

# Counter anti-vaccination myths and build the vacci(Nation)

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## Declaration

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# Outline of presentation

- Key issues to **increase vaccination uptake**
  - **Advocacy**
  - **Social mobilisation**
  - **Communication**
- **Vaccine communication in practice**
  - How to build **trust**
  - Different types of **explanations** and when they should be used
  - How to **counter anti-vaccination myths**

# KEY ISSUES CONCERNING ADVOCACY, SOCIAL MOBILISATION AND COMMUNICATION TO INCREASE VACCINATION UPTAKE



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[http://timeschangin.blogspot.com/2009\\_03\\_15\\_archive.html](http://timeschangin.blogspot.com/2009_03_15_archive.html)

- **Influencing public opinion** to bring about **social change**
  - E.g. The Treatment Action Campaign brought about HIV/AIDS policy changes
- **Policy-related** vaccination **advocacy**
  - Public health officials & scientists
  - SA Department of Health fully supports EPI-SA
- South African **media advocacy** for vaccines
  - Influence way media reports on vaccination-related issues
  - Government officials, healthcare workers and academics

- **Exchange / sharing** of information
- Effective communication  
→ **mutual understanding**
  - Stakeholder education
  - Educating clients about vaccination risks and benefits
  - Media communication
- Allocate **time for health promotion**
  - Establish knowledge
  - Respect language and culture
  - Explain verbally
  - Don't overwhelm with too much information
  - Adapt to individual and community needs
  - Ensure understanding

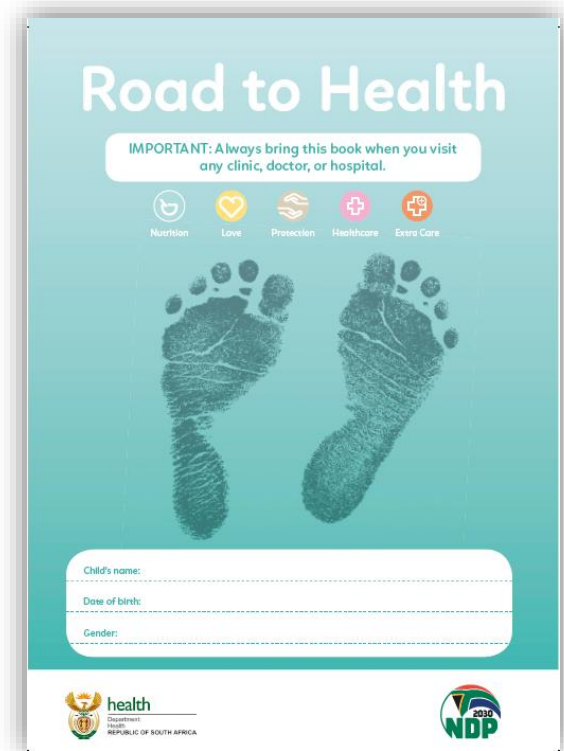


<http://clipartmag.com/communication-images#communication-images-26.jpg>

# Vaccination communication

## Essential information

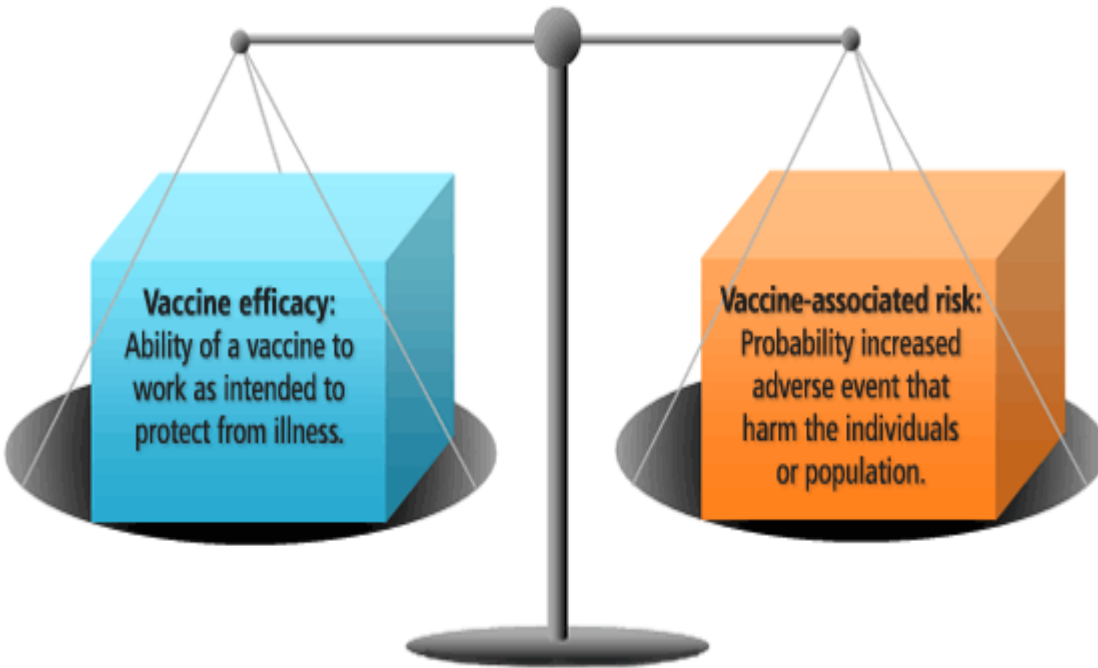
- **All** side-effects that may occur
- Managing **mild** side effects at home
- **Return to the clinic** if **more serious** side effects occur
- The **date and time** of the next vaccination session
- The outstanding **doses**
- Importance of date to ensure timely **completion** of schedule
- Date and time of **next vaccination** session on **Road to Health Book (RtHB)**
- Use reference points if the caregiver is **illiterate**





# Vaccination communication

## Risk benefit communication



<http://vaccine-safety-training.org/balancing-efficacy-and-safety.html>

- Vaccination risks versus disease risks
- Vaccination benefits far outweigh risks
- Serious AEFIs rare
- Serious complications of diseases common
- Anti-vaccination misinformation on credible-looking websites

Advice given by  
healthcare workers  
highly regarded

- Be knowledgeable about the science
- Understand risks and benefits
- Communicate this information effectively



- Social mobilisation = **high demand** for vaccination.
- Beyond understanding and accepting need → demanding vaccination as a **human right** and vaccinating their children
- All stakeholders convinced through effective advocacy and effective communication that vaccination is a **public good** that is **worth providing** and **worth receiving**

Effective vaccination **advocacy + communication** = **Social mobilisation**



**Increased vaccination uptake**



- **Politicians:** well-considered, evidence-based decisions
- **Healthcare workers:** fully understand and promote vaccination
- **Teachers / community leaders:** influence others
- **General public:** demand vaccination as a human right
- **Media:** informed, responsible decisions about publication

# VACCINE COMMUNICATION IN PRACTICE

## How to build trust



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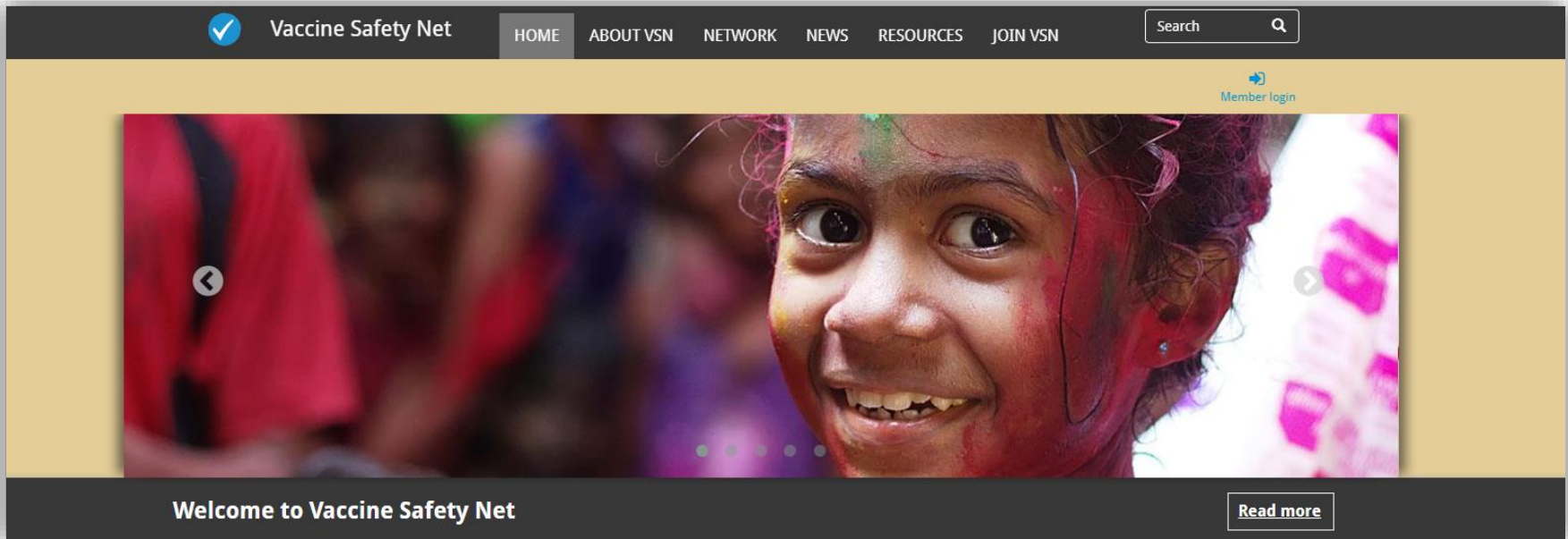
- Health messages can be distressing
- **Stressed / uncomfortable** people unlikely to understand / accept
- **Confidence** and **full attention** first priority
- **Acknowledgement** of **concerns** gains attention
- Knowledgeable people judge information on merits
- **Unknowledgeable** people use peripheral cues to help them decide
  - Are you likeable?
  - Do you care about their concerns?
- Explaining **complex issues** at the outset may engender suspicion
  - Effective communication will not occur
  - Demonstrating importance of child's health to you builds trust

- Build **self-confidence**
  - Don't ridicule caregivers' sources of vaccine misinformation
  - Endorse credible books, magazines and websites that you find helpful and interesting

Rowan KE (2000). Explaining illness through the mass media: a problem-solving perspective. In: Whaley BB (ed). Explaining Illness: Research, theory, and strategies.

