



WORKSHOP ON IMMUNIZATIONS

WHY CHILDREN ARE NOT VACCINATED? VACCINE HESITANCY

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Formerly: - Bill & Melinda Gates Foundation, Seattle, WA, USA
- World Health Organization, Geneva, Switzerland

The value of vaccination

“The impact of vaccination on the health of the world’s people is hard to exaggerate. With the exception of safe water, no other modality has had such a major effect on mortality reduction and population growth”



Stanley Plotkin (2013)

VACCINES AVAILABLE TO PROTECT AGAINST MORE DISEASES (US)

Vaccines in 1990	Vaccines in 2011	
<ul style="list-style-type: none">•Diphtheria•Tetanus•Pertussis <p>} DTP</p>	<ul style="list-style-type: none">•Diphtheria•Tetanus•Pertussis <p>} DTaP</p>	<ul style="list-style-type: none">• Hepatitis B• Varicella• HPV
<ul style="list-style-type: none">•Polio - OPV	<ul style="list-style-type: none">•Polio – IPV	<ul style="list-style-type: none">• Pneumococcal Disease
<ul style="list-style-type: none">•Measles•Mumps•Rubella <p>} MMR</p>	<ul style="list-style-type: none">•Measles•Mumps•Rubella <p>} MMR</p>	<ul style="list-style-type: none">• Influenza• Rotavirus• Hepatitis A
<ul style="list-style-type: none">•Hib – conjugate	<ul style="list-style-type: none">•Hib – conjugate	<ul style="list-style-type: none">• Meningococcal Disease



BASIC VACCINES RECOMMENDED BY WHO

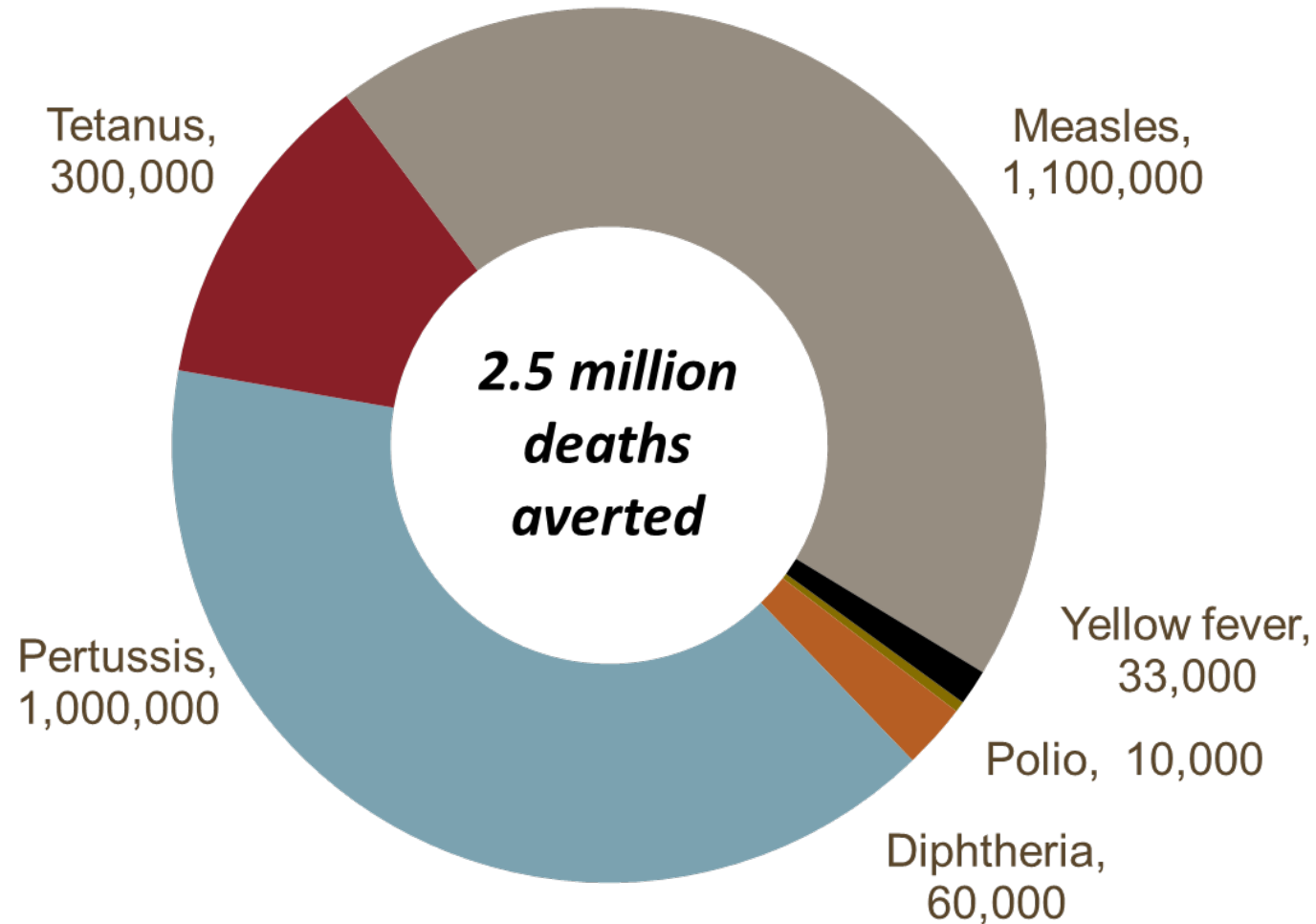
For all: BCG, hepatitis B, polio, DTP, Hib, Pneumococcal (conjugated), rotavirus, measles, rubella, HPV.

For certain regions: Japanese encephalitis, yellow fever, tick-borne encephalitis.

