



## Vaccine Prevention of a Rare but Severe Disease- *Communication Issues*

<http://www.austimcc.edu/microbio/2704r/nm.htm>

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## Conflicts of Interest

No financial conflicts to declare

My Biases:

- Consultant to Canadian Paediatric Society Imm/ID Cmt
- Consultant to WHO Immunization/ Vaccines and Biologicals
- SAGE Working Group on Vaccine Hesitancy
- Canadian Centre for Vaccinology: Health Policy and Translation Group

I believe vaccines are safe, effective, serious diseases can occur if not immunized

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## Vaccine Preventable Diseases



[http://www.huffingtonpost.com/2014/10/27/anti-vaccine-disease-outbreaks\\_n\\_6056862.html](http://www.huffingtonpost.com/2014/10/27/anti-vaccine-disease-outbreaks_n_6056862.html)

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### Rare vs Common Vaccine Preventable Diseases



CDC

VS



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### WHO SAGE Working Group Definition of Vaccine Hesitancy (2014)

**Vaccine hesitancy**

- refers to delay in acceptance or refusal of vaccines *despite availability of vaccine services*
- *is complex and context specific varying across time, place and vaccines*
- is influenced by factors such as **complacency, convenience and confidence.**

[http://www.who.int/immunization/sage/meetings/2014/october/1\\_Report\\_WORKING\\_GROUP\\_vaccine\\_hesitancy\\_final.pdf?ua=1](http://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf?ua=1)

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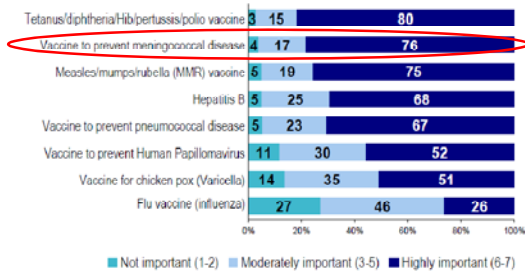
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### Relative Importance of Different Vaccines

"How important do you think the following vaccines are in preventing disease in children?"



EKOS Research Associates Inc.

n=1745

Vaccine Safety Survey, 2011

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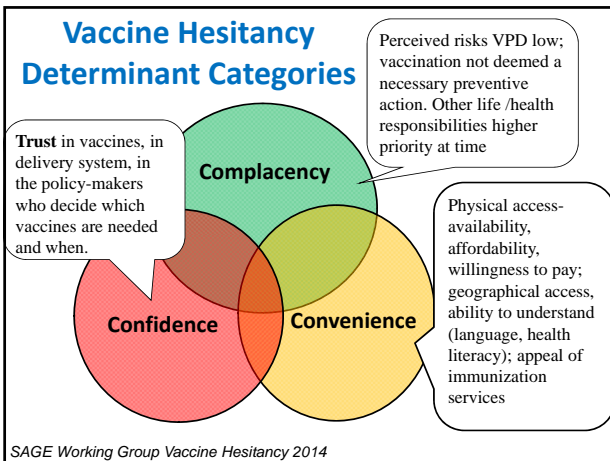
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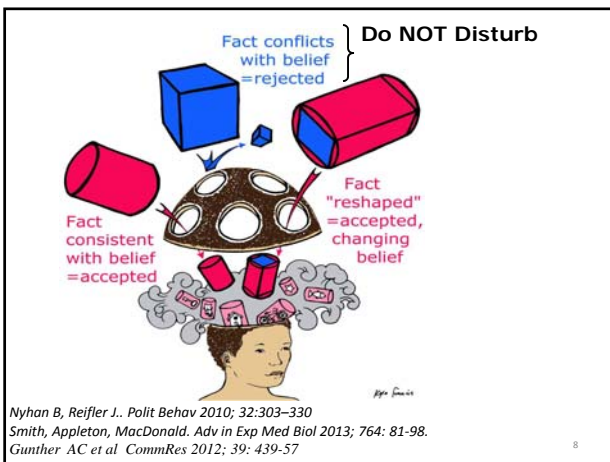
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### Risk Perception Problem: Impact of Heuristics

**"Hard wired"** to deal with life threatening situations with reflexive reactions

**Heuristics:** cognitive shortcuts  
-simplify complex decisions & judgments  
... "automatic intuition"

MacDonald NE et al. Risk perception, risk management and safety assessment: What can governments do to increase public confidence in their vaccine system? Biologicals 2012 ;40(5):384-8

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## Cognitive Shortcuts- Heuristics-

### Anchoring

Estimate by starting from a value know (anchor)  
 Judge probability future event by what occurred in past  
 Hear about serious AEFI  
 -estimate AEFI as "more common" than reality