## Website example

<http://www.vaccinesafetynet.org/>



The screenshot shows the homepage of the Vaccine Safety Net website. The header is dark grey with a navigation menu containing: HOME, ABOUT VSN, NETWORK, NEWS, RESOURCES, JOIN VSN, and a search box. A blue checkmark icon is next to the site name 'Vaccine Safety Net'. Below the header is a large banner image of a smiling young girl with colorful face paint. A 'Member login' link is visible in the top right of the banner area. At the bottom of the banner, there is a dark grey bar with the text 'Welcome to Vaccine Safety Net' on the left and a 'Read more' button on the right.

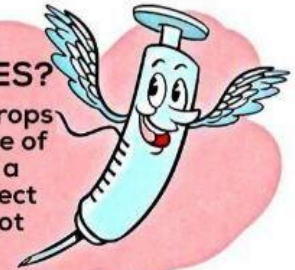


# Example

# VACCINES

## WHAT ARE VACCINES?

Vaccines are injections or drops given to decrease the chance of you or your family getting a disease. Vaccines help protect against diseases, but do not treat diseases



Vaccines protect you against diseases!



If you've been vaccinated before, they can wear off over time. Ask your health care provider if you need another one.

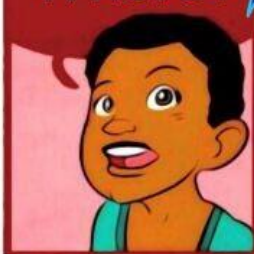


**Who?**  
Babies, Children, Adults, Pregnant Women, Elderly.



**When?**

**Where?**



- Some Pharmacies
- Clinics
- Hospitals
- Doctors Surgeries

If you're not vaccinated, diseases spread to yourself, friends & family



Contact your Pharmacist or other health care provider for more information!



## Birth

- BCG- TB
- OPV-Polio Vaccine



## 6 Weeks

- OPV
- RV(1)
- PCV(1)
- DTap-IPV-Hib-HBV(1)



## 10 Weeks

- DTap-IPV-Hib-HBV(2)

## 14 Weeks

- RV(2)
- PCV(2)
- DTap-IPV-Hib-HBV(3)



## 6 Months

- Measles



## 9 Months

- PCV (3)

## 12 Months

- Measles (2)

## 18 Months

- DTap-IPV-Hib-HBV(4)



## 6 & 12 years

- Td Vaccine

**IT'S NEVER TOO LATE TO VACCINATE!**

# Example

Vaccination schedule  
reminder:  
Fridge magnet

Name of child: \_\_\_\_\_

Tick or shade once vaccinated!



**Vaccines  
work!**  
Do your part!!

**Congratulations!**



**You are now  
protected from  
some serious  
diseases!**



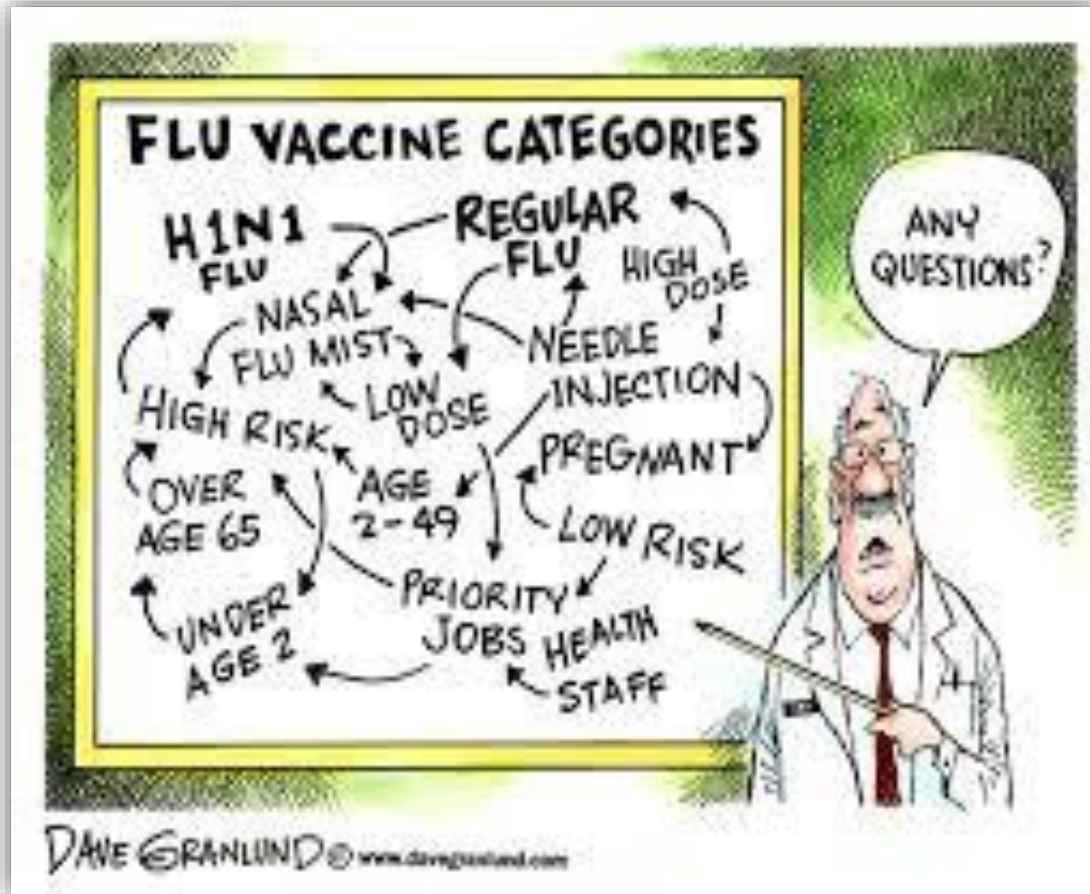
# VACCINE COMMUNICATION IN PRACTICE

## Different types of explanations and when they should be used



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- Three main **obstacles prevent understanding** complex subject matter:
  - Distinguishing **essential meanings of terms** from meanings associated by lay people with these terms
  - Visualising **complex human anatomical or physiological** phenomena or pathology
  - Understanding ideas that contradict **lay beliefs**
- Three different **types of explanations** to overcome these obstacles
  - **Elucidating** explanations
  - **Quasi-scientific** explanations
  - **Transformative** explanations



## Clarify terms - useful for:

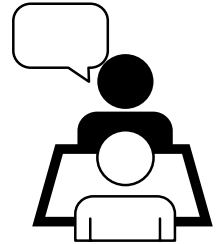
- Introducing vaccines
- Increasing uptake
- Allaying public fears

**Best when there is no causal relationship:**

“following” ≠ “caused by”

## Example:

- Explaining what a vaccination is, and what it is not



## When can this kind of explanation be used?

- When caregivers **do not have the basic knowledge** about vaccination
- When caregivers have asked if they can rather give their babies **alternative types of vaccination**
- Also suitable for
  - Parenting / baby magazine
  - Talk show slot on radio or TV
  - Website on parenting

# Explanation example: What is a vaccination

- A vaccination is when a **healthy person** is given a vaccine to **prevent** them from getting a specific **disease**.
- A vaccine is **made** from the **germ** that causes the disease – it can be made of parts of the germ that **can't cause disease**, or whole killed germs, or a live germ that has been stripped of its disease-causing ability.
- The vaccine makes the person **build up resistance to the germ**, so that if the person is ever exposed to the real live germ, they are highly unlikely to get the disease that the germ causes – this is called **immunity**, which is why vaccinations are sometimes also called immunisations.
- For **example**, vaccination against **polio** starts **when babies are born**, before they have a chance to be exposed to polio germs. The polio vaccine is then also given at 6, 10 and 14 weeks, and again at 18 months, to allow the baby to build up full immunity to polio. Polio vaccination can be done by using polio drops in the mouth, or it can be given by injection.

# Explanation example: What is a vaccination NOT

- A vaccination is **not a medicine**, and the vaccines we use in infant immunisation programmes cannot be given to sick people to make them better.
- **Homeopathic** “vaccines” are **not vaccines** at all, since they don’t contain any vaccine material and can’t produce immunity.
- Nor can your baby be vaccinated by playing with children who have the disease at so-called **“immunisation parties”**.
  - In fact your baby stands a very high chance of catching the disease at such parties.
- Although the **disease** may be **mild** in most children, it can be **very severe** in others, and can result in long-term illness and suffering for your baby, and sometimes even death.
- Vaccines are the most **effective** way to **protect** your child from dangerous diseases and the best way to keep your child **healthy**

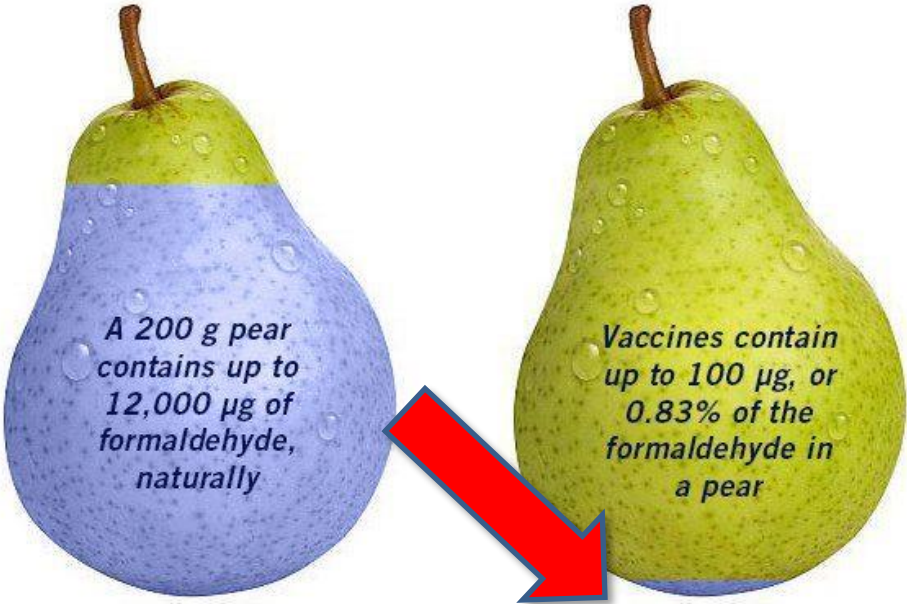
- Communication may fail because people cannot visualise information
- Quasi-scientific explanations **help visualising** complex issues
- **Simple images** in words or graphics create images in the mind
- **Headlines** show how content is organised
- **Comparisons** organise the message further
- Help to make written communication effective
  - **Headings**
  - **Sub-headings**
  - **Captions**
  - **Signalling phrases**





### Best for explaining causal relationship

Concerned about formaldehyde in vaccines? Consider the pear...