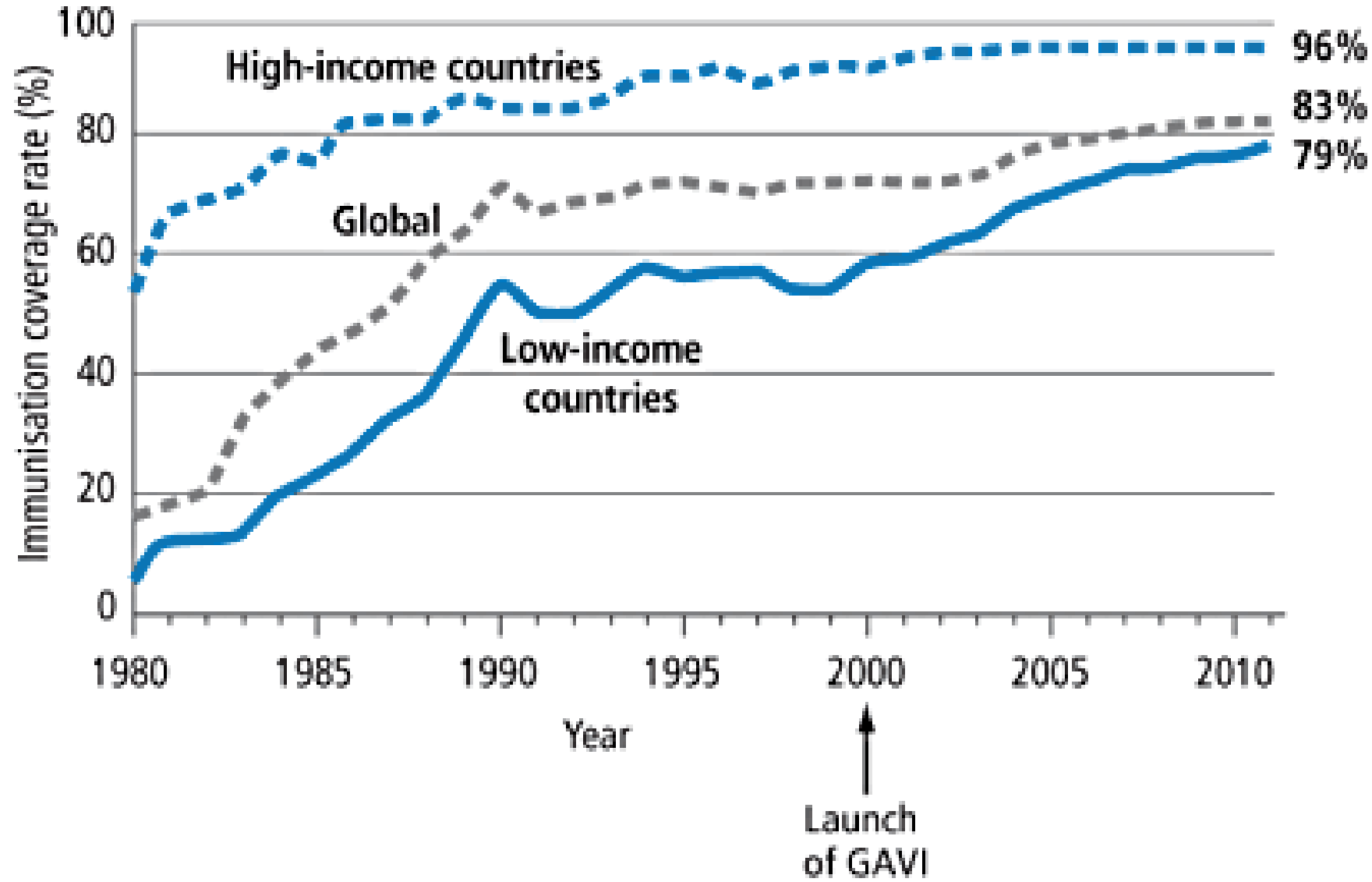
For some high-risk populations: typhoid, cholera, meningococcal, hepatitis A, rabies.

