Vaccine Misinformation

Paul A. Offit, MD

The Children's Hospital of Philadelphia

The Perelman School of Medicine at the University of Pennsylvania

Vaccine Safety Issues

- OPV and polio
- Egg and gelatin allergies
- Measles vaccine and thrombocytopenia
- Influenza vaccine and GBS
- Pandemrix vaccine and narcolepsy
- Yellow fever vaccine and viscerotropic disease

MMR

Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Summary

Background We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Introduction

We saw several children who, after a period of apparent normality, lost acquired skills, including communication. They all had gastrointestinal symptoms, including abdominal pain, diarrhoea, and bloating and, in some

Wakefield, A.J., et al. Lancet 351: 637-641, 1998.

MMR-Autism: Scientific Studies I

Taylor, B, et al. Lancet 1999;351:2026-29

Dales L, et al. JAMA 2001;285:1183-85

Kaye JA, et al. Brit Med J 2001;322:460-3

Madsen KM, et al. N Engl J Med 2002;347:1477-82

Peltola H, et al. Lancet 1998;351:1327-8.

MMR-Autism: Scientific Studies II

Makela A, et al. Pediatrics 2002;110:957-63

DeStefano R, et al. Pediatrics 2004;113:259-66

Farrington CP, et al. Vaccine 2001;19:3632-5

Fombonne E, et al. Pediatrics 2001;108:e58

Taylor, B, et al. British Med J 2002;324:393-6

Thimerosal

Thimerosal-Autism: Scientific studies

Hviid A, et al. JAMA 2003;290:1763-66

Andrews N, et al. Pediatrics 2004;114:584-91

Herron J. Pediatrics 2004;114:577-83

Verstraeten T, et al. Pediatrics 2003;112:1039-48

Barbaresi W, et al. Arc Ped Ado Med 2005;159:37-44

Schecter R, et al. Arch Gen Psychiatry 2008;65:19-24

Defeating Epidemiology

The fallacy of “balance”

Tim Russert

Harvey Feinberg

David Kirby

EVIDENCE OF HARM

MERCURY IN VACCINES AND THE AUTISM EPIDEMIC: A MEDICAL CONTROVERSY

DAVID KIRBY

Epidemiological studies cannot detect rare events

“Vaccines might cause autism in a small group of genetically susceptible individuals.”

Power of epidemiological studies

- Paralysis (GBS) and influenza vaccine
- Intestinal blockage and rotavirus vaccine
- Narcolepsy and Pandemrix

Epidemiological studies don’t prove anything

Epidemiological studies and proof

- Flying like Superman
- WMD in Iraq
- Visiting Juno, Alaska

Anecdote trumps epidemiology

Jenny McCarthy and Oprah Winfrey

Cultural Biases

The media defends the weak against the powerful

Finley Peter Dunne

The vaccine-autism controversy

- If you care about children with autism, you support the notion that vaccines are the cause. Lawyers, politicians, fringe scientists, and journalists care.
- Doctors, public health officials, mainstream scientists and pharmaceutical companies don’t care.

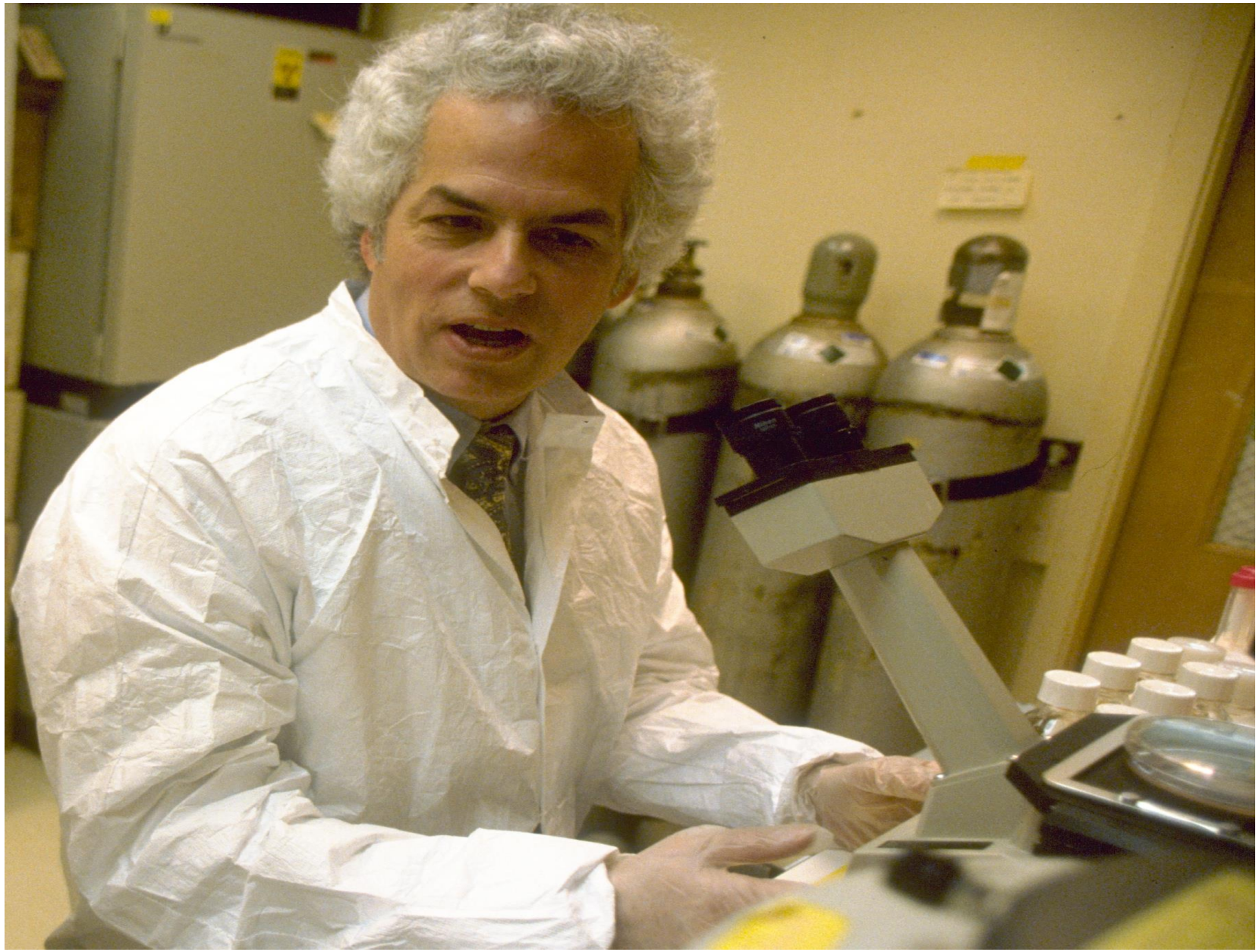
The vaccine-autism controversy

- Doctors and scientists who oppose notion that vaccines cause autism are standing up for the little guy

- Those who claim that vaccines cause autism hurt children by scaring parents about vaccines, proffering dangerous therapies, and diverting limited resources

The media loves mavericks

Barry Marshall



Stanley Prusiner

Andrew Wakefield

“While Galileo was a rebel, not all rebels are Galileo.”