A 200 g pear contains up to 12,000 µg of formaldehyde, naturally

Vaccines contain up to 100 µg, or 0.83% of the formaldehyde in a pear

The amount of formaldehyde in a vaccine is so tiny that it doesn't even affect the naturally occurring levels of formaldehyde in a child's blood.


Source: <http://tinyurl.com/foodCH20>      Refutations to Anti-Vaccine Memes

<https://www.facebook.com/RtAVM/photos/-new-a-pair-of-pears-putting-into-perspective-the-amount-of-formaldehyde-in-a-va/484442114959136/>

### Useful for:

- Introducing vaccines
- Increasing uptake
- Allaying public fears

I just ate over 100 vaccines' worth of formaldehyde.



RtAVM

I think I'll do the same tomorrow.

<https://za.pinterest.com/pin/296463587949786509/>

## Example:

- Explaining **vaccine-associated paralytic poliomyelitis (VAPP)**, following vaccination with the oral polio vaccine.

## When can this kind of explanation be used?

- Suitable for the **print media**, and could also be **depicted with graphics**.
- Should be combined with an **elucidating explanation** about polio and polio vaccines, being **“boxed”** to highlight it as the **“take-home”** message

## Note:

- If there is already a lot of negative publicity, then a **transformative explanation** would be more suitable

### What does the oral polio vaccine contain?

- The oral polio vaccine contains live polio viruses (the germ that causes polio paralysis) that have been weakened and stripped of their ability to cause disease.

### How does the oral polio vaccine work?

- The weakened polio viruses prevent polio by causing the body to make polio antibodies, which are the body's weapons to fight polio when the body is exposed to real live polio viruses in the environment.

### Can these live oral polio vaccines cause polio?

- In extremely rare cases, the weakened polio virus undergoes a change (mutation) that restores its strength and ability to cause disease. When this happens, polio paralysis can develop.

### How often does this happen?

- 1 case per 2.7 million doses globally

### What is the risk of getting polio paralysis if you are exposed to the real live polio virus, and are not vaccinated?

- 1 in 200



<http://www.who.int/immunization/hpv/communicate/en/>

Four steps help to understand ideas that contradict lay beliefs:

1. State lay view
2. Acknowledge plausibility of lay view
3. Create dissatisfaction with lay view
4. State scientifically endorsed view; show why this is better

**Best for countering anti-vaccination messages**

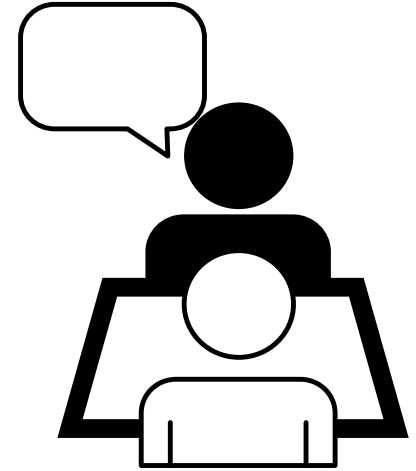
Rowan KE (2000). Explaining illness through the mass media: a problem-solving perspective. In: Whaley BB (ed). Explaining Illness: Research, theory, and strategies.

### Example:

- Explanation that there is no link between vaccines and autism

### When can this kind of explanation be used?

- When a **caregiver is reluctant** to accept
  - MMR vaccine
  - Vaccines that contain additives
  - Multivalent vaccines
- It is also **suitable** for
  - Parenting / baby magazine
  - Talk show slot on radio or TV
  - Website on parenting



### Step 1: State the lay theory

- Despite the fact that **Dr Wakefield has been found guilty** of falsifying his results in the original report that linked vaccination to autism, many people still believe that **vaccines cause autism**.
- Some say that this is because of the **viruses** in the vaccine, others say that vaccine **preservatives** are to blame, while others say it is because children are getting **too many vaccines at once**.

### Step 2: Acknowledge the plausibility of the lay view

- It is **not only lay people** who hold this view
- A few **scientists** support it, and have come up with **causal pathways** to support their claims that are **biologically plausible** to **themselves** at least, and which are convincing to many well educated members of the public.



### Step 3: Show how the lay view does not hold up to scrutiny

- However, these claims are discredited for several reasons. First, Wakefield had **not designed** his **study** in a way that **could show cause** – it lacked both a statistically powerful sample size and a comparison group.
- The findings were on **only 8 of 12 autistic children**, all 8 having received MMR (falsified at the time of publication as “before developing autism”; we now know it was “after” in some cases). At the time MMR coverage in Britain was 92%, thus most children aged between 1 to 2 years would have received MMR.
- As it happens, **autism** is usually **diagnosed** at this **age**, so it is not surprising that these children were diagnosed at around the same age as MMR vaccination.



# Transformative explanation

## Example: Step 3 (cont)

- Second, **preservatives** have **never** been used in MMR – it is a **live vaccine**, and preservatives are used only in killed vaccines.
- Third, **babies** are **exposed** to **numerous organisms** every day, and suffer many viral infections each year, which they clear.
  - Besides, babies who are vaccinated respond just as well to infections that are not vaccine-preventable, as babies who are not vaccinated.
  - When vaccinated with multivalent vaccines (i.e. vaccines that act against a number of organisms), babies respond with antibody titres just as high as when vaccinated with the individual vaccines separately.

### Step 4: State the scientifically endorsed view and show how this explains the phenomenon better than the lay view

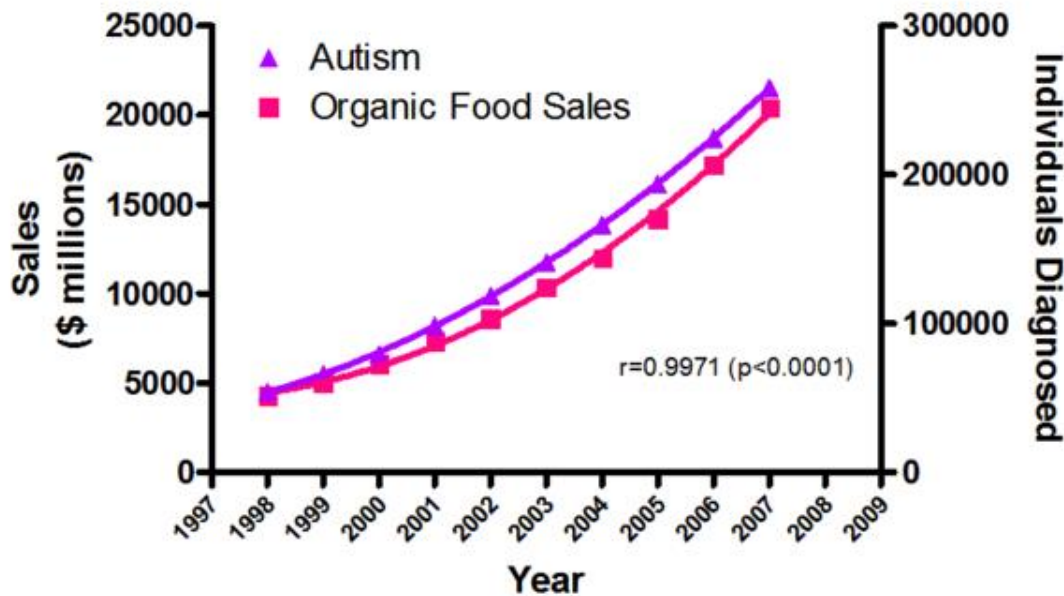
- Most compellingly, since Wakefield's original report in 1998, **over 1 million children** have been studied using statistically powerful epidemiological study designs
- No link between vaccination and autism** has been found in any of these studies.
- Studies **to show cause** (i.e. to rule out coincidence) must always consist **of at least 2 groups**
  - Those vaccinated and those not vaccinated
  - Further sub-divided into those with autism and those without autism in each group for comparison by statistical analysis.

- Furthermore, these studies have to have **statistically powerful sample sizes** in order to be representative of the target population.
- Let us look at a simple **example**
  - If you study only one group (children with autism) and you find that all of them have brown eyes, you cannot conclude that there is a link between brown eyes and autism
  - Unless you study a group of children without autism, and you can show that most of the children who don't have autism have blue or green eyes, and very few have brown eyes.
- And even if you do find this to be true, if you have only studied 10 or twenty children with autism, your finding may be purely due to chance, since such a **small sample** cannot represent all children with autism.