For certain immunization programs: mumps, influenza

Vaccines save millions of lives annually, worldwide



WHAT THE WORLD HAS ACHIEVED: 40 YEARS OF INCREASING REACH OF BASIC VACCINES

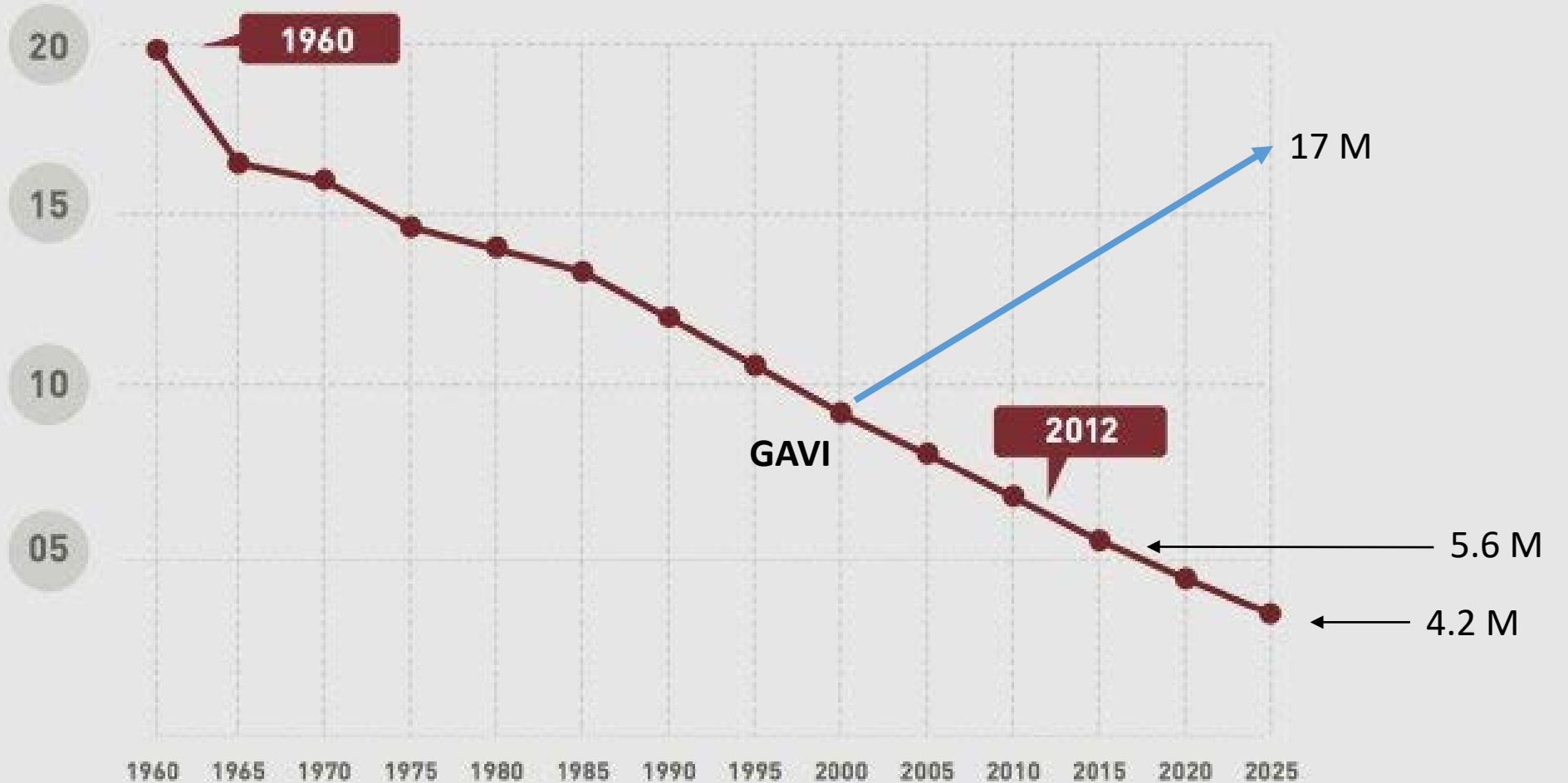




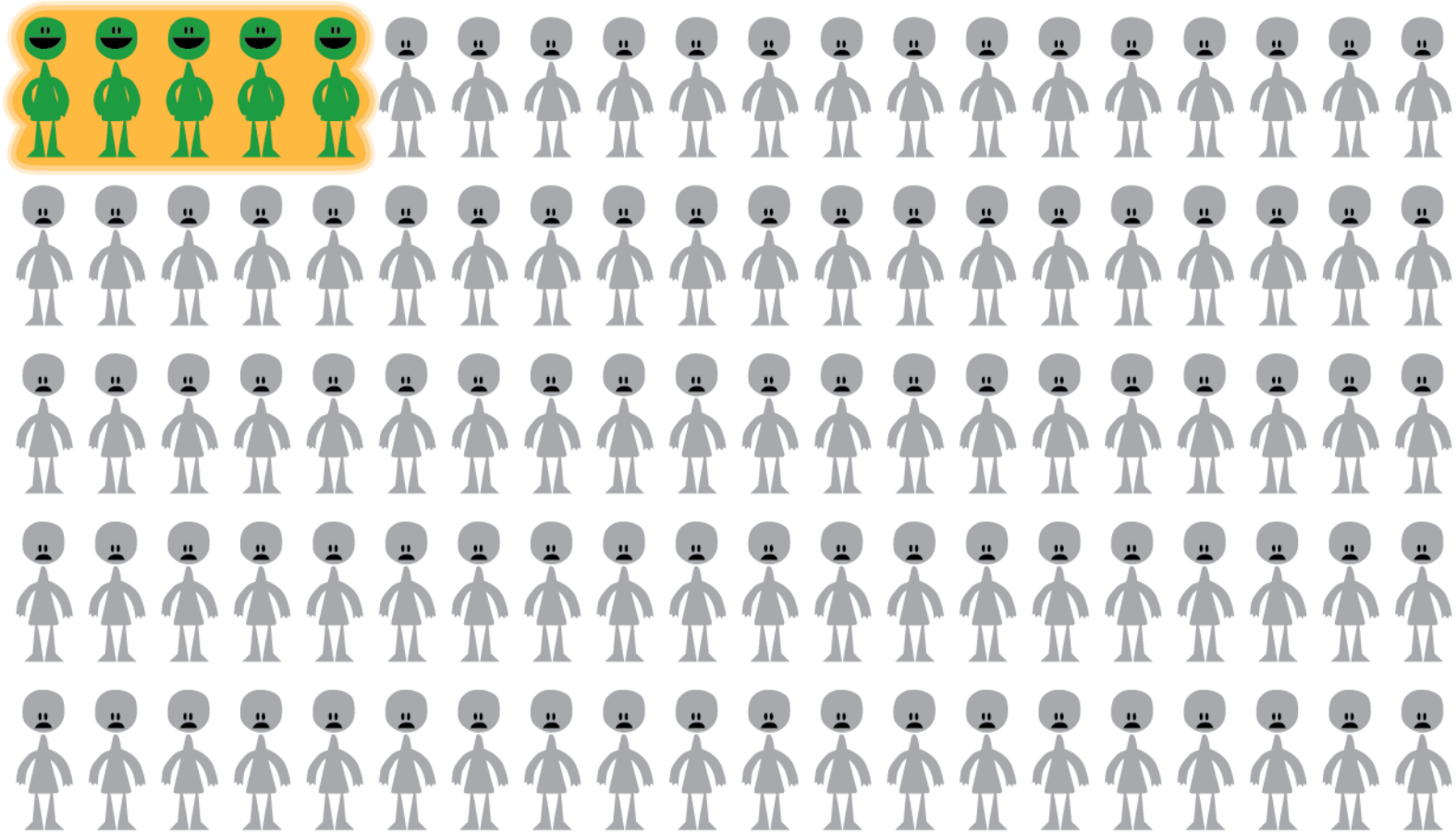
“Bill Gates Chart”

CHILDREN WHO DIE BEFORE AGE 5

MILLIONS



Today (ca 2015): <5% of children in GAVI countries fully immunised with the 11 WHO-recommended vaccines



Seth Berkley (GAVI)



The goal: 50% of children in GAVI countries fully immunised by 2020



Seth Berkley (GAVI)



The current world immunization efforts are achieving:

- Equity between high and low-income countries
- Bringing the power of vaccines to even the world's poorest countries
- Reducing morbidity and mortality in developing countries
- Eliminating and eradicating disease



WHY CHILDREN ARE NOT VACCINATED?

- Vaccines are not available
- Deficient health care systems
- Poverty

- Vaccine hesitancy (reticencia a la vacunacion)

VACCINE HESITANCE: WHO DEFINITION

“Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services.”

Vaccine hesitancy is complex and context specific, varying across time, place and vaccines.

It is influenced by factors such as complacency, convenience and confidence.

MacDonald NE, the SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 33:4161-4164 (2015)

TEN THREATS TO GLOBAL HEALTH IN 2019

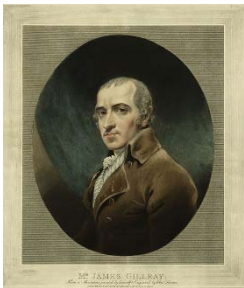
- Air pollution and climate change
- Noncommunicable diseases
- Global influenza pandemic
- Fragile and vulnerable settings
- Antimicrobial resistance
- Ebola and other high-threat pathogens
- Weak primary health care
- Vaccine hesitancy
- Dengue
- HIV



“COW-POX, OR THE WONDERFUL EFFECT OF THE NEW INOCULATION”



