



Vaccine Risk Communication An Overview

[www.freewebs.com/edward_jenner/
the_cow_pock_large_cartoon.jpg](http://www.freewebs.com/edward_jenner/the_cow_pock_large_cartoon.jpg)

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May 16, 2014

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**

Premise

An **informed** individual is not necessarily a behaviorally responsive one...

Many factors influence immunization decisions; **it's complex**

*“the cultural, emotional, political, and social context within which decisions are made may **introduce substantial irrationality**”*

Plough A, Krinsky S. Sci Technol Human Values. 1987;12 :4–10

Anti-vaccine Movement one factor only

To ↑ uptake vaccines, we need to

- understand these factors
- develop savvy strategies to **convince an individual/parent to want and accept immunization.**

Vaccine Hesitancy

High Demand

Low Demand

Accept All

Accept some, Delay, Refuse some

Refuse All

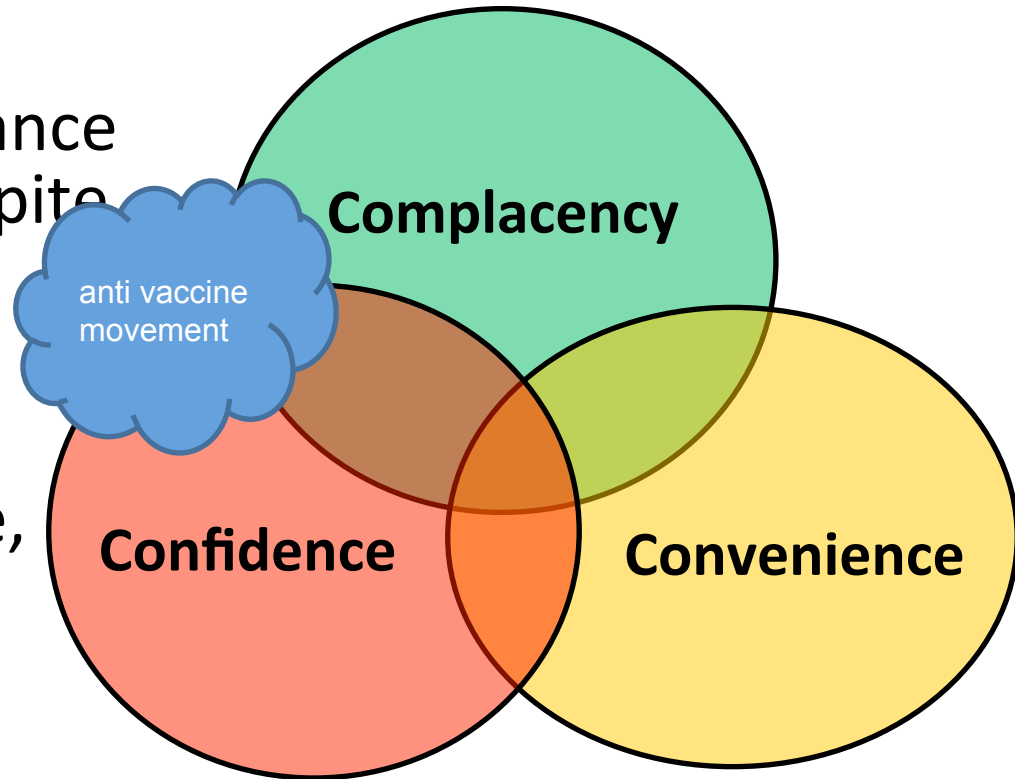
Accept but unsure

Refuse but unsure

Vaccine hesitancy

- refers to delay in acceptance or refusal of vaccines despite availability of vaccine services.
- Complex; context specific varying across time, place, and vaccines.
- includes factors: 3 Cs

**Problem HIC, MIC, LIC
problem**



WHO SAGE Working Group
on Vaccine Hesitancy, 2014



Vaccine Concerns & Reluctance to Immunize

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- Pertussis – SIDS
- Hep B – demyelinating dis
- MMR- autism
- Thimerosal- ASD
- Alum- inclusion myositis
- HPV-lowers sexual debut; more sexually active
- Multiple vaccines as cause of – cancer, diabetes, multiple sclerosis
- Multiples vaccines overwhelm immune system
- Natural infection is better than immunization

NOT NEW

Anti Vaccine Tactics

Skewing science

Deny or reject science that fails to support antivac

Shifting hypothesis

Ongoing proposal new theories for vaccine harm; ever moving target

Censorship

Suppress dissenting opinion; shut down critics

Attacking the opposition

Attack critics via personal insults and by filing legal claims



loveforlife.com.au



Australian Vaccination Network Inc.