Norman Leavitt

The media falls into the single-study trap

Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

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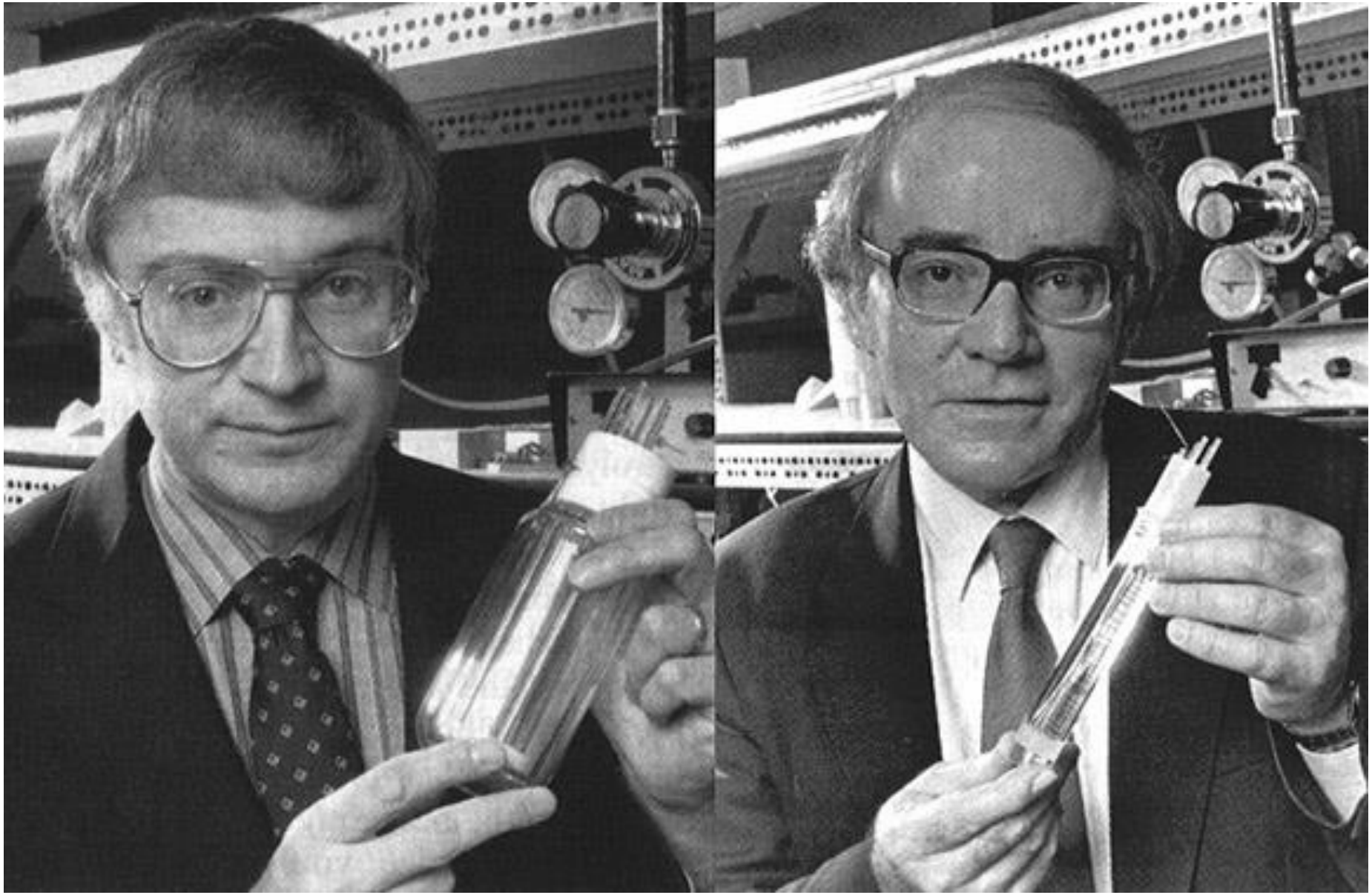

Stanley Pons and Martin Fleischmann

The public and the media don’t understand science

What Science Isn’t

- Science isn’t scientists or scientific bodies or accumulated knowledge
- Science is a way of thinking about or approaching a problem
- Although scientists get it wrong all the time, science is enormously self-correcting; but fluidity of science can be disconcerting.

Explaining cause and effect

The Lay of the Land

Belief	Percent of population
Astrology	50
ESP	46
Witches	19
Aliens already landed	22
Commune with dead	42
Ghosts	35

Conflicts of interest

Ad hominem attacks

- If you don’t have the data, discredit the messenger
- Appeal to personal considerations rather than logic or reason
- CDC, AAP, individuals under fire

Easy appeal to toxic, environmental hell

Jenny McCarthy and Jim Carrey


PENN & TELLER

Easy to scare people;
harder to unscare them


100 GRAND
CRUNCH
Kit Kat
M&M'S
SWEETARTS

Combatting Misinformation about Vaccines

Daniel A. Salmon, PhD, MPH

Director, Institute for Vaccine Safety

Professor, International Health & Health, Behavior and Society

Johns Hopkins University Bloomberg School of Public Health

Vaccine Misinformation: Problem

- Complex
- Separating coincidence from causality
  - Post hoc ergo propter hoc
  - Background rates of disease
- Separating fact from fiction
  - Trust in corporations and gov’t low
  - Fear of ‘pharmaceutical industrial complex’
  - Growing interest in natural products - “green our vaccines”
  - Media
  - Internet

Vaccine Misinformation: Solutions

- Vaccine Safety Science
  - Proactive and Timely
  - Rigorous
  - Relevant
  - Objective (and appearance of objectivity)
- Communications
  - Proactive and Timely
  - Evidence based
  - Find commonality rather than polarization
  - Tailored
  - Credible sources

Vaccine Safety Science: Proactive & Timely

- Characteristics of vaccine safety scares
  - Vaccine recommended around infancy or when adverse health outcome occurs
  - Adverse health outcome characteristics contributing to vaccine safety scare
    - Increasing in incidence or recognition
    - Poorly understood etiology
    - Concerning to parents/public
    - Advocacy groups
- Good science takes time whereas anecdote, sensationalism and bad science travels quickly
- Very difficult to changes someone's mind (cognitive dissonance and affirmation bias)
- Need to inform views as being formed

Vaccine Safety Science: Rigor

- Licensure process ensures benefits **>** risks for populations & outcomes studied
- Observational studies after licensure and recommendations to examine uncommon events, excluded populations, subpopulations, and delayed onset adverse events
  - Bias and Confounding potential problems
  - Challenges with control group
  - Very large studies needed for uncommon events
  - Dependent on diagnostic validity
- Infrastructure (active surveillance) very helpful for rigor and timeliness

Vaccine Safety Science: Relevant

Recommendations Approved by NVAC on June 2, 2009

	Step 1: What to Do					Step 2: How to Do It
Criteria	**Significance of the Exposure to a Vaccine**	**Burden of the Adverse Health Event Following Immunization**	**Public Concern**	**Scientific Concern and Degree to which Science Warrants Further Study***	**Impact on Policy**	**Feasibility**
Issues to Consider	1. Number of people who receive the vaccine(s). 2. Receipt of vaccine by infants or children. 3. Receipt of vaccine by other vulnerable populations. 4. The vaccine(s) is/are mandatory or universally recommended.	1. Severity of the health event including acute and chronic disability, treatability, and preventability. 2. Frequency of the health event. 3. Increasing incidence of the health event	Magnitude of public concern about a possible link between vaccination and the adverse health event. Concrete measures of magnitude such as survey data, refusal/delay rates, etc. should be used.	1. Strength 2. Consistency 3. Specificity 4. Temporality 5. Biological gradient 6. Biological Mechanism 7. Coherence 8. Experiment 9. Analogy	A study is likely to have a significant impact on the understanding of this issue, influence vaccine policy decision making, and enhance trust and confidence in the vaccine program.	1. Methodological feasibility 2. Ethical feasibility 3. Cost of the study and impact on the ability to do other studies (including opportunity costs) 4. Optimal sequencing with other potential studies that may be done by groups other than ISO.

* Scientific Concern and Degree to which Science Warrants Further Study is based on the Bradford-Hill causality criteria.

Figure 2. Prioritization criteria used by the Vaccine Safety Working Group.

