Howard A Schneiderman
Dean, UC Irvine School of Biological Sciences
1970-1979
A Syllogism

• All successful public health programs ultimately rely on a broad societal consensus for support

• The societal consensus supporting US childhood immunization programs is beginning to erode

• A public dialogue about values that underlie immunization programs is needed to sustain and strengthen the consensus required to derive the full potential of modern vaccinology to protect the public health
I am indebted to these bioethicists for their generous teaching and collaboration:

Douglas Diekema, MD, MPH
University of Washington

Christopher Feudtner, MD, PhD
University of Pennsylvania

Douglas Opel, MD
University of Washington
In the past 12 months I have had no relevant financial relationships with the manufacturers of any commercial products or providers of any services discussed in this CME activity.

I do not intend to discuss an unapproved or investigative use of a commercial product or device in my presentation.

I am not a bioethicist
“Something’s just not right—our air is clean, our water is pure, we all get plenty of exercise, everything we eat is organic and free-range, and yet nobody lives past thirty.”
## Vaccine-Preventable Diseases:
20th Century Annual Morbidity Compared to Current Morbidity

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity†</th>
<th>2007 Reported Cases††</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>29,005</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>21,053</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>43</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>800</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>200,752</td>
<td>10,454</td>
<td>95%</td>
</tr>
<tr>
<td>Polio (Paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>12</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>152</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>28</td>
<td>95%</td>
</tr>
<tr>
<td><strong>Haemophilus influenzae</strong></td>
<td><strong>20,000</strong></td>
<td><strong>202</strong>*</td>
<td><strong>99%</strong></td>
</tr>
</tbody>
</table>

†Source: *JAMA*. 2007;298(18):2155-2163
†† Source: CDC. *MMWR* August 22, 2008/57(33);901,903-913. (Final data)
* 22 type b and 180 unknown (< 5 years of age)
### Recommended Childhood Vaccines

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DTP / DTaP</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Polio</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>MMR</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Hib</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pneumococcal (PCV 7)</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Meningococcal (MCV 4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Rotavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Human Papilloma Virus (HPV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
A Rising Tide of Immunization Hesitancy

2000
- 19% of parents do not think vaccines are proven safe

2004
- 92% of pediatricians report parental vaccine refusal

2008
- ~20% of parents now defer or refuse some vaccines

Proportions of parents who reported vaccine doubt indicators

- No vaccine doubt indicators – 71.7%
- Vaccine doubt indicators – 28.2%
  - Unsure: 8.9%
  - Delayed: 10.2%
  - Refused: 1.6%
  - Unsure & delayed: 3.2%
  - Delayed & refused: 2.3%
  - Unsure, delayed & refused: 1.6%

Parents Who Refuse Vaccines

Compared to parents who immunize their children, parents who refuse vaccines are, in general:

• Older, better educated, non-Hispanic white

• Concerns about vaccine safety
  – Cause harm 69%
  – Overload immune systems 49%

• Child not at risk for disease 37%

• Disease not dangerous 21%

Parental Concerns circa 2009

- Drugs
- Anabolic steroids
- Alcohol
- Bullying
  - Cyber bullying
- Child & sexual abuse
- School anxieties
- Exposure to violence & sex
  - Media & Internet
- Sexuality issues
  - ‘sexting’; stereotyping

- Gangs
- Obesity
- Environmental hazards
  - Mercury
  - Lead
  - Phthalates & Bisphenol A
  - Hormones in meat, milk
  - Pesticides
  - Contaminated foods
  - High fructose corn syrup
  - 2nd hand smoke
  - Excess sun exposure
Social & Cultural

- Decline in vaccine-preventable diseases
- Recognition of the limits of medicine & technology
- Resurgence of complementary medicine
- Growth of consumerism
- Failures of US health care system
- Growth of the vaccine injury compensation fund: as of 1/09 almost $3 billion

Adapted from Kane MA. Vaccine 16 (Suppl):1998;S73-78
Origins of Immunization Hesitancy II

Science, Media & the Internet

• **Distortion of scientific process:**
  – Science: hypothesis - test - accept or reject - refine
  – Media: hypothesis “validated” by repetition

• **Differing criteria for causality:**
  – Medical; legal; public opinion

• **Challenge of risk communication:**
  – Power of case reports vs. science

• **21st century access to media, Internet:**
  – Controversy sells
  – Source credibility, media concept of balance

Adapted from Kane MA. *Vaccine* 16 (Suppl):1998;S73-78
Good journalism values balance above all else. We owe it to our readers to present everybody's ideas equally....