# The “real” cause of autism: Organic food

Distinction between correlation and causation

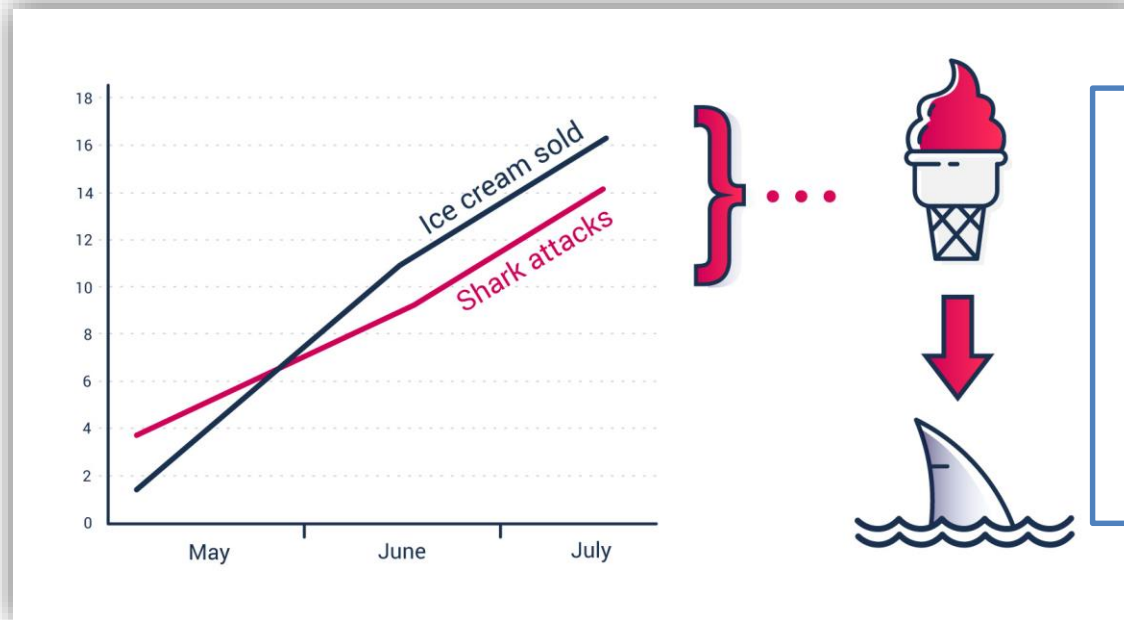
The real cause of increasing autism prevalence?



Sources: Organic Trade Association, 2011 Organic Industry Survey; U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), OMB# 1820-0043: "Children with Disabilities Receiving Special Education Under Part B of the Individuals with Disabilities Education Act"

How susceptible are you to ...

- logical fallacies?
- cognitive biases?
- extracting what you believe is meaningful?



**Spurious “shark attacks and ice cream sales association”**

**Positive correlation between the rise in shark attacks and increased ice cream sales**

**Does eating ice cream cause shark attacks?  
OR Do shark attacks cause more ice creams to be eaten?**

- Linear regression analysis (**correlation**) used instead of measures of **association**
  - because only **one group** has been investigated and **comparison** between groups is thus **not possible**

# VACCINE COMMUNICATION IN PRACTICE

## How to counter anti-vaccination myths



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# Cowpox vaccine

“Unnatural” and “ungodly”

Vaccinated - would grow  
body parts of cows

“**Anti-vaccination movement**”



**1967:**

2.7 million deaths

20%-40% case fatality

100% permanent facial scarring

**1980:**

**Global eradication  
of smallpox**

**Thanks to the  
smallpox vaccine!**





- **Misguided quest** to **help** other parents
- **Financial** interests
- Parents exposed to misinformation and are **concerned**:
  - **“Vaccine hesitancy”**
  - They are not anti-vaccination
  - Deserve empathy and understanding
- Need effective communication leading to acceptance of vaccination

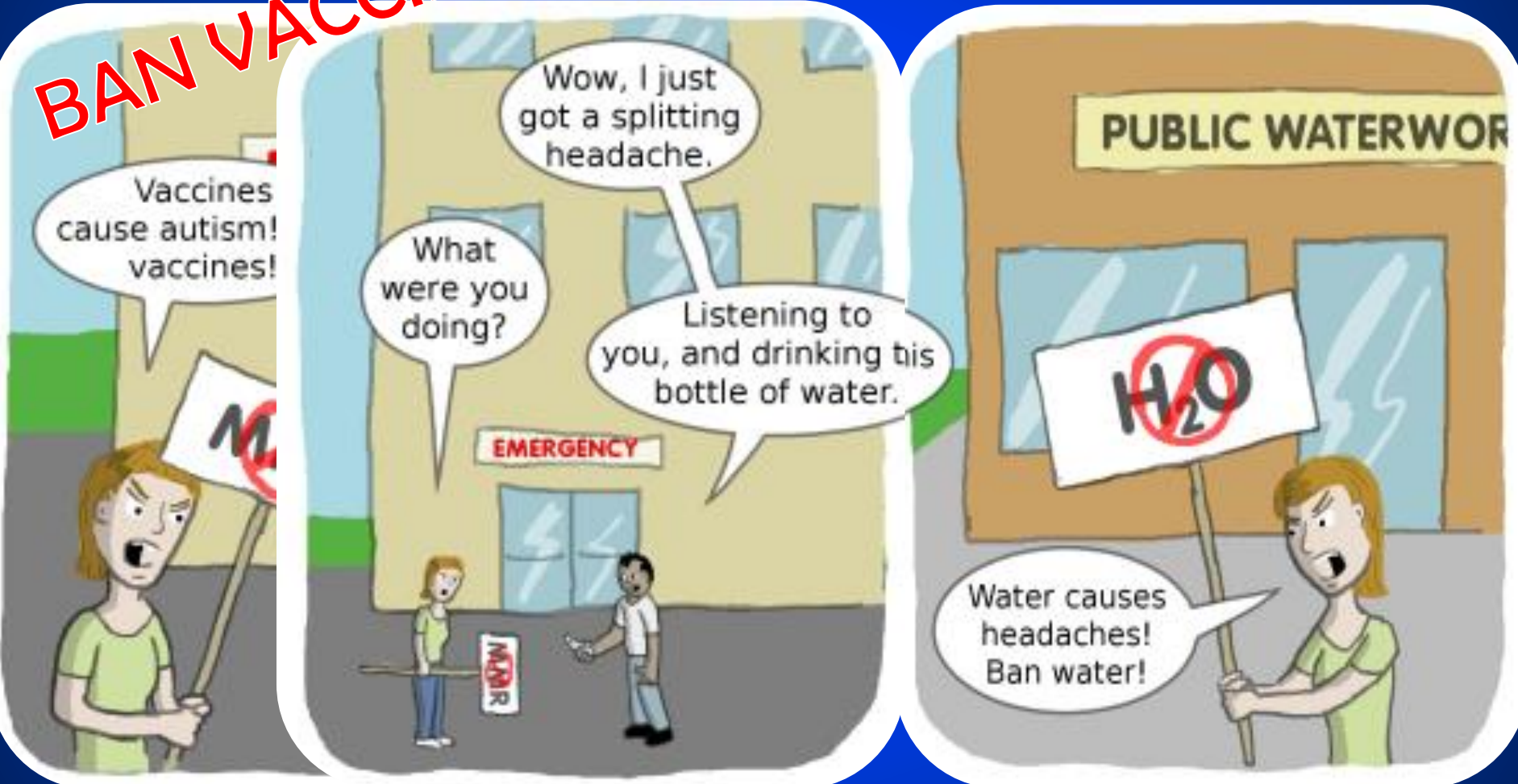


## MYTH

**“Vaccines are not safe” OR  
“Vaccines are harmful”**

# MYTH: Vaccines cause autism!

**BAN VACCINES!**



<https://www.cansa.org.za/files/2017/04/Fact-Sheet-Position-Statement-Vaccines-Vaccination-April-2017.pdf>

Water causes headaches! **BAN WATER!**

# How to protect yourself from getting autism?

**Do not vaccinate ... so**



<https://me.me/i/cant-get-autism-if-you-die-from-polio-none-13174593>



# 1998 - Andrew Wakefield revived anti-vaccination movement



**Lancet:** Claimed association between measles mumps rubella (MMR) vaccine and developing autism

There was no scientific basis for the claim



Medical license revoked by Britain's General Medical Council



	Autism positive	Autism negative
MMR received	8	No data
MMR NOT received	4	No data

- Tiny sample size: Only **12 children with autism studied**
  - 8 of whom it was claimed **developed autism** shortly after receiving MMR = later found to be a **false claim**
- **No comparison** group
- The **temporal sequence** was found to be **reversed** in most cases (i.e. autism signs and symptoms preceded MMR)
- The **causal mechanism** was **not biologically plausible**

# HOW THE CASE AGAINST THE MMR VACCINE WAS FIXED

In the first part of a special *BMJ* series, **Brian Deer** exposes the bogus data behind claims that launched a worldwide scare over the measles, mumps, and rubella vaccine, and reveals how the appearance of a link with autism was manufactured at a London medical school

**W**hen I broke the news to the father of child 11, at first he did not believe me. “Wakefield told us my son was the 13th child they saw,” he said, gazing for the first time at the now infamous research paper which linked a purported new syndrome with the measles, mumps, and rubella (MMR) vaccine.<sup>1</sup> “There’s only 12 in this.”

That paper was published in the *Lancet* on 28 February 1998. It was retracted on 2 February 2010.<sup>2</sup> Authored by Andrew Wakefield, John Walker-Smith and 11 others from the Royal Free Hospital and School of Medicine, London, it reported on 12 developmentally challenged children, and triggered a decade long public health scare.

“Onset of behavioural symptoms was associated by the parents with measles, mumps, and

brain and bowel diseases. Child 11 was the penultimate case.

Running his finger across the paper’s tables, over coffee in London, Mr 11 seemed reassured by his anonymised son’s age and other details.