Vaccine Safety Science: Relevant

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GAP

	Step 1: What to Do					Step 2: How to Do It
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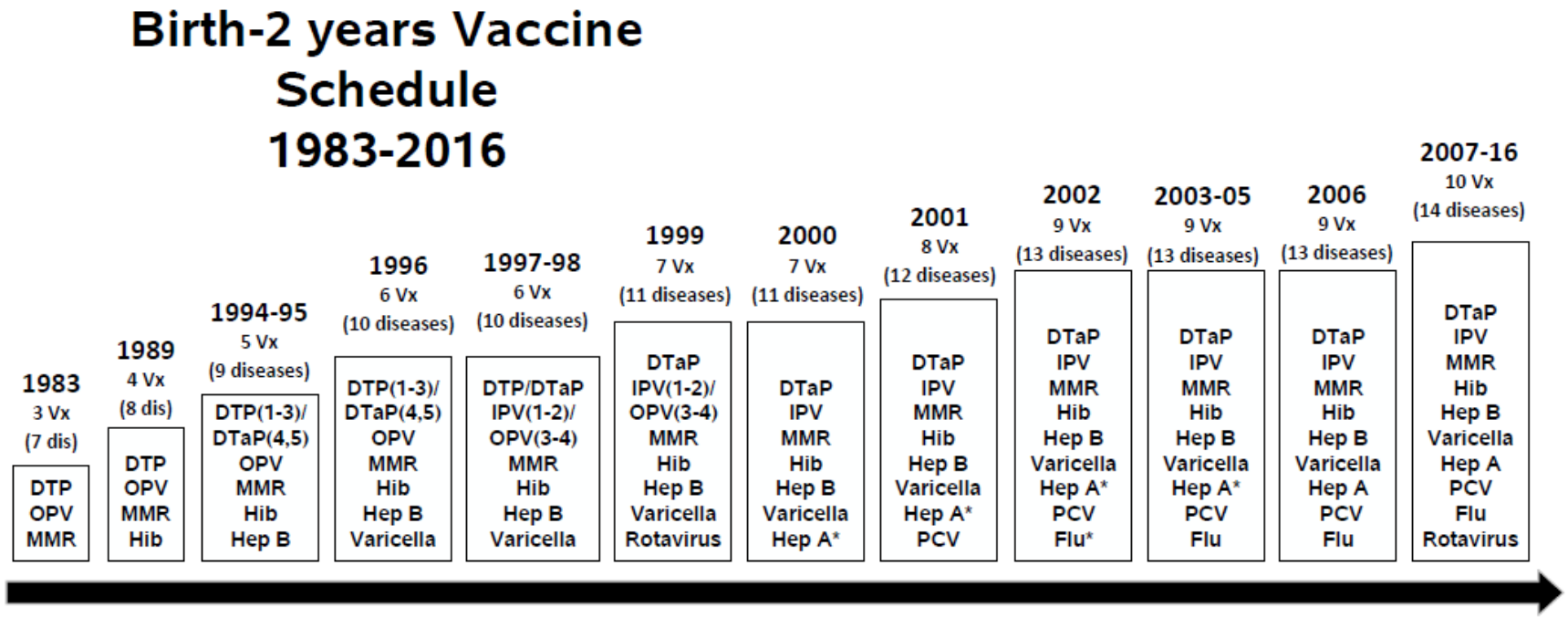
Figure 2. Prioritization criteria used by the Vaccine Safety Working Group.

"GAP" emphasis added

Immunization Schedule Timeline



CDC. Past Immunization Schedules. 2016
Retrieved http://www.cdc.gov/vaccines/schedules/past.html

Slide Courtesy of Jason Glanz

77% of Parents Reported Vaccine Concerns

- 38% - painful to receive so many shots
- 36% - **too many vaccines at one doctors visit**
- 34% - **too many vaccines if first two years of life**
- 32% - may cause fevers
- 30% - may cause learning disabilities, such as autism
- 26% - **ingredients unsafe**
- 17% - not tested enough for safety
- 16% - may cause chronic disease
- 11% - unlikely to get diseases
- 9% - not enough vaccine supply
- 8% - diseases not serious

Kennedy, Health Affairs, 2011

NVAC June2, 2009

"The NVAC endorses the Writing Group's recommendation for an external expert committee, such as the Institute of Medicine, with broad methodological, design, and ethical expertise to consider "strengths and weaknesses, ethical issues and feasibility including timelines and cost of various study designs to examine outcomes in unvaccinated, vaccine delayed and vaccinated children and report back to the NVAC."

Too Many Vaccines?

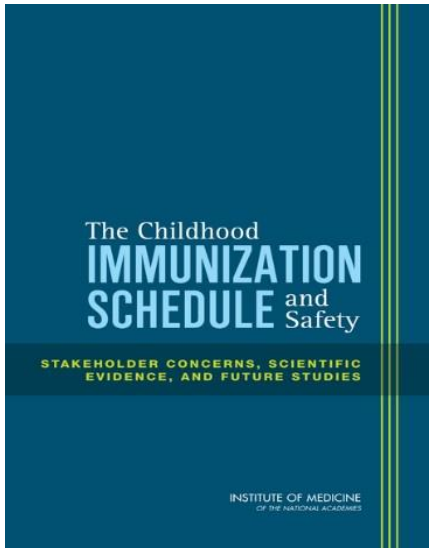
Studying the Safety of the Recommended Childhood Immunization Schedule

Vaccine Safety Conference
Wellcome Trust
London, England
May 31, 2019

Slides Used with Permission of Jason Glanz

IOM Report, 2013

- Assessed feasibility of studying the safety of recommended childhood immunization schedule
  - Reviewed scientific literature
  - Elicited stakeholder concerns
  - Identified and evaluated potential methodological approaches



IOM Report Concluded

- Few published studies have examined the entire current recommended schedule as a whole
- Available evidence suggests current schedule is safe
- Need more observational studies
- VSD represents an ideal research environment

IOM General Recommendations

- Focus on entire childhood schedule
- Long term health outcomes
- Susceptible subpopulations

IOM Specific Recommendations

- Compare health outcomes between:
  - fully immunized and completely unimmunized
  - fully immunized and partially immunized
  - children who receive fewer doses per visit and those who receive vaccines at later ages
- Develop metrics for the exposure (schedule)

Epidemiology of Under-vaccination and Alternative Immunization Schedules

- 323,247 children born between 2004–2008
- 48.7% under-vaccinated
- 1/8 (13%) children under-vaccinated due to parental choice
- 1399 patterns of under-vaccination
- Significant differences in healthcare utilization

Glanz et al. *JAMA Pediatrics* 2013

What's next?

Rank	Outcome	Rank	Outcome
1	Asthma (in progress)	11	Attention deficit disorder
2	Anaphylaxis	12	All-cause morbidity (published?)
3	Encephalopathy	13	Crohn's disease and ulcerative colitis (in progress)
4	All-cause mortality (published)	14	Syncope and vasovagal reaction
5	Meningitis	15	Seizures
6	Learning and devel. disorders	16	Kawasaki disease
7	Epilepsy	17	Juvenile rheumatoid arthritis
8	Type 1 diabetes (in progress)	18	Tics
9	First demyelinating event	19	Chronic urticaria
10	Allergy development	20	Bell's palsy

NVAC June2, 2009

"The NVAC endorses the Writing Group's recommendation for an external expert committee, such as the Institute of Medicine, with broad methodological, design, and ethical expertise to consider "strengths and weaknesses, ethical issues and feasibility including timelines and cost of various study designs to examine outcomes in unvaccinated, vaccine delayed and vaccinated children and report back to the NVAC."