James Gillray, 1802



THE VACCINATION MONSTER

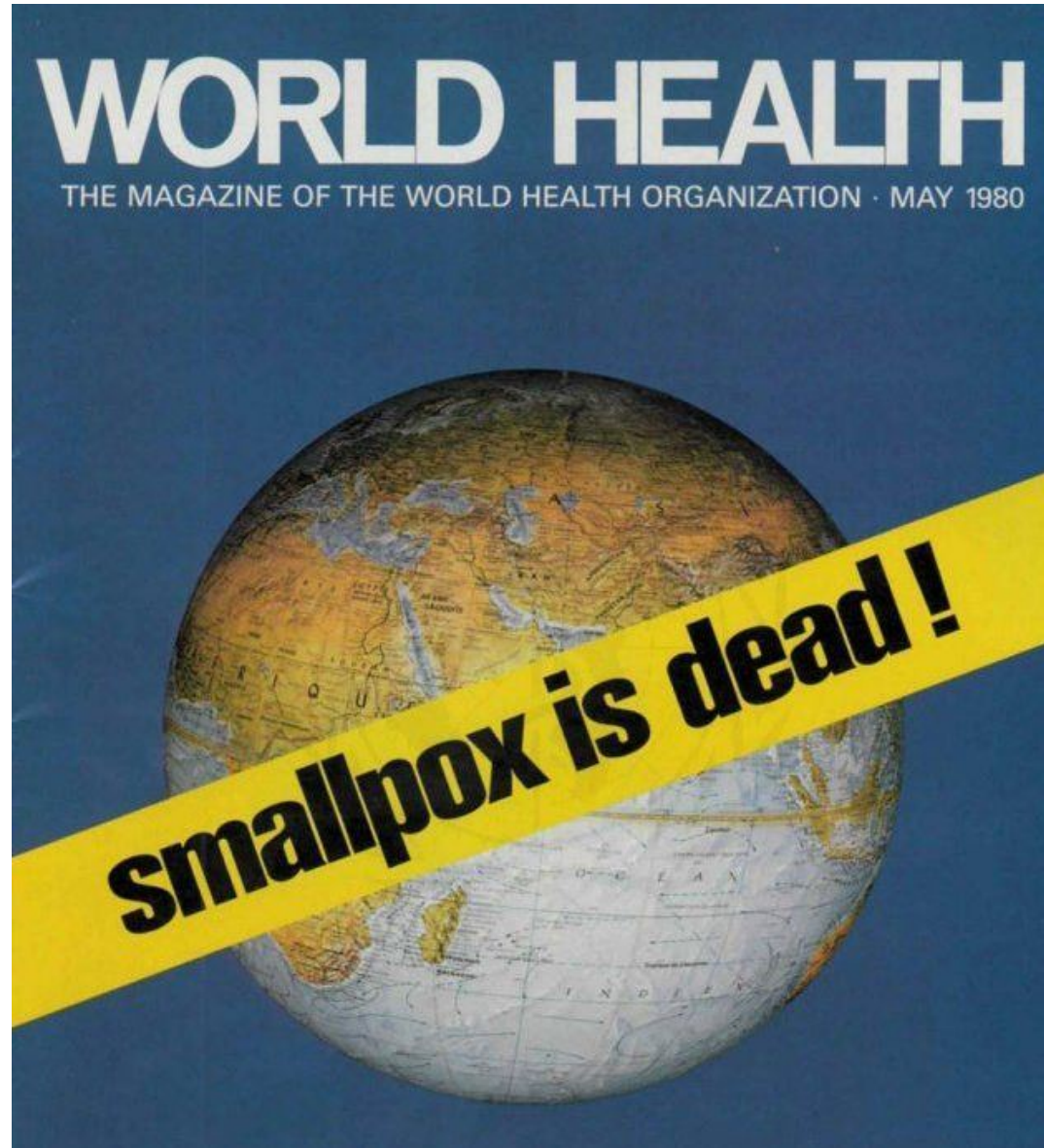


- The National Anti-Vaccination League argued that in 1880 smallpox vaccination was causing the deaths of 25,000 children.

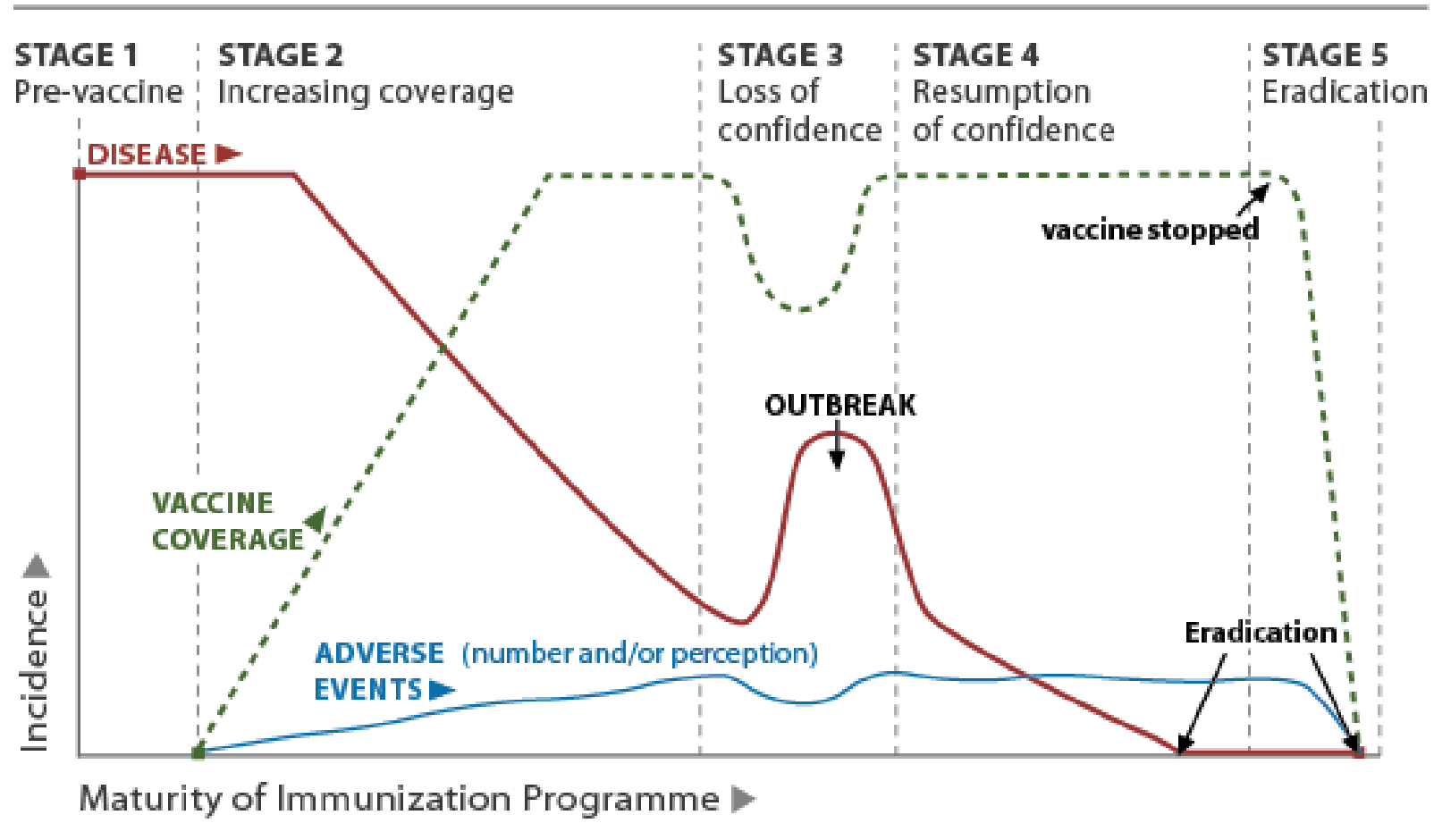
SIX REASONS USED TO OPPOSE (SMALLPOX) VACCINATION (IN 19TH CENTURY ENGLAND)

- Principles were not well understood (especially after the Age of Enlightenment).
- Competition with variolation.
- Vaccination is ineffective.
- Vaccination is not safe.
- Religious and philosophical concerns.
- Resistance to compulsory vaccination.