### Omission bias

Actions more harmful than inactions  
 Reluctance to immunize

### Availability

Judge an event as frequent or likely to occur if can easily imagine or recall it

Not recall serious vac preventable dis eg. measles

Have seen autism

Stories are powerful ; anti vaccine movement knows this <sup>10</sup>

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## Access to Vaccine Information

**Vaccine Confidence Project:** study media ++ vax > 10,000 in 144 countries in 1 year *Larson H et al Lancet Infect Dis 2013;13(7):606-13.*

2010 >80 % households in US, Can, UK internet access: > 80% seek health info...esp like **user-generated content (Web 2.0)**, such as *online news groups and blogs*

*PEW Research Group 2010, Kata A. Vaccine 2012 )*

**Web2.0 "everyone, anyone is an expert"**  
 now big audience for "fringe" views

Google™ provides **personalized** search results based on user's **previous browsing habits**

Critics concerned-infringe users' privacy

**Immunization problem** – if find anti vaccine sites in searches and use them – will appear on first pages next searches...<sup>11</sup>

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## Influence Vaccine Critical Websites:

### Vaccine Risk Perception

#### Websites

Accessing *vaccine critical* websites for 5 to 10 minutes  
 - ↑ perception of risk of vaccination  
 - ↓ perception of risk of omitting vaccination and changes intention to vaccinate. *Betsch C et al J Health Psychology 2010 15:446-455*

#### Blogs

Accessing *vaccine critical* blog on HPV: "stories"  
 - ↑ perception of risk of vaccination  
 - ↓ changes intention to vaccinate  
 HPV vaccine supportive blog +ve; less effect: "facts"  
*Nan X, Madden K. Health Commun. 2012 27(8):829-36.*

#### HPV on YouTube:

2008 review majority +ve  
 2011 review 1/2 now -ve, 1/3 +ve, rest neutral

*Briones R, Nan X, Madden K, Waks L. Health Commun 2012;27:478-85*

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## Medical Conspiracy Theories and Health Behaviors in the United States

Table 1. Americans Agreeing With Various Medical Conspiracy Theories, 2013\*

Medical Conspiracy Narrative	Respondents, % <sup>a</sup> (N = 1351)			
	Heard Before	Agree	Neither Agree nor Disagree	Disagree
The Food and Drug Administration is deliberately preventing the public from getting natural cures for cancer and other diseases because of pressure from drug companies.	63	37	31	32
Health officials know that cell phones cause cancer but are doing nothing to stop it because large corporations won't let them.	57	20	40	40
The CIA deliberately infected large numbers of African Americans with HIV under the guise of a hepatitis inoculation program.	32	12	37	51
The global dissemination of genetically modified foods by Monsanto Inc is part of a secret program, called Agenda 21, launched by the Rockefeller and Ford foundations to shrink the world's population.	19	12	46	42
Doctors and the government still want to vaccinate children even though they know these vaccines cause autism and other psychological disorders.	69	20	36	44
Public water fluoridation is really just a secret way for chemical companies to dump the dangerous byproducts of phosphate mines into the environment.	25	12	41	46

49% of Americans agree ≥ 1 conspiracy theory; 18% agree ≥ 3  
 > Conspiracy beliefs > avoid traditional health care e.g. flu vac

Oliver JE, Wood T. JAMA Intern Med. 2014; 174(5):817-8

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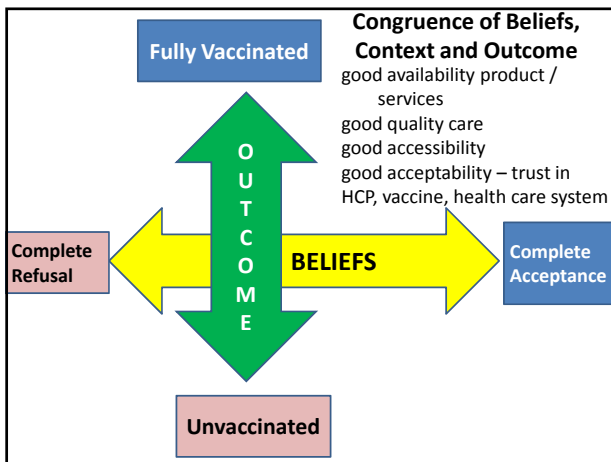
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## 10 Approaches to Consider for Enhancing Vaccine Acceptance for Rare VPD

1. **Diagnose** if there is a problem- TIP
2. **Physicians and HCP are credible** –caring key
3. Don't **underestimate** how much parents care about vaccines 3.
4. **Exploiting heuristics** for communication and social media
5. Ensure **clarity of language**
6. **Frame** message
7. **Tell don't ask**
8. Employ Strategies to **Reduce Vaccine-Related Pain**
9. Ensure know **vaccine safety** system
10. Employ **strategies** known to **increase vaccine uptake**

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### Vaccine Hesitancy: WHO EUR: The Guide to Tailoring Immunization Program- "TIP"

Don't assume you know cause of low uptake.....