Vaccine Safety Science:
Objective and Appearance of Objective

American Academy of Pediatrics

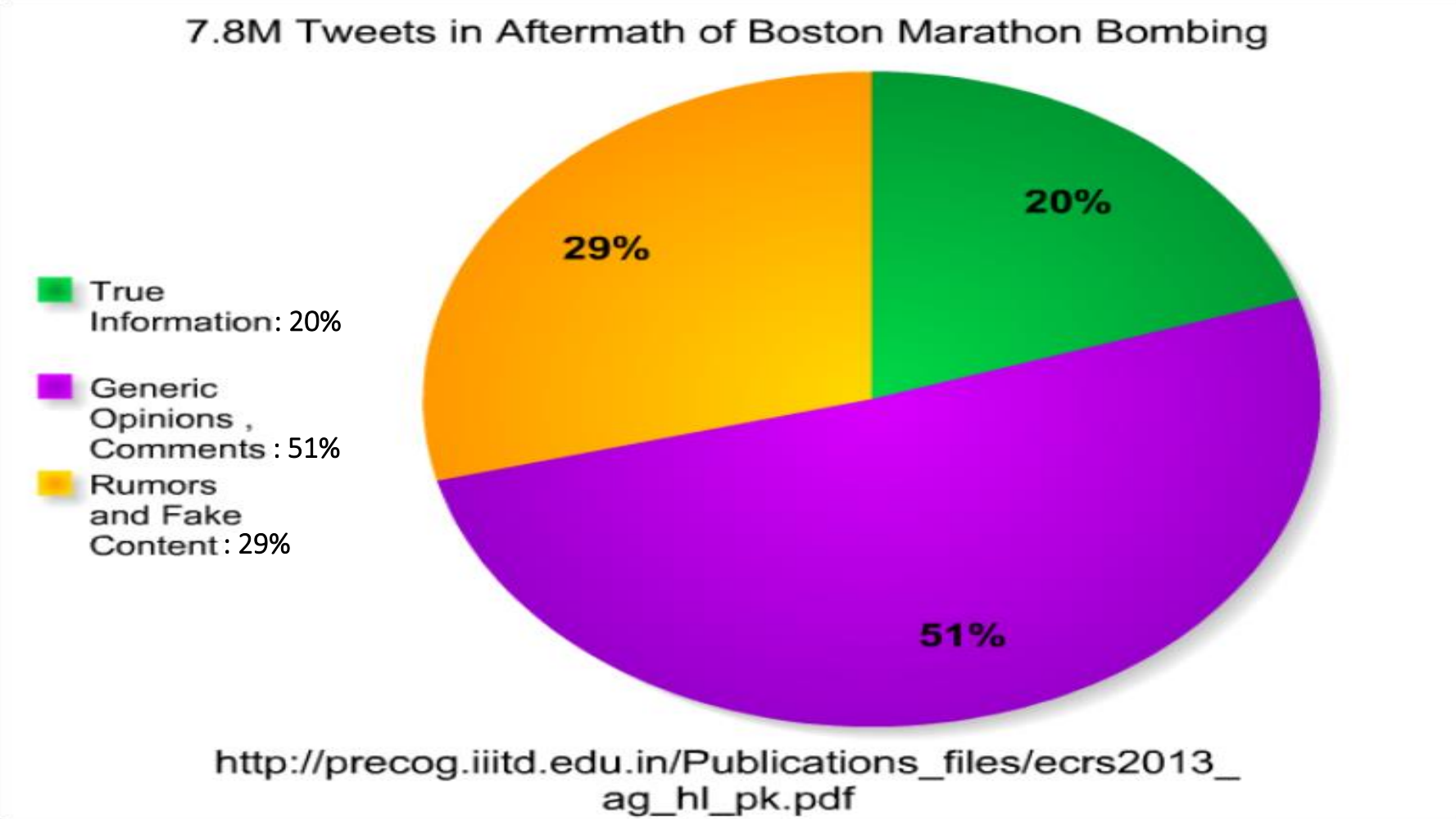
DEDICATED TO THE HEALTH OF ALL CHILDREN®

AMERICAN ACADEMY OF FAMILY PHYSICIANS

STRONG MEDICINE FOR AMERICA

AAPS Association of American Physicians and Surgeons

Communications: Proactive and Timely



Communications: Evidence Based

"If we do not accept substandard evidence in vaccine development science, why should we accept half-baked evidence in vaccine communication science"

Saad Omer

Systematic review of evidence on interventions to decrease parental vaccine refusal & hesitancy (through September, 2012)

- Identified 30 studies
  - Passage of state laws (n=4): Limited evidence of impact
  - State and school level implementation of laws (n=5): Limited evidence of impact
  - Parent-centered information or education (n=17): Limited evidence of impact
- Conclusion: No convincing evidence on effective intervention to address parental vaccine hesitancy or refusal
  - Few studies examined impact on refusal rates, intention to vaccinate, change in attitudes towards vaccines
  - Mostly observation studies that were either under-powered or provided indirect evidence
  - Most studies were of low quality (per GRADE criteria)

Sadaf, Vaccine, 2013

How Providers Initiate Conversation May Matter

- Observational study of provider-parent vaccine discussions, oversampled vaccine hesitant parents
- Majority of providers (74%) used Presumptive Format (well, we have to do some shots) rather than Participatory Format (what do you want to do about shots)
- Participatory format more common with vaccine hesitant parents (41% vs. 11%)
- Resistance to following recommendations higher with participatory rather than presumptive format
- When parents resist, half of providers pursued original recommendation and 47% of parents ultimately accepted recommendation

Opel, Pediatrics, 2013

Pro-Vaccine Messages Don’t Always Work

- Corrective information
  - decreased misconceptions that MMR vaccine causes autism
  - **reduced intent to vaccinate** with MMR vaccine among parents with least favorable vaccine attitudes
- Messages @ risk of measles through narrative and images **increased misperceptions about MMR vaccine**
- No interventions increased intent to vaccinate among parents with least favorable vaccine attitudes

Nyhan, Pediatrics, 2014

Web-based Social Media Intervention to Increase Vaccine Acceptance: A Randomized Controlled Trial

Jason M. Glanz, PhD,[a,b] Nicole M. Wagner, MPH,[a] Komal J. Narwaney, MPH, PhD,[a] Courtney R. Kraus, MSPH,[a]
Jo Ann Shoup, MSW, MS, PhD,[a] Stanley Xu, PhD,[a,c] Sean T. O'Leary, MPH, MD,[d]
Saad B. Omer, MBBS, MPH, PhD,[e] Kathy S. Gleason, PhD,[a] Matthew F. Daley, MD[a,d]

PEDIATRICS Volume 140, number 6

RCT Evaluating Website with Vaccine Information Interactive Social Media (VSM) and Website with Vaccine Information (VI) versus Usual Care (UC)

TABLE 2 Days Undervaccinated, Mean Ranks for Days Undervaccinated and Difference in the Mean Ranks Between Study Arms ($n = 888$)

Study Arm	Days Undervaccinated Percentiles			Mean Ranks[a]	Study Arm Comparisons	Difference in Mean Ranks	P[b]
	5th	50th	95th				
VSM ($n = 442$)	0	0	155	438.46	VSM versus UC	−26.91	.02
VI ($n = 297$)	0	0	107	443.03	VI versus UC	−22.34	.08
UC ($n = 149$)	0	0	411	465.37	VSM versus VI	−4.57	.63

[a] Obtained by ranking all observations in increasing order of magnitude of days undervaccinated and calculating the mean.
[b] Obtained by using 1-way analysis of variance on the ranks for days undervaccinated.

TABLE 3 Proportion of Infants Up-to-Date for Vaccination Status and OR Estimates for Up-to-Date Vaccination Status Between Study Arms ($n = 888$)

Study Arm	Proportion of Infants Up-to-Date (%)	Study Arm Comparisons	OR for Up-to-Date Vaccination Status (95% CI)	P
VSM ($n = 442$)	92.53	VSM versus UC	1.92 (1.07–3.47)	.03
VI ($n = 297$)	91.25	VI versus UC	1.62 (0.87–3.00)	.13
UC ($n = 149$)	86.58	VSM versus VI	1.19 (0.70–2.03)	.52

TABLE 4 Proportion of Children Up-to-Date on First Dose of MMR Vaccine and OR Estimates for Up-to-Date MMR Vaccination Status Between Study Arms ($n = 776$)

Study Arm	Proportion of Children Up-to-Date on First Dose of MMR (%)	Study Arm Comparisons	OR for Up-to-Date MMR Vaccination Status (95% CI)	P
VSM ($n = 389$)	95.63	VSM versus UC	1.95 (0.87–4.39)	.10
VI ($n = 265$)	95.47	VI versus UC	1.88 (0.79–4.49)	.15
UC ($n = 122$)	91.80	VSM versus VI	1.04 (0.49–2.21)	.92

Glanz, Pediatrics, 2017

JAMA Pediatr. 2018 May 7;172(5):e180016. doi: 10.1001/jamapediatrics.2018.0016. Epub 2018 May 7.