Because every issue has two sides

Consumer Warning: NSW Fair Trading has directed Australian Vaccination Network to change its name because it regards the name to be misleading. The Australian Vaccination Network is challenging this Direction and the challenge is currently before the NSW Administrative Decisions Tribunal



Kata A. Anti-vaccine activists, Web2.0 and the post modern paradigm....Vaccine 2012;30: 3778-89

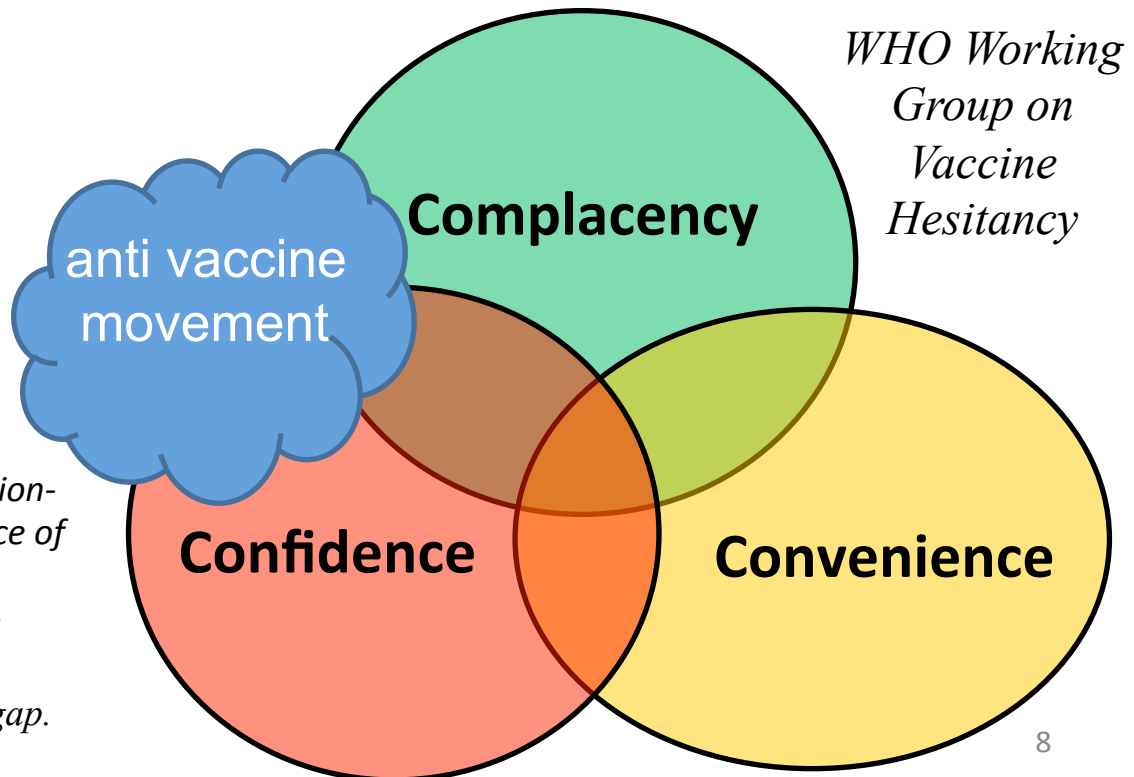
Public Perspective of Risk:

Personal not Sci/Evidence Based

“What does it mean for me and my family- what should I do about it?”



Even when believe vaccines imp for protection-may still be issues



Benin et al Qualitative analysis of mothers' decision-making about vaccines for infants: the importance of trust Pediatrics 2006;117:1532-41

Kwok R. The real issues in vaccine safety. Nature 2011;473:436-438

Larsen et al. Addressing the vaccine confidence gap. Lancet 2011; 378(9790):526-35

Risk Perception Problem: Impact of Heuristics



“**Hard wired**” to deal
with life threatening
situations with reflexive
reactions

*www.free-digital-photography-
tips.com/images/...*

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

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 ¹⁰

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 and 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...

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*¹²

Social Networks Analysis: Vaccine Decisions

Social networks: -people: **HCW**, family, friends
-sources info –media, internet..

Window or Mirror

- 
- *opportunity to explore diverse viewpoints about immunization/ specific vaccines*
 - ***or***
 - ***simply reflect and reinforce what that parent already believes***

Brunson EK. Pediatrics. 2013; 131: e1397-04.