SMALLPOX WAS DECLARED ERADICATED IN 1980



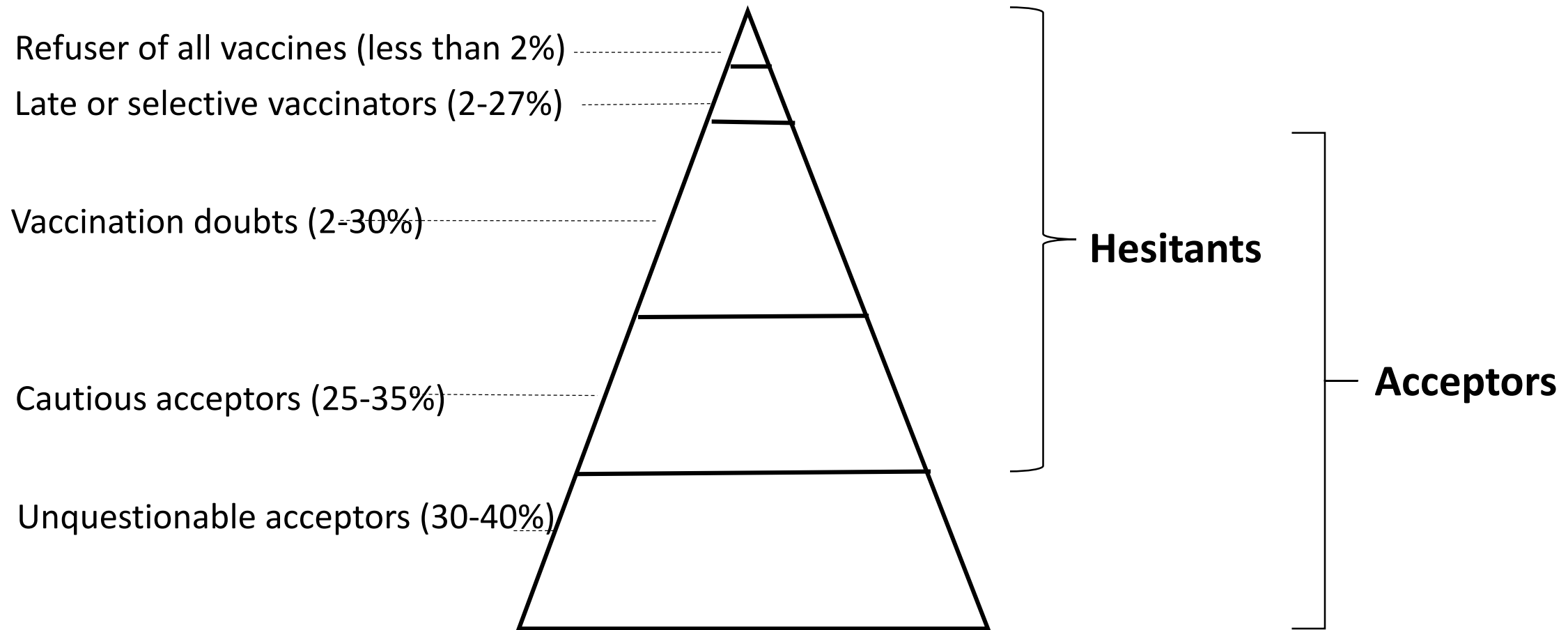
EVOLUTION OF IMMUNIZATION PROGRAMS



Chen RT, Orenstein WA. Epidemiol Rev, 1996

Nolte et al. Reticencia a la vacunacion: abordaje de su complejidad. Rev Hosp Niños BA, 2016.

THE CONTINUUM OF VACCINE ACCEPTANCE

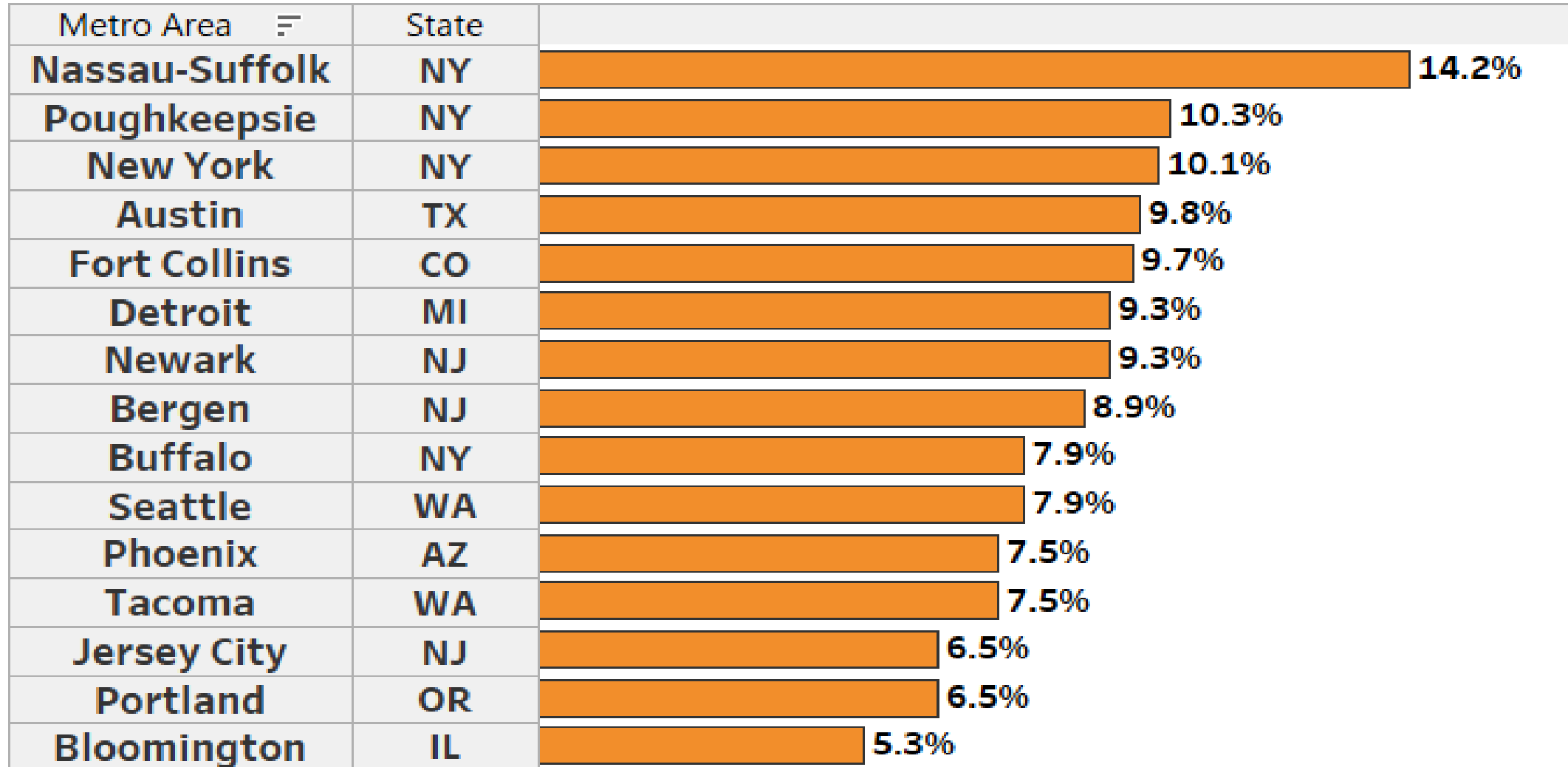


Leask et al. Communicating with parents about vaccination: a framework for health professionals. BMC Pediatrics, 2012.
Nolte et al. Reticencia a la vacunacion: abordaje de su complejidad. Rev Hosp Niños BA, 2016.

Vaccination refusal rates

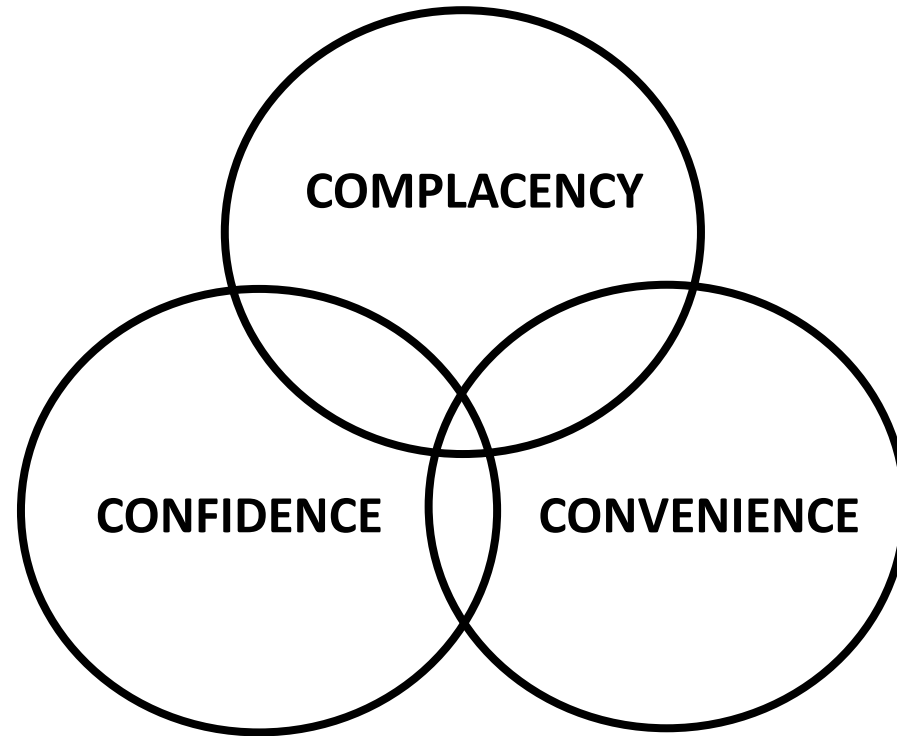


Percent of infants in all years in study with at least one parental vaccination refusal