Effect of a Health Care Professional Communication Training Intervention on Adolescent Human Papillomavirus Vaccination: A Cluster Randomized Clinical Trial.

Dempsey AF[1,2], Pyrznawoski J[1], Lockhart S[1], Barnard J[1], Campagna EJ[1], Garrett K[3], Fisher A[4], Dickinson LM[1,5], O'Leary ST[1,6].

Author information

Abstract

IMPORTANCE: The incidence of human papillomavirus (HPV)-related cancers is more than 35 000 cases in the United States each year. Effective HPV vaccines have been available in the United States for several years but are underused among adolescents, the target population for vaccination. Interventions to increase uptake are needed.

OBJECTIVE: To evaluate the effect of a 5-component health care professional HPV vaccine communication intervention on adolescent HPV vaccination.

DESIGN, SETTING, AND PARTICIPANTS: A cluster randomized clinical trial using covariate-constrained randomization to assign study arms and an intent-to-treat protocol was conducted in 16 primary care practices in the Denver, Colorado, metropolitan area. Participants included 188 medical professionals and 43 132 adolescents.

INTERVENTIONS: The 5 components of the intervention were an HPV fact sheet library to create customized information sheets relevant to each practice's patient population, a tailored parent education website, a set of HPV-related disease images, an HPV vaccine decision aid, and 2½ hours of communication training on using a presumptive vaccine recommendation, followed by motivational interviewing if parents were resistant to vaccination. Each practice participated in a series of 2 intervention development meetings over a 6-month period (August 1, 2014, to January 31, 2015) before the intervention.

MAIN OUTCOMES AND MEASURES: Differences between control and intervention changes over time (ie, difference in differences between the baseline and intervention period cohorts of patients) in HPV vaccine series initiation (≥1 dose) and completion (≥3 doses) among patients aged 11 to 17 years seen at the practices between February 1, 2015, and January 31, 2016. Vaccination data were obtained from the practices' records and augmented with state immunization information system data.

RESULTS: Sixteen practices and 43 132 patients (50.3% female; median age, 12.6 years [interquartile range, 10.8-14.7 years] at the beginning of the study period) participated in this trial. Adolescents in the intervention practices had significantly higher odds of HPV vaccine series initiation (adjusted odds ratio [aOR], 1.46; 95% CI, 1.31-1.62) and completion (aOR, 1.56; 95% CI, 1.27-1.92) than those in the control practices (a 9.5-absolute percentage point increase in HPV vaccine series initiation and a 4.4-absolute percentage point increase in HPV vaccine series completion in intervention practices). The intervention had a greater effect in pediatric practices compared with family medicine practices and in private practices compared with public ones. Health care professionals reported that communication training and the fact sheets were the most used and useful intervention components.

CONCLUSIONS AND RELEVANCE: A health care professional communication intervention significantly improved HPV vaccine series initiation and completion among adolescent patients.

Communications:
Find Commonality rather than Polarization

- Most parents are not anti-vaccine
- Many parents have vaccine concerns
- We need 95%+ vaccine coverage, homogenously, and often indefinitely
- Yelling and name calling leads to conflict and polarization
- Parents, medicine and public health share desire to protect the health of children

Communication: Tailored Immunization Groups or Profiles

Immunization Advocates: actively seek vaccination

Go Along to Get Along: follow the advice of their doctors and perceived social norms to vaccinate

Cautious Acceptors: vaccinate, but with some caution

Fence-Sitters: very uncertain in their vaccine decisions

Refusers: actively reject some or all vaccines

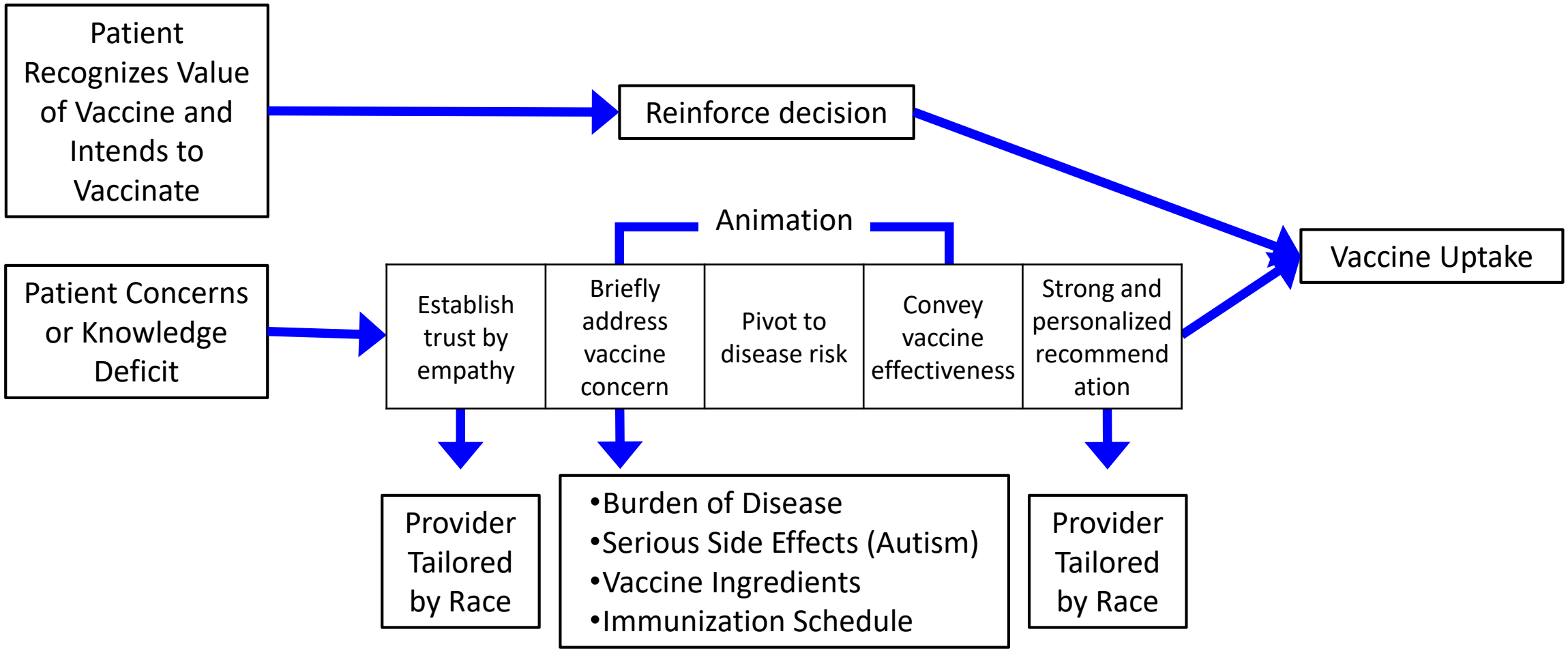
Edwards KM, et al. Pediatrics 2016;138(3).
Keane MT, et al. Vaccine 2005;23(10):2486.
Leask J, et al. BMC Pediatr 2012;12:154.
Gust D, et al. Am J Health Behav 2005;29(1):81.
Gust DA, et al. Pediatrics 2008;12(4):718.
Kahan DM. Yale LERP 491.
Smith PJ, et al. Pub Health Repo 2011;126S:135.