But then he pointed at table 2—headed “neuropsychiatric diagnosis”—and for a second time objected.

“That’s not true.”

Child 11 was among the eight whose parents apparently blamed MMR. The interval between his vaccination and the first “behavioural symptom” was reported as 1 week. This symptom was said to have appeared at age 15 months. But his father, whom I had tracked down, said this was wrong.

closed £150 (€180; \$230) an hour through a Norfolk solicitor named Richard Barr, he had been confidentially put on the payroll for two years before the paper was published, eventually grossing him £435 643, plus expenses.<sup>4</sup>

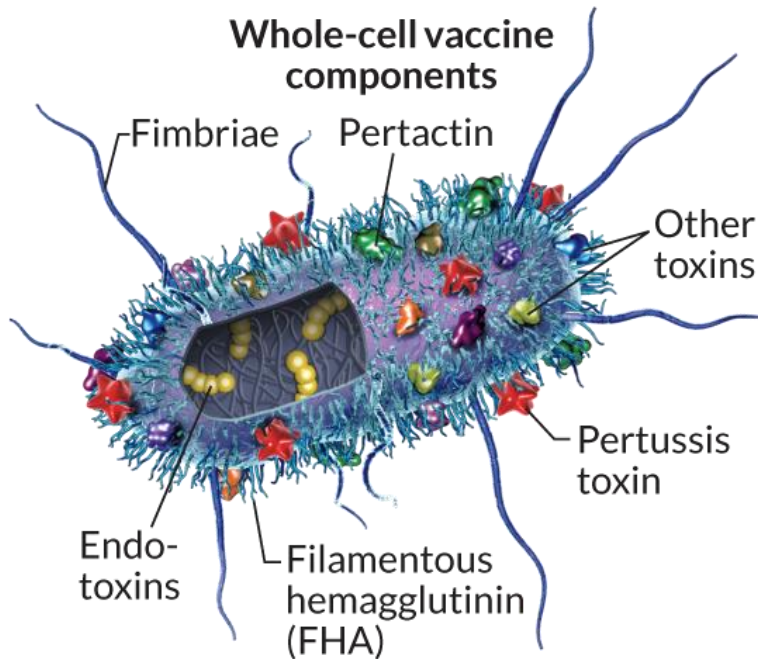
**“The regulator’s main focus was whether the research was ethical. Mine was whether it was true”**

Curiously, however, Wakefield had already identified such a syndrome before the project that would reputedly discover it.

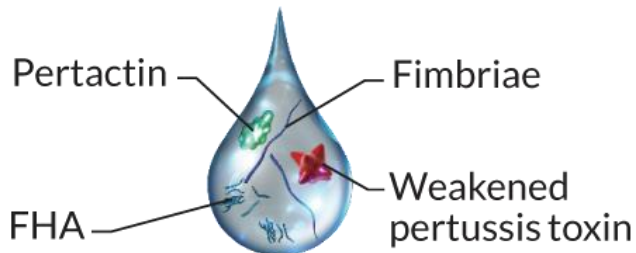
“Children with enteri-

tis/disintegrative disorder [an expression he used for bowel inflammation and regressive autism<sup>5</sup> form part of a new syndrome,” he and Barr explained in a confidential grant application to the UK government’s Legal Aid Board,<sup>6</sup> before any of the children were investigated. “Nonetheless the evidence is undeni-





### Acellular vaccine components



- **Whole cell pertussis vaccine**
  - Killed vaccine associated with high fever.
  - Highly effective for many years
- **Acellular pertussis vaccine**
  - Contains only the proteins which elicit the immune response
  - Not as effective as whole cell pertussis vaccine

- Experimental studies to test the safety and efficacy of vaccines – typically involve **two groups** of children

	Experienced adverse event / developed disease	No adverse event / no disease
Vaccinated	Total vaccinated with the outcome	Total vaccinated without the outcome
Not vaccinated	Total not vaccinated with the outcome	Total not vaccinated without the outcome

- Over 60 000 children included in the latest rotavirus vaccine trials
  - Still not large enough to detect a very rare adverse event
  - 1 in a million children
- Post-marketing surveillance** to detect very rare adverse events
  - Possible **rare adverse events** flagged and fully investigated
  - Observational studies** - children who have been vaccinated / not vaccinated in normal course of their lives - not under trial conditions.

# Untrue and dangerous claims about vaccines



Donald J. Trump  
@realDonaldTrump

Follow

Healthy young child goes to doctor, gets pumped with massive shot of many vaccines, doesn't feel good and changes - AUTISM. Many such cases!

5:35 am - 28 Mar 2014

13,001 Retweets 11,040 Likes



4.2K 13K 11K



justhere @KFerrugia · Feb 23

Replying to @realDonaldTrump @LevequeThots

our foods? All  
ause.

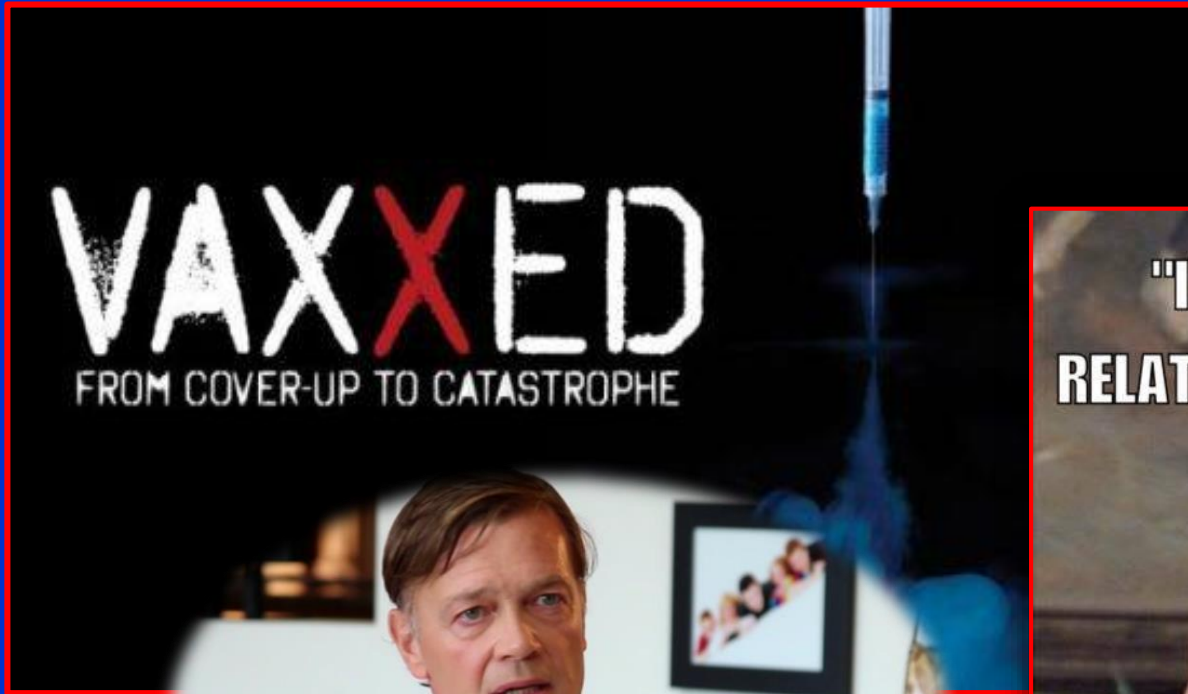
**1 in 4 of Donald Trump's tweets contains fake news**



