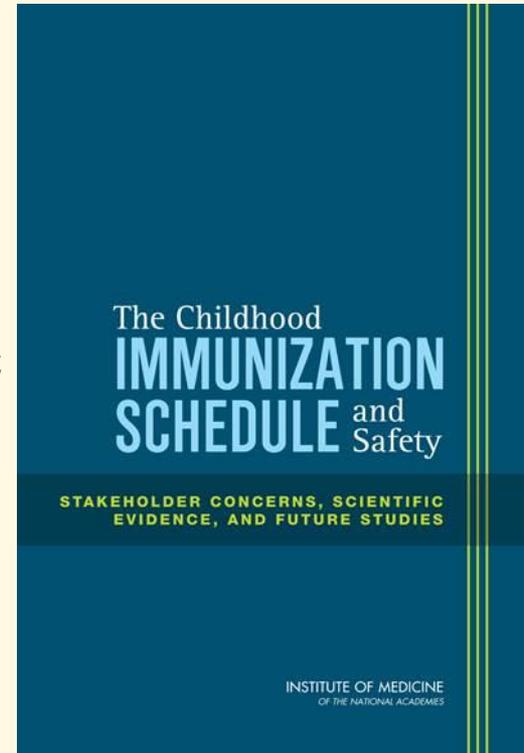


# The Childhood Immunization Schedule and Safety:

Stakeholder Concerns, Scientific  
Evidence, and Future Studies

**Ada Sue Hinshaw, R.N., Ph.D.**

Dean and Professor  
Graduate School of Nursing  
Uniformed Services University  
of the Health Sciences  
IOM Committee Chair



## **In 2009, NVAC endorsed the recommendation of the NVAC Safety Working Group:**

*“For an external expert committee, such as a committee convened by the Institute of Medicine (IOM), with broad expertise in research methodologies, study design, and the ethical conduct of research to consider the 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.”*

# Statement of Task

The Institute of Medicine will convene an expert committee to:

1. Review scientific findings and stakeholder concerns related to the safety of the recommended childhood immunization schedule.
2. Identify potential research approaches, methodologies, and study designs that could inform this question, including an assessment of the potential strengths and limitations of each approach, methodology and design, as well as the financial and ethical feasibility of doing them.
3. Issue a report summarizing their findings.

# Committee Members

**Ada Sue Hinshaw, R.N., Ph.D.**  
(*Chair*)

Dean and Professor  
Graduate School of Nursing  
Uniformed Services University  
of the Health Sciences

**Tomás Aragón, M.D., Dr.P.H.**

Health Officer  
San Francisco Department of  
Health

**Alfred Berg, M.D., M.P.H.**

Professor  
Department of Family Medicine  
University of Washington School  
of Medicine

**Stephen Buka, M.S., M.A., Sc.D.**

Professor, Head of Epidemiology  
Brown University

**R. Alta Charo, J.D.\***

Professor of  
Law & Bioethics  
University of Wisconsin Law  
School

**Gerry Fairbrother, Ph.D.**

Senior Fellow  
AcademyHealth

**Elena Fuentes-Afflick, M.D., M.P.H.**

Chief of Pediatrics  
San Francisco General Hospital

**Sidney Gospe, Jr., M.D., Ph.D.**

Professor of Neurology &  
Pediatrics  
Head, Division of Pediatric  
Neurology  
Seattle Children's Hospital

**Paul Greenberger, M.D.**

Professor  
Division of Allergy-Immunology  
Northwestern University  
Feinberg School of Medicine

Daniel Heitjan, Ph.D., M.Sc.

Professor of Biostatistics &  
Statistics  
University of Pennsylvania  
School of Medicine

**Annette C. Leland, M.B.A.**

Independent  
Washington, DC

**Pejman Rohani, Ph.D.**

Professor  
Department of Ecology &  
Evolutionary Biology  
Center for the Study of Complex  
Systems  
University of Michigan

**Lainie Friedman Ross, M.D., Ph.D.**

Professor of Clinical Ethics  
Professor, Departments of  
Pediatrics, Medicine & Surgery  
University of Chicago

**Pauline A. Thomas, M.D.**

Associate Professor  
Department of Preventive Medicine  
& Community Health  
New Jersey Medical School

\*through August 2012

# Committee Process

- 3 information-gathering meetings open to the public.
- Presentations from clinicians, representatives of federal and international state agencies, including public health agencies, vaccine safety researchers, advocacy groups, vaccine manufacturers, and methodological experts.
- Gathered information on public perspectives and reviewed the scientific literature on the safety of the childhood immunization schedule.
- Commissioned an independent paper to inform the committee and solicit feedback from the public on study designs for the safety evaluation of different childhood immunization schedules.
- Received comments (both oral & written) from a variety of stakeholders.

# Identified Stakeholders

- Academic researchers
- Advocacy groups
- Federal government agencies, departments, and federal advisory committees
- General public (including parents)
- Health care system and providers
- International organizations
- Media
- Nongovernmental organizations
- Philanthropic organizations
- State, local, and tribal governments and public health agencies
- Travel industry
- Vaccine distributors
- Vaccine industry
- Vaccine investors

# Stakeholder Concerns

- The committee endorses the need for systematic research to understand the public's knowledge, beliefs, and concerns about:
  - The childhood immunization schedule and
  - Vaccine-preventable diseases.
- A subset of parents are documented as having the strongest safety concerns.
- Other stakeholders should be included in research efforts as they may hold different or mixed concerns.