World Health Organization

"…messages need to be tailored for the specific target group, because messaging that too strongly advocates vaccination may be counterproductive, reinforcing the hesitancy of those already hesitant…"

Dubé E*, et al.* Vaccine 2015.

Audience Segmentation and Tailoring for MomsTalkShots Educational App



Salmon, Limaye….Omer et al, under review, Vaccine

Communication: Credible Sources

- Healthcare Providers
  - Widely considered best source for vaccine information in many developed countries
  - Often lack the tools to effectively communicate with parents
  - Reimbursement for vaccine risk communication may be inadequate
- Institute of Medicine (IOM) Safety Reviews
  - Public not widely familiar with IOM
  - “Inadequate Evidence” 75% of the time
- AAP and AAFP vs. AAPS

Examples of What Works #1
The Cutter Incident

- Launch of the polio vaccine program was accompanied with reports of paralysis following vaccination
- Langmuir had recently formed the Epidemic Intelligence Service (EIS) at CDC to rapidly investigate outbreaks
- Investigation identified some vaccine (primarily manufactured by Cutter Laboratories) was not fully inactivated and had caused wild disease
- Vaccine program was halted for a very short time
- Because of this rapid investigation, robust and rigorous science, objectivity of risk assessment and transparency the program quickly resumed

Example of What Works #2
2009-10 H1N1 Safety Monitoring and Communication

- Mass vaccination program in midst of vaccine crisis in confidence
- 1976 Swine Flu Fiasco
- Most comprehensive vaccine safety and communication program ever, anywhere
- Vaccine safety crisis around H1N1 never occurred in US

National Vaccine Advisory Committee (NVAC)
Recommendations for H1N1 Safety Monitoring

1) Assemble background rates of adverse events that occur in the general population
2) Develop and disseminate a federal plan
3) Enhance active surveillance for signal detection, assessment and confirmation of possible associations between vaccines and adverse events
4) Establish a transparent and independent review of vaccine safety data as it accumulates
5) Develop, and where possible test in advance, a strong and organized response to scientific and public concerns about vaccine safety

Estimates of Coincident, Temporally-Associated Events

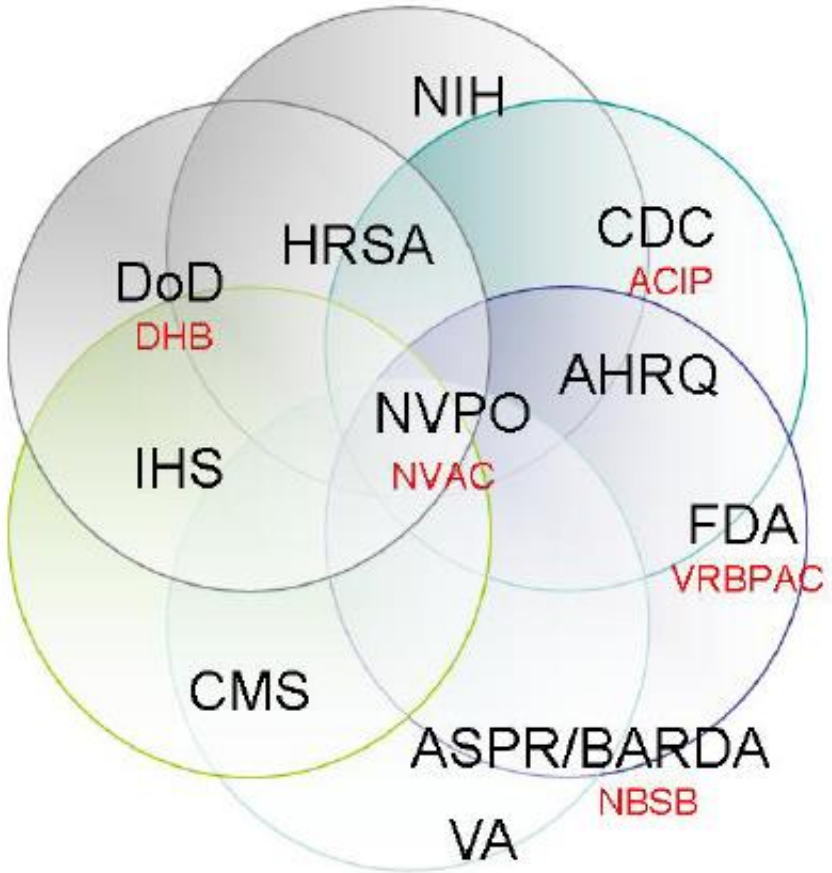
Coincident events	Number of coincident events since a vaccine dose: *Within 1 day*	*Within 7 days*	*Within 6 weeks*	Baseline incidence rate used for estimate
Guillain-Barré Syndrome (per 10 million vaccinated people)	0.51	3.58	21.50	1.87 per 100,000 person-years (all ages; UK Health Protection Agency data)
Optic Neuritis (per 10 million female vaccinees)	2.05	14.40	86.30	7.5 per 100,000 person-years in US females
Spontaneous abortions (per 10 million vaccinated pregnant women)	3,970	27,800	166,840	Based on data from the USA (12% of pregnancies)
Sudden death within 1 hour of onset of any symptoms (per 10 million vaccinated people)	0.14	0.98	5.75	Based upon UK background rate of 0.5 per 100,000 person-years

Black *et* al. Importance of background rates of disease in assessment of vaccine safety during mass immunisation with pandemic H1N1 influenza vaccines; Table 6. *Lancet* 2009; 374; Oct. 30 [Epub.]

Federal Plans to Monitor Immunization Safety for the Pandemic 2009 H1N1 Influenza Vaccination Program

Federal Immunization Safety Task Force

U.S. Department of Health and Human Services
Agency for Healthcare Research and Quality
Centers for Disease Control and Prevention
Food and Drug Administration
Health Resources and Services Administration
Indian Health Service
National Institutes of Health
Department of Defense
Department of Veterans Affairs



http://www.flu.gov/professional/federal/fed-plan-to-mon-h1n1-imm-safety.pdf

Advisory Committees in Red

Health Affairs

TOPICS JOURNAL

RESEARCH ARTICLE

HEALTH AFFAIRS > VOL. 31, NO. 11: ACOS, MEDICAL HOMES, NURSING, COSTS AND QUALITY

Success Of Program Linking Data Sources To Monitor H1N1 Vaccine Safety Points To Potential For Even Broader Safety Surveillance

Daniel Salmon, W. Katherine Yih, Grace Lee, Robert Rosofsky, Jeffrey Brown, Kirsten Vannice, Jerome Tokars, James Roddy, Robert Ball, Bruce Gellin, Nicole Lurie, Howard Koh, Richard Platt, Tracy Lieu,

NVAC Vaccine Safety Risk Assessment Working Group (VSRAWG) Charge

To conduct independent, rapid reviews of available federal immunization safety monitoring data for the 2009 H1N1 influenza vaccines

VSRAWG Members

Marie McCormick[1]	*NVAC*
Stephen Cantrill	*National Biodefense Science Board (NBSB)*
John Clements	*Defense Health Board (DHB)*
Vicky Debold	*Vaccines and Related Biological Products Advisory Committee (VRBPAC)* Public Rep
Kathryn Edwards	*Institute of Medicine (IOM); Formerly ACIP and VRBPAC*
Theodore Eickhoff	*VRBPAC*
Susan Ellenberg	*IOM*
Laura Riley	*NVAC*
Mark Sawyer	*ACIP*

[1] VSRAWG Chair

VSRAWG Methodology

- Created on October 30, 2009
- In-person meeting reviewed
  - Influenza vaccine safety literature from 1967 to 2009
  - Protocols/analytic plans from each vaccine safety monitoring system
  - Clinical trials data
- Ongoing Process
  - Bi-weekly calls through vaccine program, then monthly
  - Received vaccine safety data from each system via the Federal Immunization Safety Task Force (ISTF)
  - Discussed and interpreted data
  - 20 total meetings