**"YOU ARE FAKE NEWS"**



# Vaccine debate – which side are you on?



**Andrew Wakefield**  
anti-vaccination  
activist



# Scared of the flu shot?



**FACT:**  
You **already**  
**caught the virus**  
but was  
**not showing**  
**symptoms**  
when  
**vaccinated**

**MYTH:**

Flu shots  
can give  
you the flu



**MYTH: Vaccines are not safe**



**FACT:**

**Independent assessment of each individual lot of a licensed vaccine batch before release onto the market**

**Retesting in case of adverse events**

**If someone has to wear a hazmat suit to handle vaccines in a laboratory, it should not be injected!**

**National Control Laboratory  
UFS**





# Vaccines ARE safe

Serious adverse events following immunisation  
are extremely rare

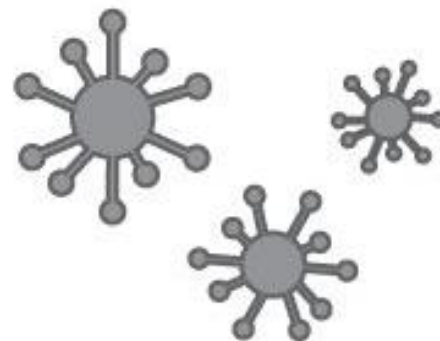
**1 in  
12,000**

Chance of being struck by  
lightning in your lifetime



**1 in  
352,113**

Chance of being injured  
by a vaccination





# MYTH

**“Vaccines are ineffective”**

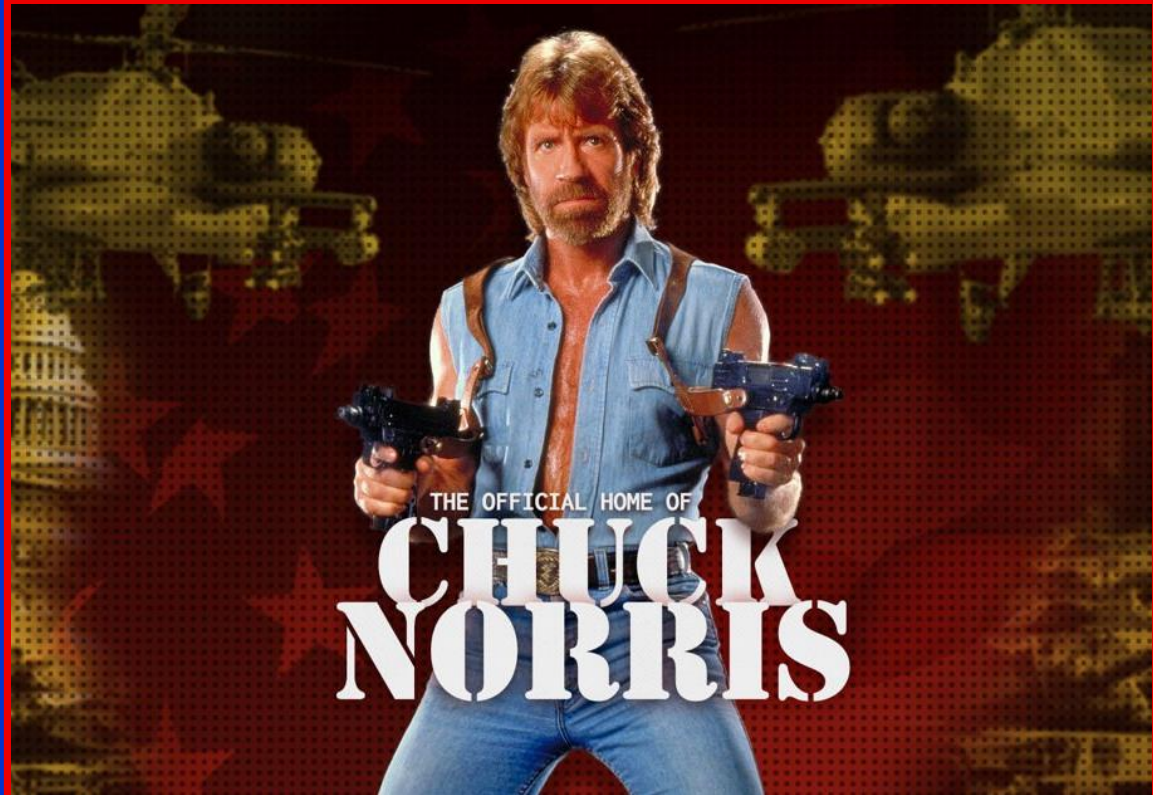
**MYTH: Vaccines are ineffective**

**Why would my unvaccinated kids be a threat to your vaccinated kids?**

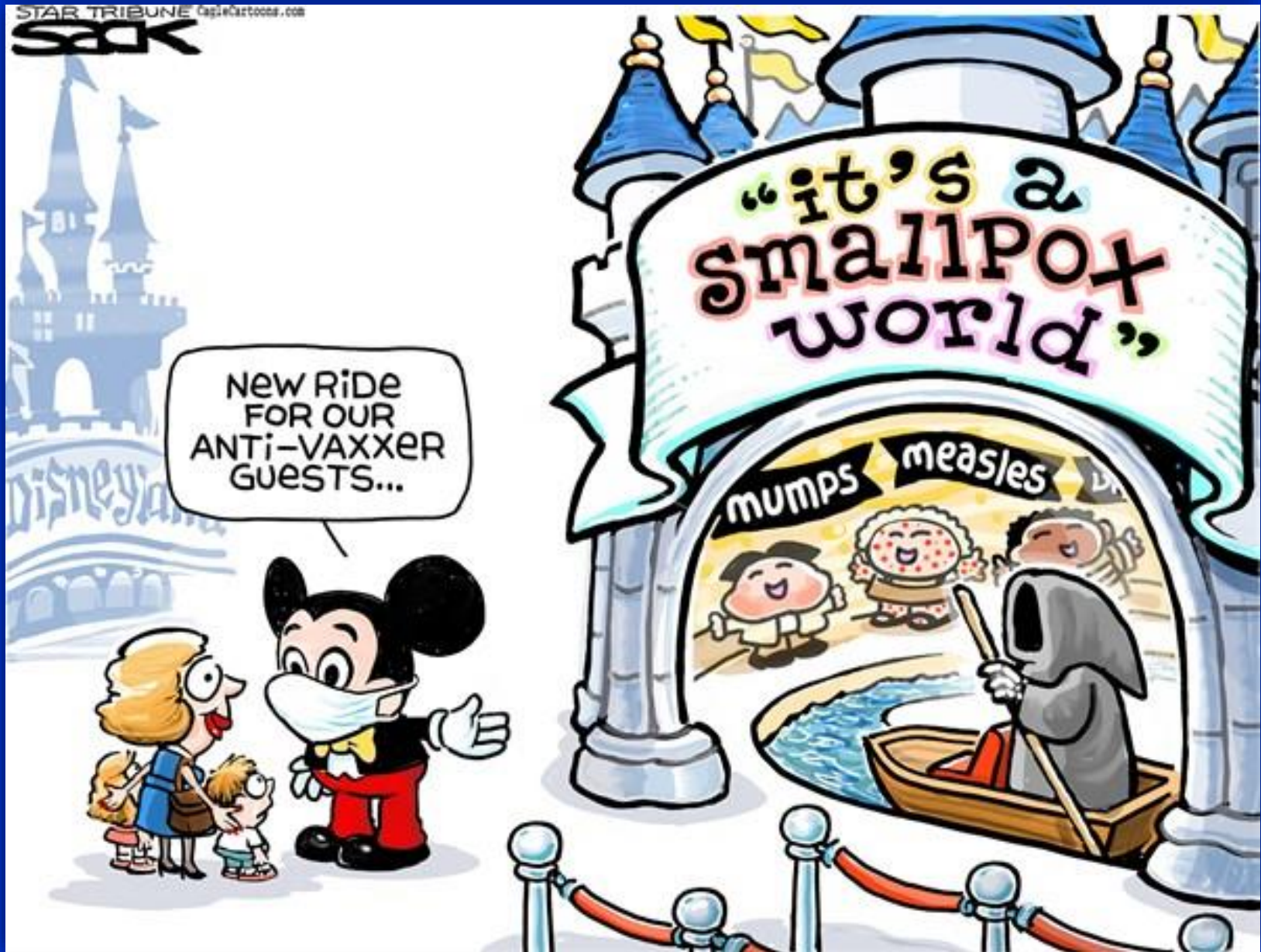
**... if you are so sure that vaccines work?**

**No vaccine is 100% effective (85%-95%)**

**Personal Body Guard**



# Parents choosing NOT TO VACCINATE their children





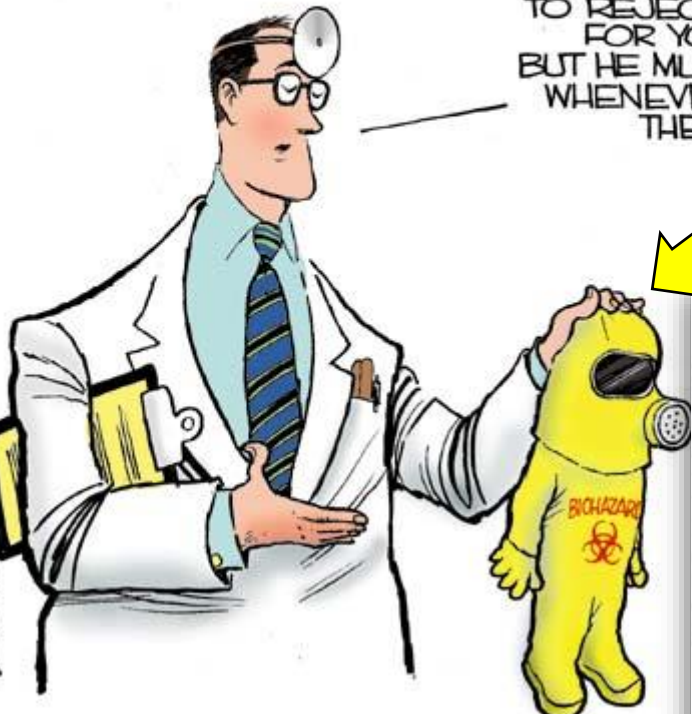
# Parents choosing NOT TO VACCINATE their children

HOW IT SHOULD BE...

YES, YOU'RE FREE  
TO REJECT VACCINATIONS  
FOR YOUR CHILD...  
BUT HE MUST WEAR THIS SUIT  
WHenever HE LEAVES  
THE HOUSE.

Supply child  
with personal  
protective wear

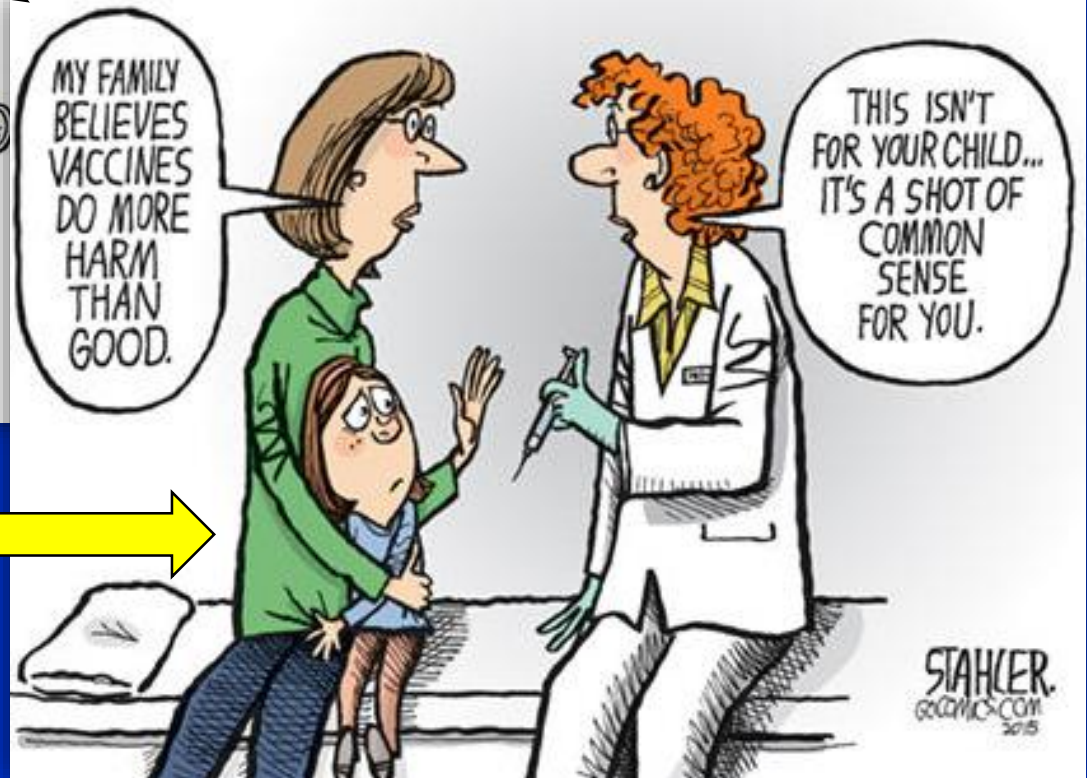
San Diego Union-Tribune 8-25-10 ©  
Breen



MY FAMILY  
BELIEVES  
VACCINES  
DO MORE  
HARM  
THAN  
GOOD.