...[l]f politicians or special-interest groups say things that seem untrue or misleading, our duty as journalists is to quote them without comment or contradiction. To do otherwise would be elitist and therefore wrong....
News Value of Controversy

The media regard balance as evidence of journalistic integrity; equate one expert with another; value controversy over search for truth.

Andrew Wakefield  David Salisbury
Jenny McCarthy    Ann Schuchat
Robert Sears      Larry Pickering
NVIC              NNii

*Communication trumps science because most parents have no clear idea how to evaluate the credibility of their source of immunization information!*
History of School Immunization Laws

1804 – Massachusetts passed laws requiring populations be vaccinated against smallpox

1855 – Massachusetts passed first compulsory school immunization law

1905 – US Supreme Court upheld compulsory population vaccination – Jacobson vs. Massachusetts

1922 – US Supreme Court upheld constitutionality of school immunization requirements

Adapted from Orenstein, 2005
1905 – Jacobson vs. Massachusetts

Plaintiff Jacobson:
Right of every free man to care for his own body and health in such a way as to him seems best

Justice Harlan:
No absolute right to be wholly freed from constraint. Organized society could not exist without manifold restraints
1905 – Jacobson vs. Massachusetts

Justice Harlan:

Limits based on “the necessity of the case”; not exceed what is reasonably required for the safety of the public

Compulsory measures should not pose a health risk to the subject; must not be arbitrary and oppressive
The Harm Principle

John Stuart Mill, *On Liberty*

The only purpose for which power can rightfully be exercised over any member of a civilized community, against his will, is to prevent harm to others.

His own good, either physical or moral, is not a sufficient warrant.
When is it justifiable to restrict individual freedom?

- When action (or inaction) places another individual at substantial risk of serious harm.
- To protect helpless individuals from a significant threat of harm.
- The restriction of freedom must be effective in preventing that harm.
- No less restrictive alternative exists that would be equally effective at preventing the harm.

Adapted from Diekema, D 2007
What constitutes a threat to the public health or public harm?

- Contagion or epidemic
  - Smallpox, Tuberculosis, Polio, Diphtheria, Measles

- Illness, injury, disability, death
  - Haemophilus, Pneumococcal & Meningococcal Disease, Hepatitis A, Hepatitis B, Varicella

- Adverse effect on children
  - Car seats, Booster seats

- Cost of care, disability
  - Motorcycle helmets, Rotavirus
What level of vaccine safety is required?

What disease risk balanced by what assurance of vaccine safety and efficacy justifies a universal immunization recommendation or mandate?

- Safety is relative, not absolute
- Can reject, but not prove, the null hypothesis:
  - Cannot prove there is no association between a vaccine and an adverse event
  - Can conclude only there is no evidence of an association
Rotashield® Vaccine – withdrawn from market in 2000

<table>
<thead>
<tr>
<th>With vaccine:</th>
<th>Without vaccine:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000,000 were vaccinated</td>
<td>1,000,000 won’t be vaccinated</td>
</tr>
<tr>
<td>100 got sick</td>
<td>16,000 will get sick</td>
</tr>
<tr>
<td>1 died</td>
<td>10 will die</td>
</tr>
</tbody>
</table>

If one is culpable for vaccine-related deaths, then one is also culpable for deaths caused by withholding vaccine

Adapted from Offit P, 2000
Balance of Benefits & Burdens

• What should be the balance between:
  – the state’s duty to protect the public health
  and
  – an individual’s right of free choice?
Enforcing School Laws by Exclusion

Measles in LA – 1977

2 deaths, 3 encephalitis, numerous pneumonia cases and hospitalizations

March 31, 1977

Order to exclude children without proof of immunization by May 2, 1977

May 2, 1977

~50,000 / 1.4 million without proof of immunity excluded

Most back with proof within days

Adapted from Orenstein, 2005
Measles in 6 States Strictly Enforcing School Laws vs. Other States, 1978