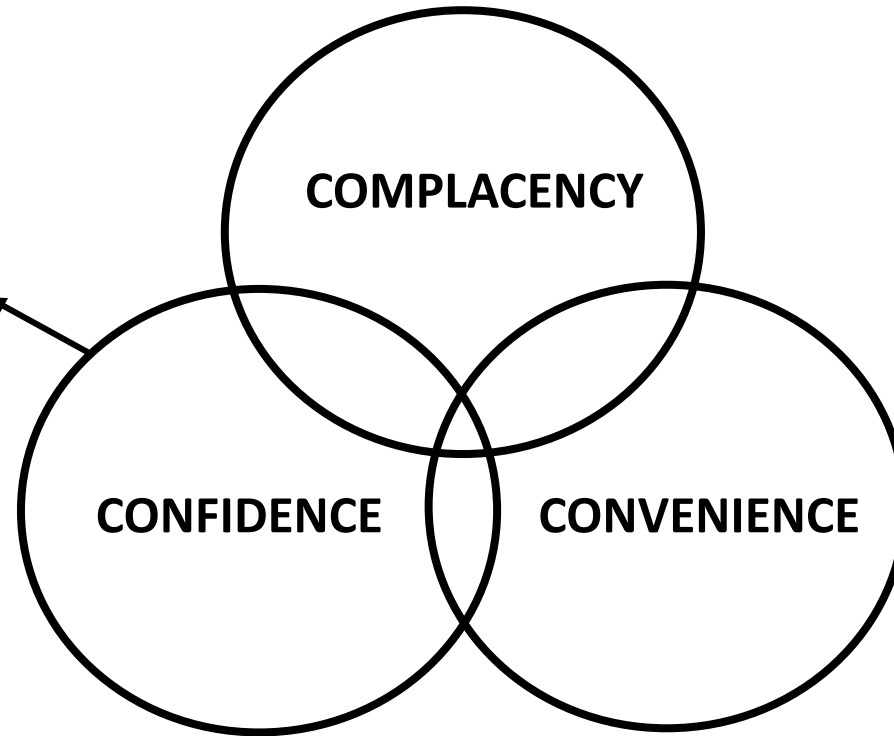
SOURCE: BlueCross BlueShield. *Early Childhood Vaccination Trends in America, 2018*

THREE C's MODEL OF VACCINE HESITANCY



MacDonald NE, the SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 33:4161-4164 (2015)

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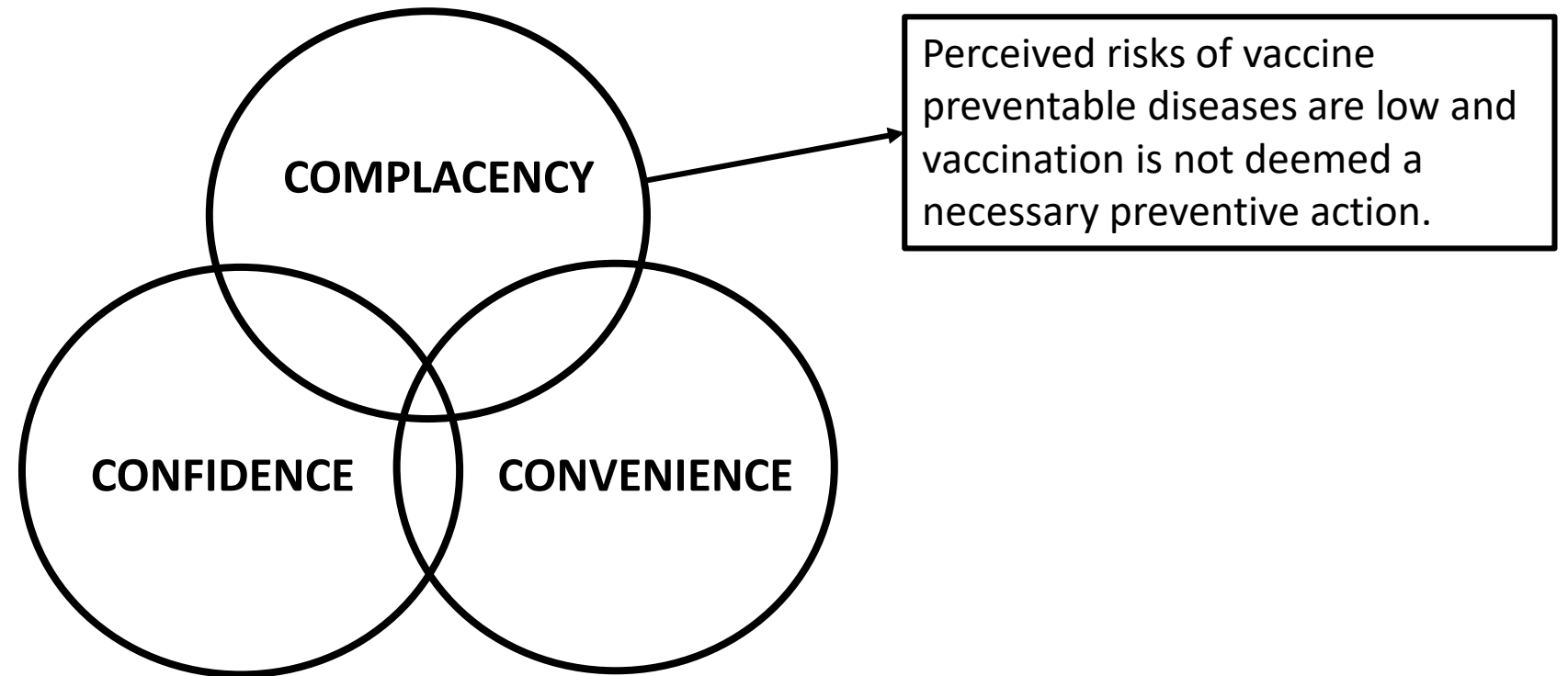


Trust in

- The effectiveness and safety of vaccines
- The system that delivers the vaccine
- The motivation of policy-makers who decided on the needed vaccines