VSRAWG Reports

- Reports included
  - Summary of data
  - Assessment of data strengths and limitations
  - Considerations for follow-up studies
- 6 VSRAWG reports were provided to the NVAC
    - December 16, 2009, January 20, 2010, February 26, 2010, March 23, 2010, April 23, 2010, June 2, 2010,
- NVAC reports transmitted to the ASH who forward to ASPR, CDC, FDA, NIH, IHS, CMS, DoD, VA & International Partners
- Available on NVPO website at: http://www.hhs.gov/nvpo/nvac/reports/index.html

Preparing the Media

- 3 tabletop exercises with HHS Leadership and the media
- Walk through scenarios highlighting possible events
- See what questions the media might ask and how they would report the issues
- See how the media responded to our responses to situations
- Prepare the media for what was to come

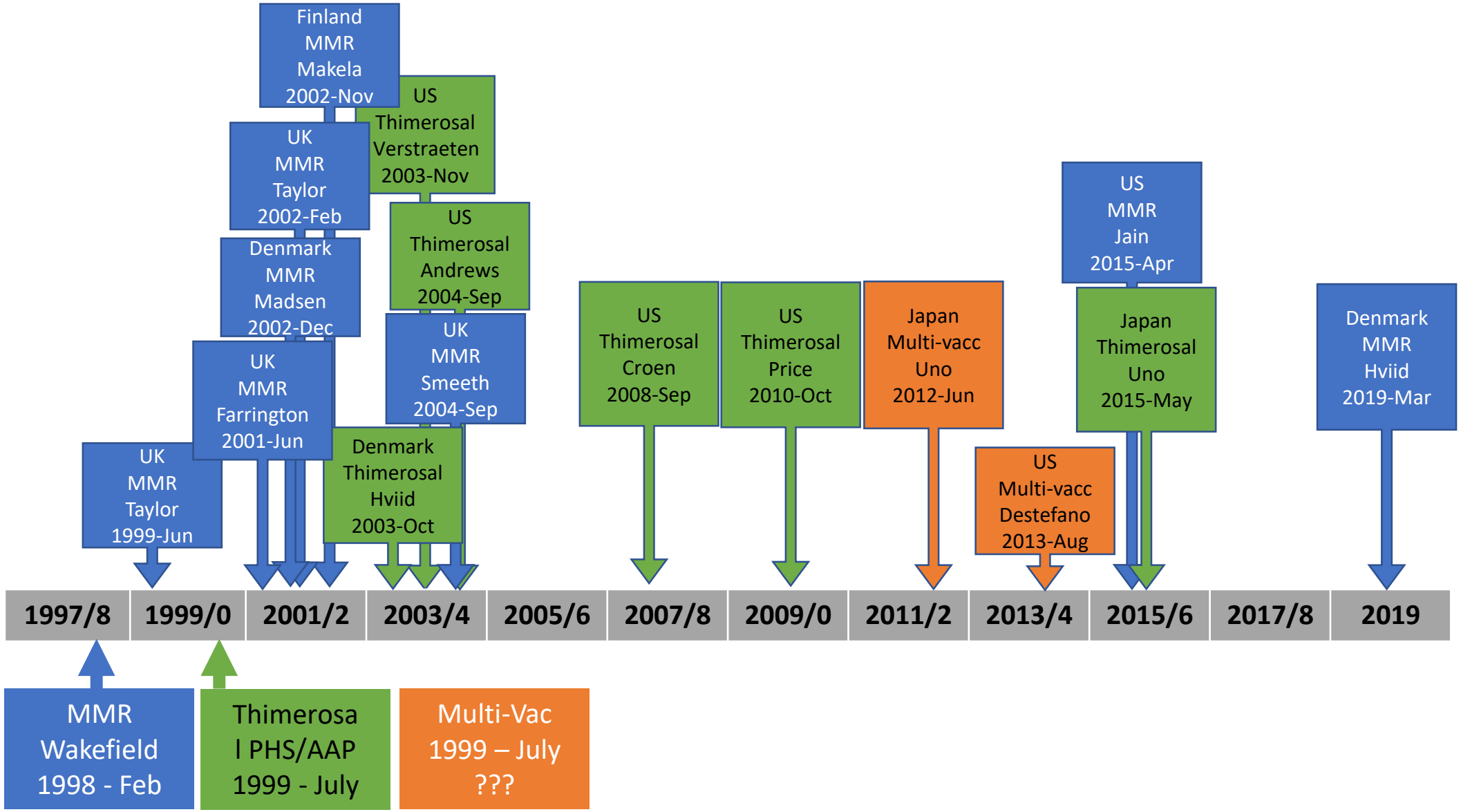
What Hasn’t Worked?

- Autism
- Simultaneous Vaccines
- Vaccine Ingredients

16 methodologically sound, controlled epidemiological studies exploring an association between Autism Spectrum Disorder (ASD) and receipt of MMR vaccine, thimerosal in vaccines, and simultaneous vaccination with multiple vaccines **by 2019**

First author	Journal	Pub Year - month	Country	Exposure
Taylor B	Lancet	1999-06	UK	MMR
Farrington CP	Vaccine	2001-06	UK	MMR
Taylor B	BMJ	2002-02	UK	MMR
Madsen KM	NEJM	2002-12	Denmark	MMR
Makela A	Pediatrics	2002-11	Finland	MMR
Hviid A	JAMA	2003-10	Denmark	Thimerosal
Verstraeten T	Pediatrics	2003-11	US	Thimerosal
Smeeth L	Lancet	2004-09	UK	MMR
Andrews N	Pediatrics	2004-09	US	Thimerosal
Croen LA	Am J Obstet Gynecol	2008-09	US	Thimerosal
Price CS	Pediatrics	2010-10	US	Thimerosal
Uno Y	Vaccine	2012-06	Japan	MMR/Multi-vaccines
DeStefano F	J Pediatr	2013-08	US	Multi-vaccines
Jain A	JAMA	2015-04	US	MMR
Uno Y	Vaccine	2015-05	Japan	MMR/Thimerosal

Vaccine Autism Controversies and Studies Over Time



Now What Do We Do?

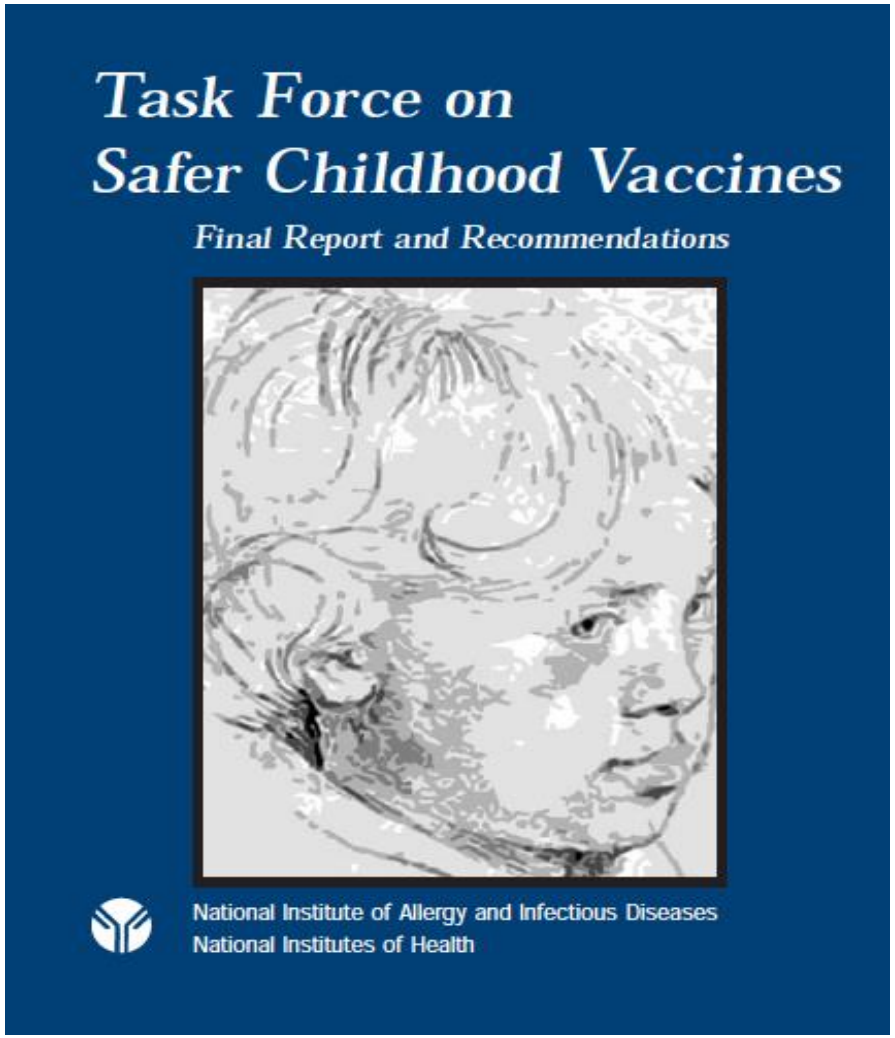
- NVAC has a critical role: PHS 99-660
- NVAC has many of the answers

