization requirement initiated by CDPH for attendance at school or child care.

For information on medical exemptions, please see our [SB277 FAQs section on medical exemptions](#).



# Why Parents Who Planned To Delay/Refuse Vaccine Changed Their Minds



# Vaccine Hesitant Parents

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## ◆ Concerns

- vaccines highly purified
  - » immune system not overwhelmed
  - » no thimerosal in virtually all routine pediatric vaccines
  - » aluminum vaccine content trivial vs. environment
- no MMR association with autism

## ◆ Vaccine schedule

- protect children when they are most vulnerable
- delayed vaccines = delayed protection

# Vaccine Hesitancy Approach Strategies

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- ◆ **Understand importance of your recommendation**
  - trust
- ◆ **Present immunization as default**
- ◆ **Facts vs. stories**
  - cognitive bias: favor information that confirms beliefs, reject facts that contradict them
  - narrative and metaphor trump facts
- ◆ **No fear: vulnerability and infection likelihood instead**
- ◆ **Maintain authority**
  - certainty, trust, you are invested in best interests of child

# Parental Immunization Refusal

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- ◆ **Listen carefully to concerns**
  - encourage questions
- ◆ **Discuss known risks and benefits**
  - risks to unimmunized child
- ◆ **Concerns about specific vaccines**
  - discuss
  - administer other vaccines
- ◆ **Multiple injection concerns**
  - modify schedule
- ◆ **Revisit discussion in future visits**
- ◆ **Document**

# Vaccine Safety Discussion Strategies

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- ◆ **Empathize:** acknowledge that there are many conflicting messages in the media
- ◆ **Assess level of scientific evidence desired**
- ◆ **Maximize benefits to their child**
  - not a public health discussion
  - vaccines provide protection
  - risk of disease for omitted vaccines
- ◆ **Provide appropriate resources**
  - e.g., CDC, AAP, NNII, CHOP, IAC

# Continued Vaccine Refusal

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## ◆ Challenges

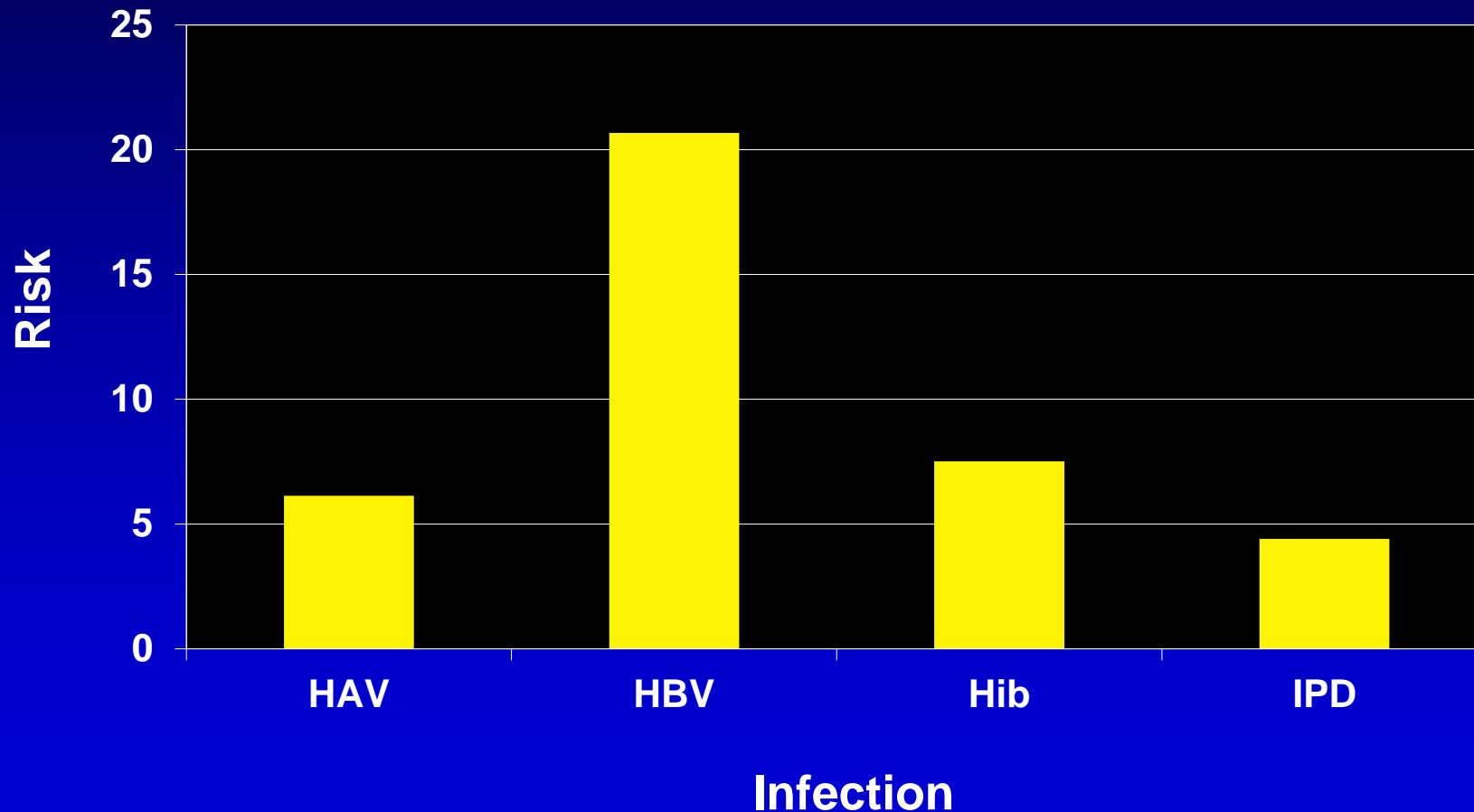
- time commitment for discussions
  - » frustration

## ◆ Agree to disagree

- acknowledge differences
  - » “it sounds like you and I have different philosophies”
- offer referral to a different practice/clinic
  - » “you might be more comfortable with this group”

# Vaccine Preventable Diseases: American Indian & Alaskan Native Children

Rate of VPD AI/AN vs. General US Population



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- ◆ **Immunization challenges**
  - education of health care providers
  - education of patients and parents
  - discussion