TIP framework to help

- 1) **identify** and **prioritize** vaccine hesitant populations and subgroups,
- 2) **diagnose** the demand and supply –side barriers and enablers to vaccination in these vax hesitant populations
- 3) **design evidence –informed responses** to vaccine hesitancy appropriate to the setting, context and hesitant population
- 4) Evaluate impact and outcomes.



[http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf](http://www.euro.who.int/__data/assets/pdf_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf)

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### Role MDs & Nurses: Credible

“For all vaccines, the *attitude of the physician* .....is very influential in the decision to vaccinate a child.....”

*Swennen B et al. Vaccine 2002;20 S5-S7. Ansari M et al.. JRSJ 2007;127:276-9. Favin et al . International Health 2012; 4:229-238*

Parents received vaccine information from MDs: < vac concerns vs from friends/family/books

*Wheeler M, Bottenheim A. Human Vaccines & Immunotherapeutics2013; 9:1782–1789*

Beware: Health Care Professional’s Imm Status program uptake.....If HCP not up to date: patients less likely up to date

*Zhang J., While AE, Norman JJ. Vaccine 2010, 28:7207-14*

**HCP immunization education is key**

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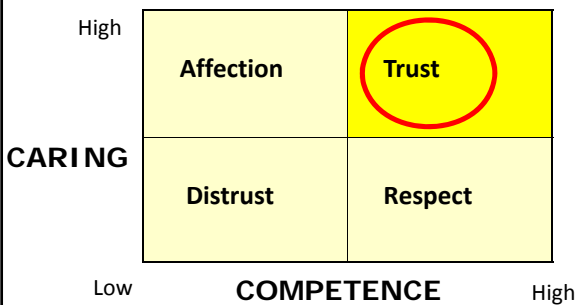
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### Trust = Competence + Caring



*Paling J. BMJ 2003; 327:745-748. Alaszewski A, Horlick-Jones T. BMJ 2003; 327:728-731 Benin et al Pediatrics 2006;117:1532-41 MacDonald NE, Finlay JC. Paediatr Child Health 2013;18(5):265-7*

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### Parent Opinions on Importance Vaccines; Provider Estimate Parental Opinion

Vaccine Importance	Parent N=401	Provider N=105	P value
Child Health	9.5 (0-10)	9.3 (4-10)	<0.001
Meningitis	9.4 (0-10)	9.2 (2-10)	0.002
Hepatitis	9.5 (0-10)	8.7 (3-10)	<0.001
Rotavirus	9.0 (0-10)	8.4 (2-10)	0.535
Pertussis	9.5 (0-10)	9.3 (0-10)	0.006
Influenza	9.3(0-10)	7.0 (1-10)	<0.001
HPV	9.2 (0-10)	5.2 (0-10)	<0.001

Healey CM et al. Parent and provider perspectives on immunization: Are providers overestimating parental concerns? *Vaccine* 2014;32: 579-584

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### Exploit Cognitive Shortcuts-

Tell compelling stories

HCPs own Or

- [www.immunize.org/reports/](http://www.immunize.org/reports/)

Parent telling story very very powerful

- [www.ovg.ox.ac.uk/meningococcal-disease](http://www.ovg.ox.ac.uk/meningococcal-disease)



Charlotte Nott's story and video

Anne Geddes

Protecting Our Tomorrows: Portraits of Meningococcal

Disease: Anne Geddes

<http://www.comeningitis.org/news-and-events/protecting-our-tomorrow-portraits-of-meningococcal-disease/>

<http://protectingourtomorrows.tumblr.com>

**anchor and recall** Shelby A, Ernst K. *Story and Science .How providers and parents can utilize storytelling to combat anti-vaccine movement. Hum Vac and Immuno* 2013; 9:1795-1801

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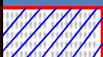
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### Use Clear Language

1000 Children



1. Standard vocabulary
2. Consistent denominator
3. Present risks/benefits fairly
4. Explain single event probability (rain,not rain) visual aides
5. Absolute numbers not relative risk or %
6. Frame your message

Meningococcal invasive Disease 10% die even with ICU care = 100 in 1000

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**Frame the Message:**  
**HCP, Immunization Programs**