NVAC Resolution: Task Force on Safer Childhood Vaccines – Final Report and Recommendation

January 22, 1996

The NVAC applauds the effort of the Task Force on Safer Childhood Vaccines in producing its recent landmark report, identifying key issues and enhancing collaboration on behalf of vaccine safety. The Committee urges the Secretary of the Department of Health and Human Services to expeditiously approve the Report, and encourages implementation through immediate development of a work plan with definitive task and time line delegated to member agencies of the Task Force.

We firmly believe that such action steps under the Report's identified priorities of education, research and surveillance are critical to ensuring vaccine safety for children and families in the United States.



NVAC Resolution: Vaccine Safety Action Plan

January 12, 1999

The NVAC recognizes that the success of immunization programs is preventing infectious diseases is critically dependent on ensuring the optimal safety of vaccines. As stated in NVAC's January 22, 1996, resolution, the NVAC firmly believes that the development of action steps to achieve the Task Force on Safer Childhood Vaccines Report's goals of education, research and surveillance are crucial for children and families in the United States.

The NVAC strongly endorses the Vaccine Safety Action Plan. While the Plan focuses on Federal activities, NVAC encourages collaboration with non-Federal government and private sector involvement. The NVAC will also assist in the expeditious development of priorities and relevant time lines for the Plan's action steps. Therefore, NVAC recommends that additional funds be allocated for implementing the Vaccine Safety Action Plan independent of existing agency funding for immunization activities.

NVAC Resolution: Use of Vaccine Injury Compensation Trust Fund Resources for National Vaccine Safety Activities

DRAFT

September 9, 1997

Recognizing the need for additional, stable, ongoing financial support for national vaccine safety activities including surveillance, assessment, and prevention of vaccine-associated adverse events, the NVAC recommends that the Secretary of Health and Human Services propose legislation amending the Public Health Service Act to allow limited and judicious use resources from the Vaccine Injury Compensation Trust Fund for purposes of expanding national vaccine safety activities, which are key to both fair compensation and prevention of vaccine-associated adverse events.

Further, recognizing the important role played by the National Vaccine Injury Compensation Program in providing payment to individuals entitled to compensation for vaccine-related adverse events, use of the resources must not interfere with the Program's capacity to adequately provide such payments.

NATIONAL VACCINE ADVISORY COMMITTEE

WHITE PAPER

ON THE

UNITED STATES VACCINE SAFETY SYSTEM

September 2011

Assessing the State of Vaccine Confidence in the United States: Recommendations from the National Vaccine Advisory Committee

Approved by the National Vaccine Advisory Committee on June 10, 2015

NATIONAL VACCINE ADVISORY COMMITTEE

Chair

Walter A. Orenstein, MD, Emory University, Atlanta, GA

Designated Federal Official

Bruce G. Gellin, MD, MPH, National Vaccine Program Office, U.S. Department of Health and Human Services, Washington, DC

Public Members

Richard H. Beigi, MD, MSc, Magee-Womens Hospital, Pittsburgh, PA

Sarah Despres, JD, Pew Charitable Trusts, Washington, DC

Ruth Lynfield, MD, Minnesota Department of Health, St. Paul, MN

Yvonne Maldonado, MD, Stanford University, Palo Alto, CA

Charles Mouton, MD, MS, Meharry Medical College, Nashville, TN

Wayne Rawlins, MD, MBA, Aetna, Hartford, CT

Mitchel C. Rothholz, RPh, MBA, American Pharmacists Association, Washington, DC

Nathaniel Smith, MD, MPH, Arkansas Department of Health, Little Rock, AR

Kimberly Thompson, ScD, University of Central Florida, College of Medicine, Orlando, FL

Catherine Torres, MD, Former New Mexico Secretary of Health, Las Cruces, NM

Kasisomayajula Viswanath, PhD, Harvard School of Public Health, Boston, MA

Representative Member

Philip Hosbach, Sanofi Pasteur, Swiftwater, PA

EXECUTIVE SUMMARY

As 2014 ended and 2015 began, measles, a disease no longer considered endemic in the United States, was infecting dozens of people in this country and threatening to infect hundreds more. While the initial case likely was the result of measles being brought into the United States from another country, the first exposures came at a popular tourist destination, which meant it would not take long for the virus to be transmitted to other people. From January 1 to May 1, 2015, nearly 170 cases of measles had been reported in 20 U.S. states and the District of Columbia.[1]

The latest measles cases provided yet another reminder of the importance of vaccines and timely vaccination. Although the source case traced to the tourist destination is not known, the first identified case stemmed from an individual who had not been vaccinated against measles, and most of the subsequent infections involved people who were unvaccinated. Unfortunately, in many cases the unvaccinated children were likely unvaccinated by choice. The recommended measles vaccination must have been delayed or declined, a choice that left the children vulnerable and the rest of the unvaccinated population susceptible to measles. Children too young to be vaccinated, as well as children who cannot be vaccinated because of health conditions, depend on high levels of vaccination coverage for protection against infectious diseases such as measles. Immunity is often silent or invisible until it is tested—and measles is one of the most sensitive stress tests we have.

JAMA. 1991 Sep 18;266(11):1547-52.

The measles epidemic. The problems, barriers, and recommendations. The National Vaccine Advisory Committee.

[No authors listed]

Abstract

The nation has experienced a marked increase in measles cases during 1989 and 1990. Almost one half of all cases have occurred in unvaccinated preschool children, mostly minorities. The principal cause for the epidemic is failure to provide vaccine to vulnerable children on schedule. Major reasons for the low vaccine coverage exist within the health care system itself, which creates barriers to obtaining immunization and fails to take advantage of many opportunities to provide vaccines to children. Ideally, immunizations should be given as part of a comprehensive child health care program. However, immunization cannot await the development of such an ideal system. Essential changes can and should be made now. Specific recommendations include improved availability of immunization; improved management of immunization services; improved capacity to measure childhood immunization status; implementation of the two-dose measles vaccine strategy; and laboratory, epidemiologic, and operational studies to further define the determinants of decreased vaccine coverage and to develop new combinations of vaccines that can be administered earlier in life. The measles epidemic may be a warning flag of problems with our system of primary health care.

What Can NVAC Do?

- Replicate and build on successes
  - PHL 99-660
  - Measles White Paper
- Work with Stakeholders
  - Fund Implementation of NVAC reports on safety system and confidence
    - CDC vaccine safety budget @$20 million compared with $5 Billion immunization program
  - Create vaccine safety and confidence excise tax
    - Adequate funding based on vaccine usage
    - Reduce VICP tax by $0.25 per disease and fund safety and confidence
    - Highly consistent with PHL 99-660
    - Requires Congress