<table>
<thead>
<tr>
<th></th>
<th>Measles Incidence per 100,000 &lt;18 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>1978*</td>
</tr>
<tr>
<td>6 Enforcing States</td>
<td>40.6</td>
</tr>
<tr>
<td>Other States</td>
<td>90.3</td>
</tr>
<tr>
<td>*1st 31 weeks</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>35.2</td>
</tr>
</tbody>
</table>

*(MMWR 1978;27:303-304)*
## Impact of Exemptions on Disease Transmission

<table>
<thead>
<tr>
<th>Location</th>
<th>Exemptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>22.2 times more likely to acquire measles</td>
</tr>
<tr>
<td></td>
<td>5.9 times more likely to acquire pertussis</td>
</tr>
<tr>
<td></td>
<td>At least 11% of vaccinated children acquired measles from contact with an exemptor</td>
</tr>
<tr>
<td>National</td>
<td>35 times more likely to acquire measles</td>
</tr>
</tbody>
</table>

Adapted from Orenstein, 2005

+ Felkin DR et al. *JAMA* 2000;284:3145-3150
++ Salmon DA et al. *AMA* 1999;282:47-53
Arizona offers a personal belief exemption for school but not daycare.

Personal belief exemptions include religious, philosophical and any other unspecified non-medical exemption.

US Immunization Exemptions
2005-2006 School Year

Source: CDC School Immunization Survey
WA State Counties’ School Entry Exemption Rates 1999-2000

Statewide Total: 3.0%
123 Measles Cases US Residents
January 2008

- Unimmunized
- Too young (< 1 year)
- Unknown Immunization Status
- Missed Opportunity
- Immunized ≥ 1 dose
- Born before 1957
- Philosophical / Religious Beliefs
Trend in Cases of Imported Measles* as a Proportion of All Measles Cases, US 1997 – 2008

* Source unknown measles cases.

Source: Adapted from MMWR August 2008, 57(33):894
I am opposed to immunization requirements because:

- *only I know what is best for my child* 18% 75%
- *go against freedom of choice* 18% 75%

Parents should be allowed to send their child to school even if *not* immunized 14% 79%

Gellin BG, Maibach E, Marcuse EK. *Pediatrics* 2000;106:1097-1102
School laws work because parents rely on physician recommendations in making their immunization decisions and most physicians... are supportive of compulsory immunization.

Immediate Challenges

- Prudent, limited use of mandates
- Exemption process that ensures informed decision making
- Development of effective public health communication strategies
- Increased investment in vaccine safety science
- Expanded public engagement in developing public health policies
Alternative Strategies: Australia

USA and Australia child vaccination rates in 2008

- Under two years:
  - USA: 86%
  - Australia: 95%
  - USA: No $ for parents
  - Australia: $ for parents

- School entry:
  - USA: 95%
  - Australia: 88%
  - USA: Mandates
  - Australia: No Mandates

Adapted from J Leask, 2009
Lawrence GL et al. *Vaccine* 2004;22:2345-2350
Prudent, Limited Use of Mandates

Criteria for immunization mandates should be established which ensure that:

• Mandates are limited to diseases of indisputable public health importance
• Mandates have strong support from the medical community
• The rationale for a mandate is clearly stated
• Mandate process engages the public and is transparent
Ensure Informed Decision Making

• Exemption rates should be monitored
• Reasons for exemptions should be explored
• The exemption process should be thoughtful:
  – Discourage “convenience” exemptions
  – Eliminate schools’ financial incentive for using exemptions
  – Avoid irrelevant or onerous hurdles to exemption
  – Require periodic reconsideration of immunization

• Widely held erroneous perceptions should be addressed
Example of a Widely Held **Erroneous** Belief

Multiple vaccines administered at a single visit can overwhelm a vulnerable infant’s immune system.
# Immunogenic Proteins & Polysaccharides in Vaccines