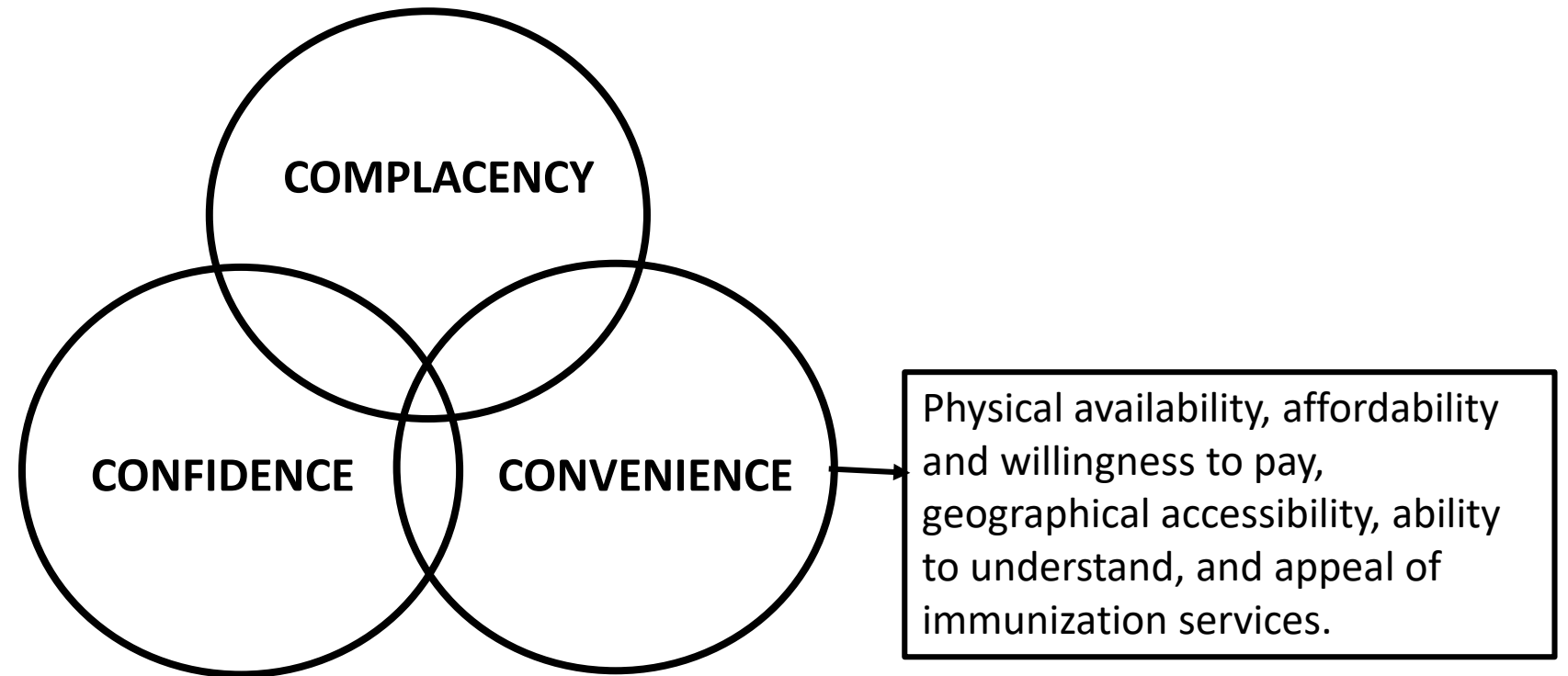
MacDonald NE, the SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 33:4161-4164 (2015)

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REASONS BEHIND PARENTAL REFUSAL TO VACCINATION (US) (1)

- **Safety concerns**

- Dangerous chemicals in the vaccine (Thimerosal, alum, peanut oil)
- Antigenic overload (too many vaccines at the same time)
- Autism (the Wakefield legacy)

- **Desire for more information from healthcare providers.**

- Misinformation (anti vaccine groups)
- Not sufficient research supports vaccine claims of safety and efficacy
- Distrust of health authorities (CDC and FDA)
- Perception that Big Pharma peddles vaccines for profit

C McKee, K. Bohannon. Exploring the reasons behind parenteral refusal to vaccines.

J Pediatr Pharmacol Ther 2016 21(2):104-109

REASONS BEHIND PARENTAL REFUSAL TO VACCINATION (US) (2)

- **Religious reasons**

- Animal derived products in the vaccine
- Human fetal cells used to manufacture the vaccine

- **Personal beliefs or philosophical reasons**

- Immunity after natural infection is better than vaccine induced immunity
- Vaccine preventable disease are not common
- Healthy diet and lifestyle will decrease the chance of acquiring the disease.
- Vaccine preventable diseases are not dangerous and they can be easily treated.
- Refusal to compulsory vaccination.

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.

Methods 12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

Findings Onset of behavioural symptoms was associated by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another. All 12 children had intestinal abnormalities ranging from lymphoid nodular hyperplasia to granuloid ulceration. Histology showed patchy chronic inflammation in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and MRI and EEG tests were normal. Abnormal laboratory results were significantly raised urinary methylmalonic acid compared with age-matched controls ($p=0.03$), low haemoglobin in four children, and low serum IgA in four children.

Interpretation We identify associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers.

Lancet 1998; **351**: 637–41

See Commentary page

Inflammatory Bowel Disease Study Group, University Departments of Medicine and Histopathology (A J Wakefield FRCS, A Anthony MR, J Linnell PhD, A P Dhillon MRCPsych, S E Davies MRCPsych) and **the University Departments of Paediatric Gastroenterology** (S H Murch MR, D M Casson MRCP, M Malik MRCP, M A Thomson FRCP, J A Walker-Smith FRCP), **Child and Adolescent Psychiatry** (M Berelowitz FRCPsych), **Neurology** (P Harvey FRCP), and **Radiology** (A Valentine FRCS), **Royal Free Hospital and School of Medicine, London NW3 2QG, UK**

Correspondence to: Dr A J Wakefield

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 vomiting and, in some cases, food intolerance. We describe the clinical findings, and gastrointestinal features, of these children.

Patients and methods

12 children, consecutively referred to the department of paediatric gastroenterology with a history of a pervasive developmental disorder with loss of acquired skills and intestinal symptoms (including abdominal pain, bloating and food intolerance), were investigated. All children were admitted to the ward free of charge, accompanied by their parents.

Clinical investigations

We took histories, including details of immunisations and exposure to infectious diseases, and assessed the children. In 11 cases the history was obtained by the senior clinician (JW-S). Neurological and psychiatric assessments were done by consultant staff (PH, MB) with HMS-4 criteria.¹ Developmental records included a review of prospective developmental records from parents, health visitors, and general practitioners. Four children did not undergo psychiatric assessment in hospital; all had been assessed professionally elsewhere, so these assessments were used as the basis for their behavioural diagnosis.

After bowel preparation, ileocolonoscopy was performed by SHM or MAT under sedation with midazolam and pethidine. Paired frozen and formalin-fixed mucosal biopsy samples were taken from the terminal ileum; ascending, transverse, descending, and sigmoid colons, and from the rectum. The procedure was recorded by video or still images, and were compared with images of the previous seven consecutive paediatric colonoscopies (four normal colonoscopies and three on children with ulcerative colitis), in which the physician reported normal appearances in the terminal ileum. Barium follow-through radiography was possible in some cases.

Also under sedation, cerebral magnetic-resonance imaging (MRI), electroencephalography (EEG) including visual, brain stem auditory, and sensory evoked potentials (where compliance made these possible), and lumbar puncture were done.