**What is framing?**

- Presenting information of the equivalent outcome in terms of
- gains (positive) or losses (negative)

**Ground Beef 25% fat**

**Ground Beef 75% lean**



Tversky A, Kahneman D. The framing of decisions and the psychology of choice. Science 1981;211(4481):453-8.  
Levin IP, Schneider SL, Gaeth GJ. All Frames Are Not Created Equal: A Typology and Critical Analysis of Framing Effects. Organ Behav Hum Decis Process 1998;76:149-188 <sup>22</sup>

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**Frame Vaccine Message**

**Anxious about negatives:**

*Meningococcal conjugate vaccine*  
> 99.9% safe  
**better /more effective**  
than say <<0.1 % serious side effects

**Often focus discussions: side effects not emphasize safety!**

Gerend MA, Shepherd MA, Shepherd JE Health Psychol. 2011;32:361-9.  
Sandell T et al Scandinavian Journal of Public Health, 2013; 41: 860-865  
NACI Canada. Canadian Immunization Guide <http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-meni-eng.php#a9>

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**Meningococcal Disease Versus Vaccine**

<p><b>Meningococcal Disease</b></p> <ul style="list-style-type: none"> <li>• Permanent brain damage (10 -20%)</li> <li>• Amputation of hands or feet (10 to 15%)</li> <li>• Death (10 to 15%)</li> </ul> <p><a href="http://www.ovg.ox.ac.uk/meningococcal-disease">http://www.ovg.ox.ac.uk/meningococcal-disease</a></p>	<p><b>Meningococcal Conjugate vaccine</b></p> <p><b>Serious side effects - none proven</b></p> <p>Minor local side effects</p> <ul style="list-style-type: none"> <li>• Injection site pain, redness and swelling – mild -50%</li> <li>• Fever (10%) , drowsiness (sleepiness) and irritability(80%- infants), esp &lt; 5yrs-</li> <li>• Headache, discomfort, muscle pain and joint pain etc 10%, esp &gt; age 11 or older</li> </ul> <p><a href="http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-meni-eng.php#a9">http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-meni-eng.php#a9</a></p>
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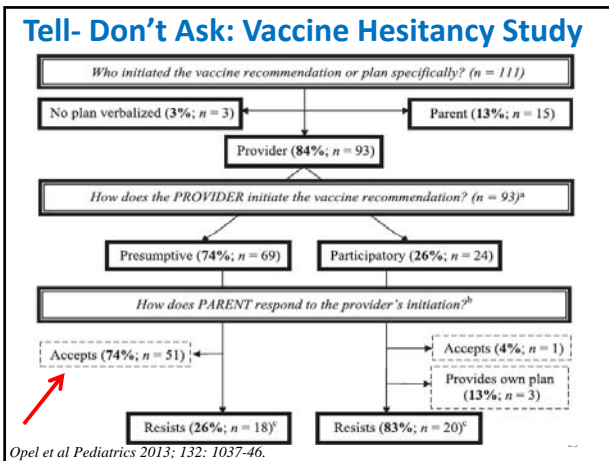
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### Address Pain Mitigation

**Vaccine Pain**

Concerns  
patient, parent , HCP

44% parents\*  
*\*Kennedy et al. Pediatrics 2011;127 suppl S92-99*

measures to mitigate imp

**perception of benefit**  
*anchor and recall*

**Vaccine MicroNeedle patches**

*Evidence based Immunization Pain Mitigation Guidelines*  
*Taddio et al. CMAJ 2010. 182(18):1989-95 .*

<http://www.youtube.com/watch?v=KgBwVSyafps>

<http://pediatric-pain.ca/it-doesnt-have-to-hurt>

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### Emphasize: Safety Monitoring for Vaccines

1. Pre-licensure review and approval
2. Good manufacturing procedures
3. Lot assessment before release
4. Post marketing surveillance AEFI-reporting
5. Causality assessment of New: serious AEFI
6. Process for action on vaccine performance issue
7. Vaccine recommendations based upon epidemiology, vaccine effectiveness and efficacy (EMA, Country NITAG)
8. International collaboration (WHO/GACVS)

*Vaccine Safety Throughout the Product Life Cycle. Pediatrics 2011;127 Supplement 1*  
*MacDonald N, Pickering L. Canadian Paediatric Society, Infectious Diseases and Immunization Committee.. Paediatr Child Health 2009;14(9):605-8.*  
*Parrella A et al. Vaccine 2013;31:2067-74*

Safer than Drugs

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## A Vaccine Preventable Disease



Anne Geddes



Anne Geddes



Anne Geddes

Remember ...sometimes a picture is worth a thousand words.....

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