<table>
<thead>
<tr>
<th>Year</th>
<th>Vaccine Proteins</th>
<th>1900</th>
<th>1960</th>
<th>1980</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Smallpox</td>
<td>~200</td>
<td>Smallpox</td>
<td>~200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diphtheria</td>
<td>1</td>
<td>Tetanus</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tetanus</td>
<td>1</td>
<td>WC-pertussis</td>
<td>~3000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polio</td>
<td>15</td>
<td>Polio</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measles</td>
<td>10</td>
<td>Measles</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mumps</td>
<td>9</td>
<td>Mumps</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubella</td>
<td>5</td>
<td>Rubella</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hib conj.</td>
<td>2</td>
<td>Hib conj.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Varicella</td>
<td>69</td>
<td>Varicella</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pneumo conj.</td>
<td>8</td>
<td>Pneumo conj.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hepatitis B</td>
<td>1</td>
<td>Hepatitis B</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTALS:**

- 1900: 1 ~200
- 1960: 5 ~3217
- 1980: 7 ~3041
- 2000: 11 123-126

Problem with Selective & Alternative Schedules

• Undervalue recommendations constructed to maximize benefit, minimize side effects for an individual child

• Give credence to erroneous beliefs, untested hypotheses, and reinforce unfounded fears

• Misinform by failing to distinguish between good and bad science

• Leave infants vulnerable to vaccine-preventable disease

• Encourage “hiding in the herd”

• Add to implementation costs
Invest in Safety Science

- Increase funding for vaccine safety science
- Factors associated with adverse reactions
- Vaccine efficacy and safety in special populations
- Increase capacity for epidemiologic studies
  - Scale: number of subjects, time windows
  - Duration of follow-up
<table>
<thead>
<tr>
<th>Rate (%)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 / 5,000 (0.05%)</td>
<td>19,200</td>
</tr>
<tr>
<td>1 / 10,000 (0.01%)</td>
<td>38,500</td>
</tr>
<tr>
<td>1 / 100,000 (0.001%)</td>
<td>384,250</td>
</tr>
</tbody>
</table>

Adapted from Ellenberg 1997, Davis 2000
Some Challenges of Risk Communication

• **Omission bias:**
  inaction acceptable, avoid discomfort of ambiguity

• **Compression:**
  overestimate rare risks, underestimate common

• **Credibility of information source**
  beliefs re disease causation
  controllability of risks

Adapted from Ball, 1998
Effective Public Health Communication

• Good vaccine safety science is essential; but good science is NOT sufficient:
  – Is complex, takes time
  – Junk science abounds
  – Safety concerns advanced as scientifically plausible

• Because vaccine safety concerns are often fear or faith-based they are not easily refuted by science:
  – Fear of environmental toxins
  – Fear of the machinations of the medical-industrial complex
  – Lack of trust in integrity of government science
  – Faith in trusted spokespersons
  – Faith in alternative health beliefs
Credibility on Issues of **Low** Concern

- **Competence/Expertise**: 80-85%
- **All other factors**: 15-20%

*Believe you if you are an expert*

Adapted from R Hyer, NIC, 2005
When people are stressed… they want to know that you care before they care what you know!  

Will Rogers
## Effect of Clinician Style on Motivation for Change

<table>
<thead>
<tr>
<th>Styles that Enhance</th>
<th>Styles that Promote Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathic</td>
<td>Coercing, arguing,</td>
</tr>
<tr>
<td>Non-judgmental</td>
<td>Shaming, criticizing</td>
</tr>
<tr>
<td>Respectful</td>
<td>Judging, labeling</td>
</tr>
<tr>
<td>Collaborative spirit</td>
<td>Commanding, threatening</td>
</tr>
<tr>
<td>Emphasis on choice</td>
<td>Moralizing, lecturing</td>
</tr>
</tbody>
</table>

Adapted from: *Brief Negotiation: Behavior change Counseling in Brief Clinical Encounters, 2nd ed.* The Permanente Medical Group, Inc., Northern California
CONCERNED PARENTS

INTENTIONAL MISINFORMERS

PLAY SOFTBALL...

PLAY HARDBALL!
Falsehood flies and the truth comes limping after; so that when men come to be undeceived it is too late; the jest is over and the tale has had its effect.