Laboratory investigations

Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of childhood neurodegenerative disease. Urinary methylmalonic acid was measured in random urine samples from eight of the 12 children and 14 age-matched and sex-matched normal controls, by a modification of a technique described previously.² Chromatograms were scanned digitally on computer, to analyse the methylmalonic-acid zones from cases and controls. Urinary methylmalonic-acid concentrations in patients and controls were compared by a two-sample *t* test. Urinary creatinine was estimated by routine spectrophotometric assay.

Children were screened for antiendomycelial antibodies and boys were screened for fragile-X if this had not been done

“I believe there is a causal association between the Measles Mumps Rubella vaccine and autism in many children for several reasons.”

Andrew Wakefield

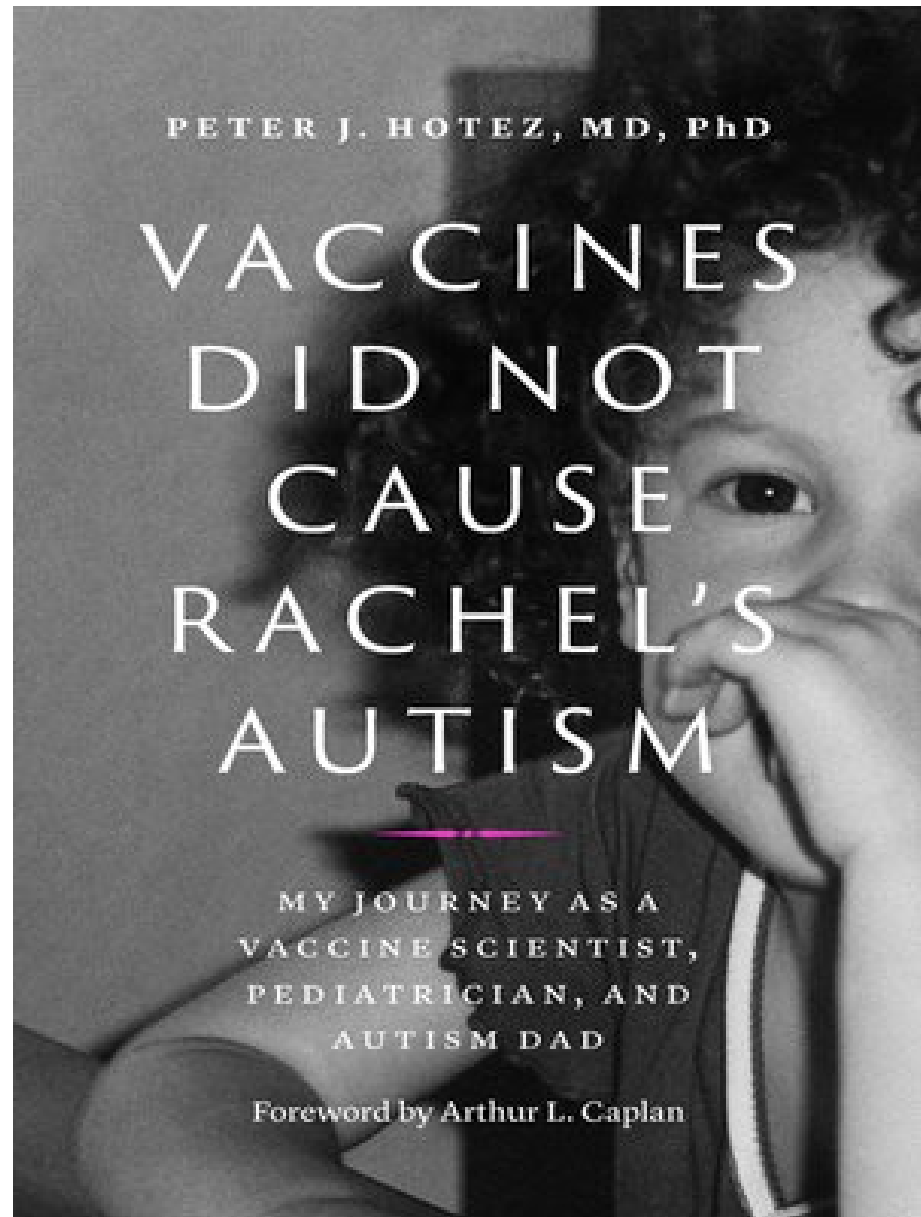
www.VAXXED.com

www.StopMandatoryVaccination.com





Peter Hotez



PETER HOTEZ TALKING POINTS

- **General**

- Childhood vaccines save lives.
- Childhood vaccines do not cause autism, plain and simple.
- The causes of autism are something other than vaccines.
- There is an abundance of deliberately misleading information on the Internet.

- **Specific**

- Myth: Mandatory vaccination is part of a conspiracy.
- Myth: The diseases are gone and we no longer need vaccines.
- Myth: More children in the United States die from vaccines than from the diseases they prevent.
- Myth: Our body's own "natural" immunity is adequate.
- Concern about vaccine ingredients.

WHO IS TO BLAME FOR VACCINE HESITANCY?

- Don't blame the concerned parents.
- Blame the anti-vaccine organizations that disseminate misleading and malicious information, and the local authorities that fail to enforce measures to protect public health.

TWO CONTROVERSIAL AND PERHAPS MISSLEADING FINAL COMMENTS

- Vaccines are 100% safe and 100% effective.
- For public health practitioners vaccines are to protect communities; for parents vaccines are to protect their own children.

HOW TO RESPOND TO VACCINE HESITANCY

- Know the local situation
- Identify key opinion leaders in the community
- Develop context appropriated educational material
- Peer education
- Link with other programs (maternal and child health)

THANK YOU

DETERMINANT MATRIX OF VACCINE HESITANCY (1)

- **Contextual influences**
(arising due to historic, sociocultural, environmental health system/institutional, economic and political factors.)
- Communications and media environment
- Influential leaders, immunization programs gatekeepers and anti- or pro-vaccination lobbies
- Historical influences
- Religious/culture/gender/socio-economic
- Politics/policy
- Geographic barriers
- Perception of the pharmaceutical industry

DETERMINANT MATRIX OF VACCINE HESITANCY (2)

- **Individual and group influences** (arising from personal perception of the vaccine or influences of the social/peer environment)
- Personal, family and/or community member's experience with vaccination, including pain.
- Beliefs, attitudes about health and prevention.
- Knowledge/awareness
- Health systems and providers – trust and personal experiences
- Risk/benefit (perceived, heuristic)
- Immunization as a social norm vs. not needed/harmful

DETERMINANT MATRIX OF VACCINE HESITANCY (3)

- **Vaccine/vaccination - specific issues** (directly related to vaccine and vaccination)
 - Risk/benefit (epidemiological and scientific evidence)
 - Introduction of a new vaccine, or a new formulation, or a new recommendation for an existing vaccine.
 - Mode of administration
 - Design of vaccination program/Mode of delivery (e.g., routine program or mass vaccination campaign)
 - Reliability and/or source of supply of vaccine and/or vaccination equipment
 - Vaccination schedule
 - Costs
 - The strength of the recommendation and/or knowledge base and/or attitude of health professionals.

THE CONTINUUM OF VACCINE HESITANCY BETWEEN FULL ACCEPTANCE AND OUTRIGHT REFUSAL OF ALL VACCINES