## Recommendation 4-1

The committee recommends that NVPO systematically collect and assess evidence regarding public confidence in and concerns about the entire childhood immunization schedule, with the goal to improve communication with health care professionals, and between health care professionals and the public regarding the safety of the schedule.

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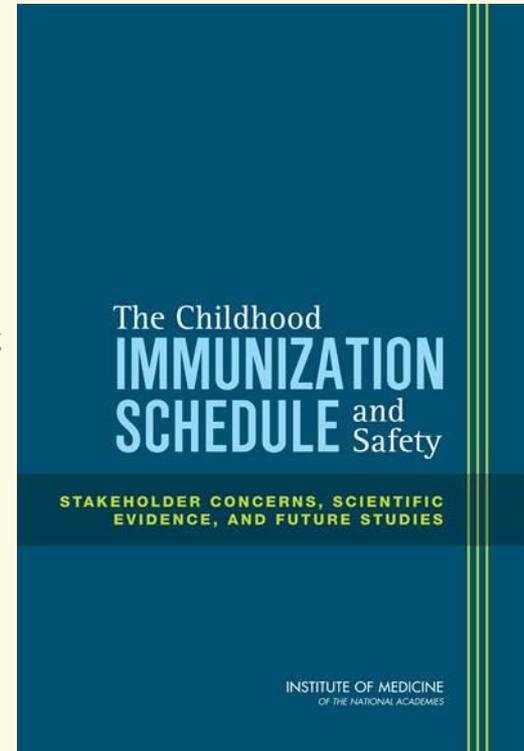
Professor

Department of Family Medicine

University of Washington

School of Medicine

IOM Committee Member



# Scientific Evidence

- The committee searched for, assembled, & summarized information on the association between aspects of the schedule and specific health conditions already available in the literature.
- The concept of the immunization “schedule” is not well developed in the scientific literature.
- The field needs valid and accepted metrics of the entire immunization schedule (the “exposure”) and clearer definitions of health outcomes linked to stakeholders’ concerns (the “outcomes”).
- Evidence from assessments of health outcomes in potentially susceptible subpopulations of children who may have an increased risk of adverse reactions was limited and is characterized by uncertainty about the definition of populations of interest.

# Recommendation 5-1

To improve the utility of studies of the entire childhood immunization schedule, the committee recommends that NVPO develop a framework that clarifies and standardizes definitions of:

- key elements of the schedule,
- relevant health outcomes, and
- populations that are potentially susceptible to adverse events.

# Future Studies

Stakeholder concerns should be one of the elements used to drive searches for scientific evidence, however, these concerns alone, absent epidemiological or biological evidence, do not warrant the initiation of further study.

- Epidemiological evidence of potential adverse health outcomes associated with elements of the immunization schedule (such as postmarketing signals or indications of elevated risk from observational studies) should exist.
- Biological plausibility supporting hypotheses linking specific aspects of the immunization schedule with particular adverse health outcomes should also be present.

## Recommendation 6-1

The committee recommends that HHS incorporate study of the safety of the overall childhood immunization schedule into its processes for setting priorities for research, recognizing stakeholders' concerns and establishing the priorities on the basis of epidemiological evidence, biological plausibility, and feasibility.

## Future Studies (cont.)

- Existing systems for the detection of adverse events provide confidence that the existing schedule is safe, and the committee recognizes that the federal government invests considerable resources to ensure vaccine safety.
- Any study that places children in a study group that does not receive vaccines according to existing guidance would be exposing them to greater risk for contracting vaccine-preventable illnesses and is therefore, unethical.

## Recommendation 6-2

HHS should refrain from initiating randomized controlled trials of the childhood immunization schedule that compare safety outcomes in fully vaccinated children with those in unvaccinated children or those vaccinated by use of an alternative schedule.

## Future Studies (cont.)

- Secondary analyses of existing systems are more promising approaches to examination of the research questions that the committee identified in future studies.
- The committee concludes that the Vaccine Safety Datalink (VSD) is currently the best-suited source of data for studying the childhood immunization schedule. Its utility will be expanded with the addition of more detailed demographic data and family medical histories.
- Newer data collection and surveillance systems (such as FDA's PRISM) offer potential for future studies.

## Recommendation 6-3

The committee recommends that the HHS and its partners continue to fund and support VSD to study the safety of the recommended immunization schedule. Furthermore, HHS should consider expanding the collaboration with new health plan members and enhancing the data to improve its utility and generalizability.

# IMPACT

- The report was released Jan. 16, 2013
- Briefings held at NVPO, House and Senate staff
- Over 250 clips of coverage on the report, including NPR, Wall Street Journal, USA Today and US News + World Report
- <http://www.npr.org/blogs/health/2013/01/16/169516511/schedule-of-childhood-vaccines-declared-safe>
- Presentations held with ACIP, NVAC, CDC, and AAP

# Questions?

The full report is available at:

<http://www.iom.edu/childimmunizationschedule>

<http://www.IOM.edu>