Jonathan Swift
National Campaign to Influence Immunization Behaviors

• Primary care physician can no longer carry the full burden of immunization communication

• To address the concerns of the growing number of immunization-hesitant parents a national social marketing campaign is needed that is:
  – Audience-centered, tailored for segments
  – Based on evidence
  – Focused on behavior
  – Maximizes benefits, minimizes barriers

Adapted from J Bender and K Sapsis, NIC 2005
Expand Public Engagement in Immunization Policy

- Need to engage non-aligned public in discussion of immunization policies & priorities
- There are well-developed models for engaging the public in decision-making:
  - US Army Corps of Engineers,
  - Environmental Protection Agency
- Beginning to be applied in public health
  - Priorities for influenza vaccine in a pandemic

http://www.iap2.org/
http://www.keystone.org/spp/health-pandemic.html
What Oprah and Larry King should be discussing…

- **Duties of families**
  - Protect individual child

- **Duties of society**
  - Protect individuals and the community of “healthy” children
  - Protect the community of vulnerable children
  - Protect future generations

- **Justice**
  - Protect due process
  - Equitable distribution of benefits; fair distribution of risks

- **Liberty**
  - Freedom to refuse or choose
  - Degree of coercion needed to enforce policy
  - Degree of societal consensus regarding policy

Adapted from Feudtner C, Marcuse E. *Pediatrics* 2001;107:1158-1164
“Sure, I follow the herd—not out of brainless obedience, mind you, but out of a deep and abiding respect for the concept of community.”
Newer Strategies for Vaccine Development

Reverse vaccinology
Defective particles replication
Replicating vectors recombined with genes from pathogens
DNA plasmids
Gene delivery by invasive bacteria
Transcriptomics and proteomics
Induction of Innate immunity
Dendritic cell targeting
Therapeutic vaccines
Adjuvants, including cytokines

Adapted from S Plotkin, 2008
<table>
<thead>
<tr>
<th>Major Uncontrolled Infectious Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter</td>
</tr>
<tr>
<td>Chlamydia</td>
</tr>
<tr>
<td>Clostridium difficile</td>
</tr>
<tr>
<td>Cytomegalovirus</td>
</tr>
<tr>
<td>Dengue</td>
</tr>
<tr>
<td>Ebola</td>
</tr>
<tr>
<td>EBV</td>
</tr>
<tr>
<td>E. coli 0157</td>
</tr>
<tr>
<td>Helicobacter pylori</td>
</tr>
<tr>
<td>Hepatitis C</td>
</tr>
<tr>
<td>Herpes simplex</td>
</tr>
<tr>
<td>HIV</td>
</tr>
<tr>
<td>Hookworm</td>
</tr>
<tr>
<td>Influenza, Pandemic</td>
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<tr>
<td>Malaria</td>
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<tr>
<td>Meningococcus B</td>
</tr>
<tr>
<td>Norwalk</td>
</tr>
<tr>
<td>Parainfluenza</td>
</tr>
<tr>
<td>Parvovirus B19</td>
</tr>
<tr>
<td>RSV</td>
</tr>
<tr>
<td>SARS</td>
</tr>
<tr>
<td>Schistosomiasis</td>
</tr>
<tr>
<td>Shigella</td>
</tr>
<tr>
<td>Strep, GpA + B</td>
</tr>
<tr>
<td>Tuberculosis</td>
</tr>
<tr>
<td>Urinary tract infection</td>
</tr>
<tr>
<td>West Nile Virus</td>
</tr>
</tbody>
</table>

Adapted from S. Plotkin, 2008
FOLON

GALERIE LIBRAIRIE DU FLEUVE

A PARTIR DU 8 DECEMBRE 1972

38 COURS DU CHAPEAU ROUGE BORDEAUX
1954
World’s First Pocket Radio
11 ounces $49.95

2009
1 GB: $49.00
iPod Shuffle

Era of modern vaccinology began in the 1990s.

Where could we be in 2064 if we fully exploit its potential to improve the public health?
US Public Heath Service based on quarantine Q signal flag

First US Naval Jack, 1775

COMMENTS! QUESTIONS? DISCUSSION...
ADDITIONAL SLIDES
Key Messages for Infant’s Parents

• We understand that you want to do what is best for your son or daughter; so do we!

• We know you are bombarded with conflicting information and do not know whom to believe

• We recognize that science does not provide answers to all the questions that concern you...

• But science is the best tool we have to get reliable answers to important questions
Key Messages for Infant’s Parents (Cont.)