THIS ISN'T  
FOR YOUR CHILD...  
IT'S A SHOT OF  
COMMON  
SENSE  
FOR YOU.

Vaccinate  
mother with  
common sense



# FACTS AGAINST MYTH: “Vaccines are ineffective”

Why would **MY** unvaccinated kid be a threat to **YOUR** vaccinated kid, if you're so sure that vaccines work?



Because I don't just worry about my kid.



I worry about your kid, babies too young to be vaccinated and those who medically can't be vaccinated. They are all at high risk of suffering from and spreading infection.

I think they **ALL** equally deserve protection.

- When **vaccination coverage is high** the majority of people who get the disease may have been vaccinated
- **Perception** that vaccines are ineffective
- **No vaccine is 100% effective**; most are 85–95% effective

# FACTS AGAINST MYTH: CDC example of vaccine effectiveness

- Of 1000 children never exposed to natural measles, 995 vaccinated
- All 1000 exposed to measles
- All **5 unvaccinated** children (**100%**) get measles
- **7 of the 995 vaccinated** children (**0.7%**) get measles
- Thus **58.3% (7/12)** of measles cases were vaccinated!
- But the vaccine was **99.3% (988/995) effective**



Information provided by anti-vaxxers to show the measles vaccine is not effective	Measles cases (n=12)	% of total cases
Previously vaccinated against measles	7	58.3%
Previously not vaccinated against measles	5	41.7%





# FACTS AGAINST MYTH: Vaccine efficacy testing must be ethically conducted

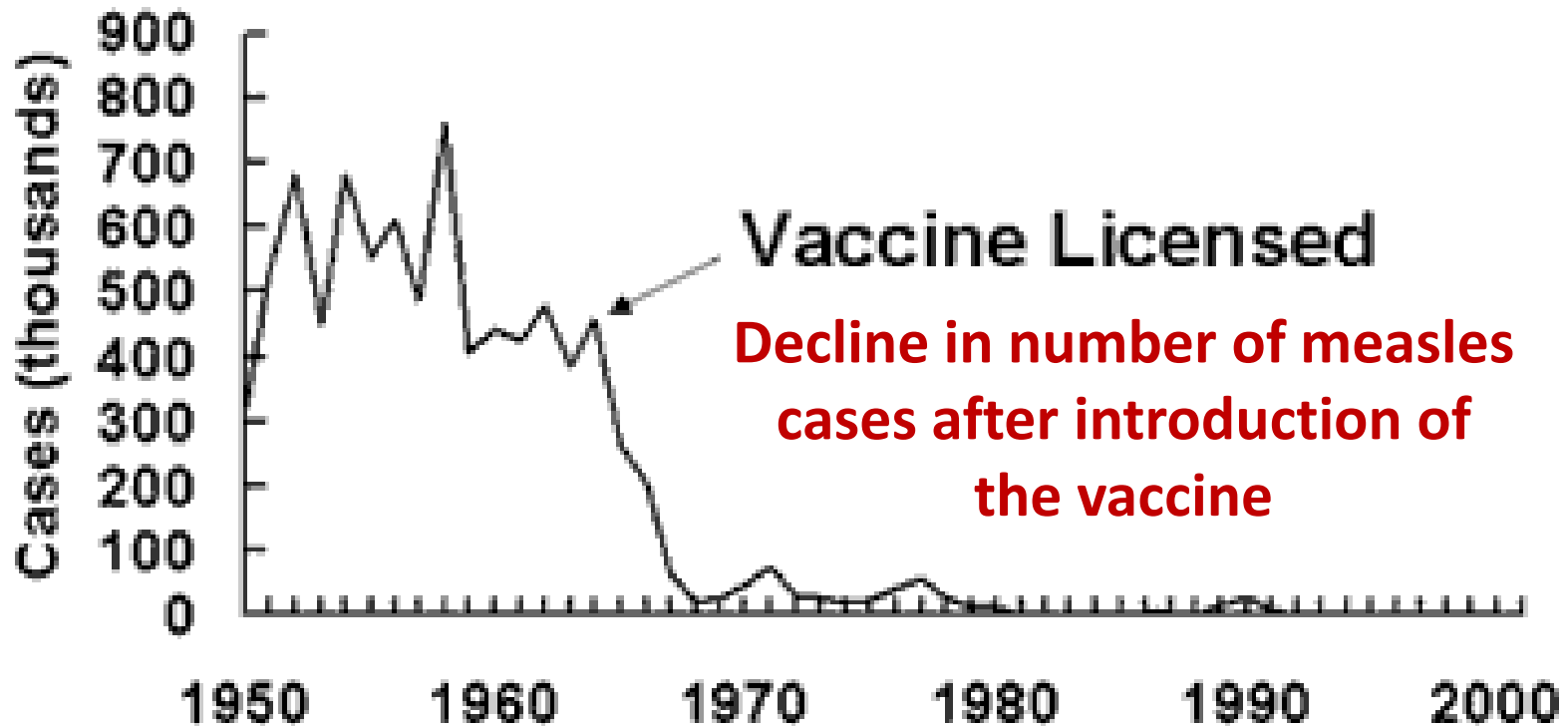


- Efficacy is measured by testing for antibodies, and comparing the levels of antibodies between vaccinated and unvaccinated children
- It would be **unethical to expose** the children to the causative organism as part of the experiment
- The anti-vaccination lobby claim that because scientists do not do this, they have no proof of efficacy

## MYTH

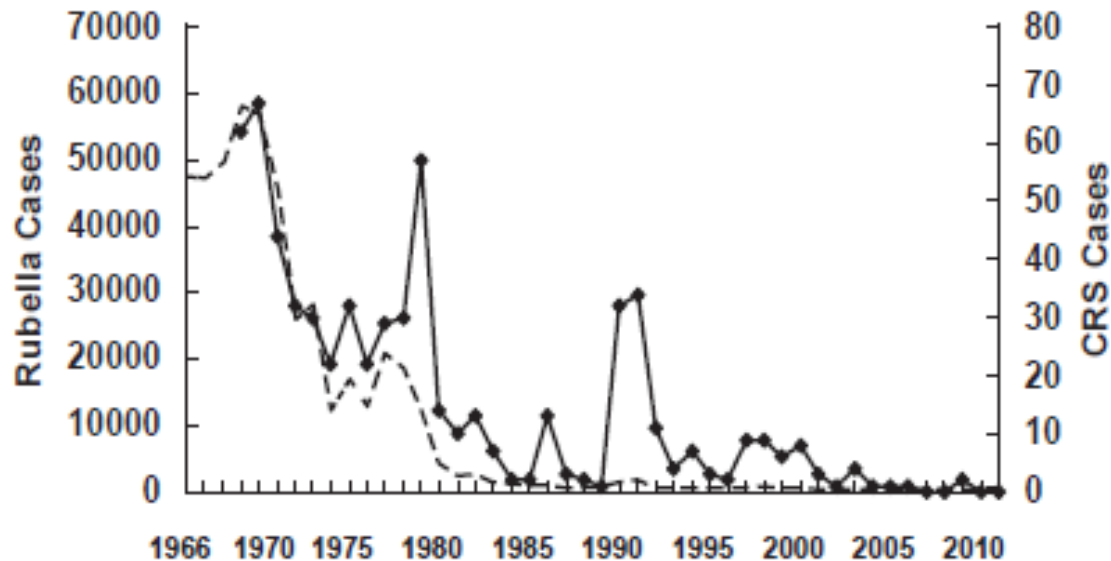
**“Vaccines are not responsible for the decline in infectious diseases”**