• We wish we could make the world completely safe for your child; we cannot

• There are important threats to your child's health and safety we cannot eliminate, but we can help you protect your child

• We can assist you to get the information you need to decide to take action to protect your child against serious diseases that can result in lifelong disability

• To help you make a fully informed decision about immunizations, here are some science-based information sources, unrelated to the government or to drug companies...
Wisdom of Mark Twain & Will Rogers

Attributed to Mark Twain
The right word may be effective, but no word is as effective as a rightly timed pause to listen

Attributed to Will Rogers
When people are stressed and upset they want to know that you care before they care what you know
2008 San Diego Measles Outbreak:
12 cases, ~70 people quarantined, ~ 980 exposures

• Parent A:
Vaccines are scary. You have no control over them like you do with the rest of what goes into your child’s body…my child is injected with something, I have no idea what… Hard to shake off the power of case reports. Getting vaccinated is a leap of faith!

• Parent B
During the San Diego measles outbreak my son could not leave my property for 21 days! How does the family that put my son in the hospital feel? Should people be able to opt out? Yes…(long pause) but they should have to live on an island!

The San Diego outbreak did not change anybody’s mind!

This American Life #370: Ruining it for the Rest of Us 12/21/08
I have examined all of the...medical literature cited by petitioners, and those items do contain some evidence indicating that mercury in some forms and dosages can be toxic. **However, a thorough examination of the record makes it clear that there is no evidence...that ethylmercury, in the very small amounts contained in thimerosal-containing vaccines, can damage infant immune systems, or otherwise contribute to autism in any way.** For example, none of the medical articles, cited by petitioners...even suggest that thimerosal or ethylmercury, in the amounts contained in infant vaccines, can damage immune systems or cause other harm.

George L. Hastings, Jr., Special Master
DATA:

- Thimerosal 25 mcg
- Hemagglutinin 15 mcg

25 > 15

More pesticide than medicine
To conclude that Colten’s condition was the result of his MMR vaccine, an objective observer would have to emulate Lewis Carroll’s White Queen and be able to believe six impossible (or, at least, highly improbable) things before breakfast.

…Although I have the deepest sympathy for families like Colten’s, struggling emotionally and financially to find answers about ASD’s causes, and reliable therapies to treat ASD’s symptoms, I must decide Colten’s case based on the evidence before me.

That evidence does not establish an adequate factual basis from which to conclude that Colten’s condition was caused by his vaccines.

Denise K. Vowell, Special Master
Snyder vs. Secretary of HHS
Case No. 01-162V, 2/12/2009

After studying the extensive evidence in this case for many months, I am convinced that the reports and advice given to the Cedillos by Dr. Krigsman and some other physicians, advising the Cedillos that there is a causal connection between Michelle’s MMR vaccination and her chronic conditions, have been very wrong.

Unfortunately, the Cedillos have been misled by physicians who are guilty, in my view, of gross medical misjudgment.

George L. Hastings, Jr., Special Master
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
<th>Birth</th>
<th>1 month</th>
<th>2 months</th>
<th>4 months</th>
<th>6 months</th>
<th>12 months</th>
<th>15 months</th>
<th>18 months</th>
<th>19-23 months</th>
<th>2-3 years</th>
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<tr>
<td>Hepatitis B&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>Hib</td>
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<td>Hib&lt;sup&gt;4&lt;/sup&gt;</td>
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<tr>
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<td></td>
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</tr>
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<td></td>
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<td></td>
<td></td>
<td>MCV</td>
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</table>

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 0 through 6 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: [http://www.cdc.gov/vaccines/pubs/acip-list.htm](http://www.cdc.gov/vaccines/pubs/acip-list.htm). Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at [http://www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.
### Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2009

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

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age</th>
<th>7–10 years</th>
<th>11–12 years</th>
<th>13–18 years</th>
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<tbody>
<tr>
<td>Tetanus, Diphtheria, Pertussis</td>
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<td>Human Papillomavirus</td>
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<tr>
<td>Influenza</td>
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<td>Influenza (Yearly)</td>
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<td>Pneumococcal</td>
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<td>HepA Series</td>
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<tr>
<td>Hepatitis B</td>
<td></td>
<td>HepB Series</td>
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<td></td>
</tr>
<tr>
<td>Inactivated Poliovirus</td>
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<td>Measles, Mumps, Rubella</td>
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<tr>
<td>Varicella</td>
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<td>Varicella Series</td>
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<td></td>
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</tbody>
</table>

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