## Measles—United States, 1950-2001



## Rubella - United States, 1966-2011

--- Rubella → CRS

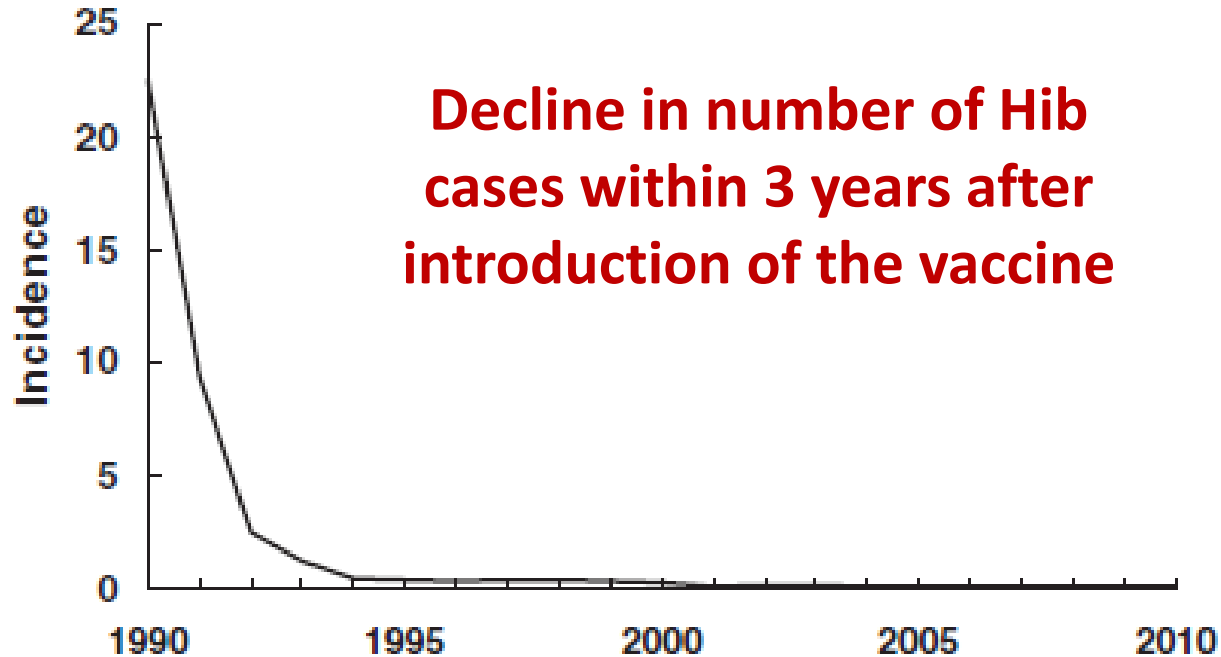


Source: National Notifiable Disease Surveillance System, CDC

CRS = Congenital rubella syndrome

**Decline in number of rubella cases after introduction of the vaccine**

## Incidence\* of Invasive Hib Disease, 1990-2010



**Decline in number of Hib cases within 3 years after introduction of the vaccine**

\*Rate per 100,000 children <5 years of age

# FACTS AGAINST MYTH: “Vaccines are not responsible for the decline in infectious diseases”

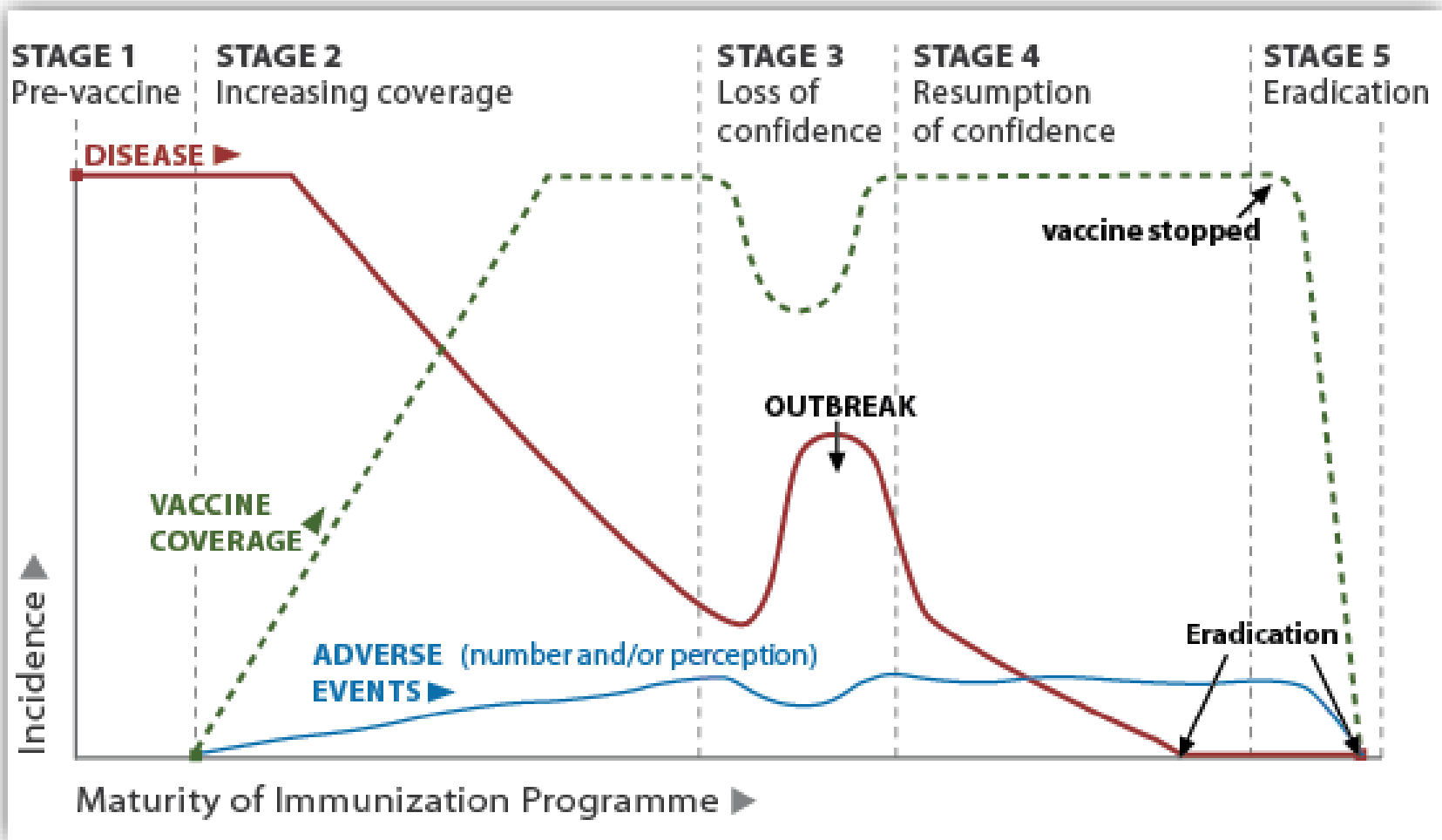


Diagram adapted from Chen RT et al. The Vaccine Adverse Event Reporting System (VAERS). A passive surveillance system in the US intended to collect reports of reactions to vaccines. Under the aegis of the US Centers for Disease Control and Prevention and the US Food and Drug Administration. (VAERS). *Vaccine*, 1994; 12(6):542–550.



# MYTH

**“Vaccination is profit driven”**

# FACTS AGAINST MYTH: “Vaccination is profit driven”

**For every \$1 spent on a vaccine in the US...**

**DTaP saves  
\$27**

**MMR saves  
\$26**

**Perinatal Hepatitis B  
saves  
\$14.70**

**Inactivated Polio  
(IPV) saves  
\$5.45**



**Varicella saves  
\$2.73**

**ECBT**  
every child by two

**...with routine vaccination the US  
saves \$13.5 billion in direct costs and  
\$68.8 billion in societal costs.**

Information from Economic Evaluation of the Routine Childhood Immunization Program in the United States, 2009, Presented at Pediatric Academic Societies' Annual Meeting, Boston, Massachusetts, Apr 28-May 1, 2012, Fangjun Zhou, PhD

Image courtesy of Vichaya Kiatying-Angsulee/FreeDigitalPhotos.net

# Who profits from vaccination?

**The expenses to TREAT a vaccine-preventable disease are much higher than providing the vaccination**

## The Anti-Vaccine Movement Supports Big Pharma.

A 2008 measles outbreak in San Diego had a public-sector cost of \$10, 376 per case.



Cost of the MMR vaccine.



## Who profits from vaccination? (2)

- **EPI-SA vaccines** are provided **free of charge** in the public sector
- **Private sector clinics** in South Africa generally provide the **vaccine at cost**, and charge only a **small administration fee**
- Vaccination clearly does NOT provide huge profits for South African healthcare workers

- **Independent scientists** who develop and test vaccines are sometimes accused of being in “the pockets” of the vaccine industry
  - E.g. Paul Offit, the inventor of the rotavirus vaccine
- Independent scientists who obtain funding, produce validated findings of vaccine safety and efficacy in numerous studies
- **Universities** do not have funds for their scientists to develop and test vaccines
  - When funding is obtained, they remain employees of their university, not the funder

- Most countries - independent national technical advisory bodies
  - Guide national policymakers and programme managers on immunisation policies and programmes
- South Africa: **National Advisory Group on Immunisation (NAGI)**
  - Independence of NAGI is unquestionable
- All vaccines in EPI-SA – selected based on scientific evidence





## RESEARCH

Burnett et al (2015). SAMJ 105(11):922-6

### **A profile of anti-vaccination lobbying on the South African internet, 2011 - 2013**

R J Burnett,<sup>1</sup> MPH, PhD; L J von Gogh,<sup>1</sup> BA; M H Moloi,<sup>2</sup> MPH; G François,<sup>3</sup> MSc, PhD

<sup>1</sup> South African Vaccination and Immunisation Centre, Department of Virology, Sefako Makgatho Health Sciences University, Pretoria, South Africa

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<sup>3</sup> Department of Epidemiology and Social Medicine, University of Antwerp, Belgium

- **Sponsors** of websites and blogs **discrediting vaccines** often have a profit motive

- These organisations **sell products** that claim to be “natural alternatives” to vaccination

- In 2009 this industry was worth USD 60 billion

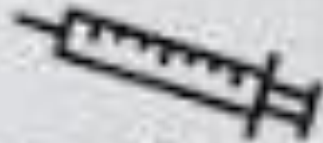
Brookes G. Economic Impact Assessment of the European Union (EU)'s Nutrition & Health Claims Regulation on the EU food supplement sector and market. 2010. <https://www.pgeconomics.co.uk/pdf/Impact-Assessment-health-claims.pdf>

- In 2013 the global vaccine market was worth only USD 24 billion

World Health Organization. Prequalification to make high-quality, safe and affordable vaccines. 2013. [http://www.who.int/features/2013/vaccine\\_prequalification/en/](http://www.who.int/features/2013/vaccine_prequalification/en/)

For the record ...

There's no  
vaccine



against  
stupidity.

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# Thank you



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