Opel DJ, Marcue E. Pediatrics 2013;131:e1619-20

Leask et al. Vaccine. 2006; 24(49–50):7238–7245

Medical Conspiracy Theories and Health Behaviors in the United States

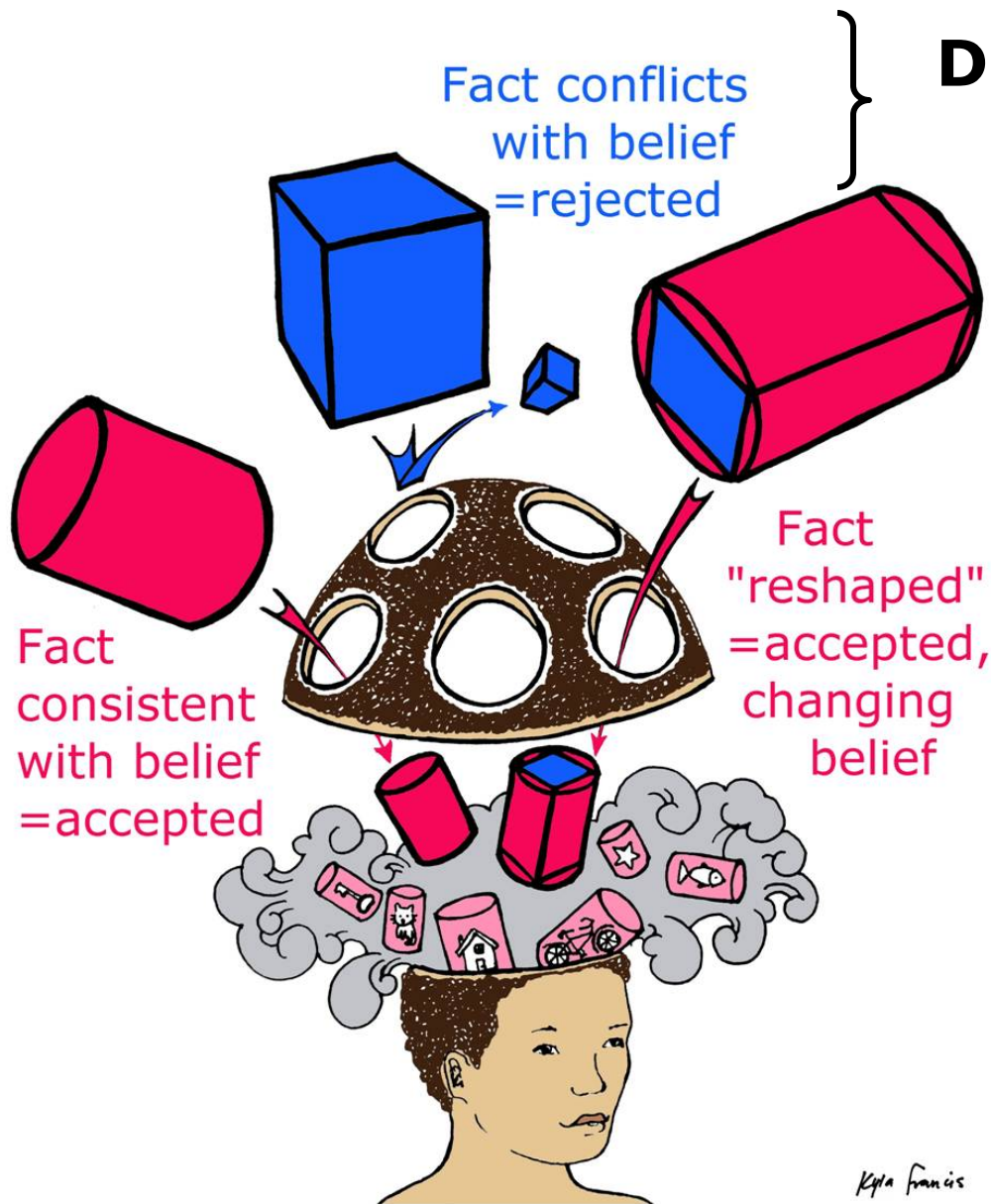
Table 1. Americans Agreeing With Various Medical Conspiracy Theories, 2013^a

Medical Conspiracy Narrative	Respondents, % ^b (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

Abbreviations: CIA, Central Intelligence Agency; HIV, human immunodeficiency virus.

^a Percentages may not total 100% because of rounding.

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



Public HCP Imm Program Policy Makers

Kyla Francis

Nyhan B, Reifler J.. *Polit Behav* 2010; 32:303–330

Smith, Appleton, MacDonald. *Adv in Exp Med Biol* 2013; 764: 81-98.

Gunther AC et al *CommRes* 2012; 39: 439-57

Strategies to Address Hesitant and Vaccine Refusers

Vaccine hesitant \neq vaccine refuser

Focus on hesitant – most probability change

Much current background best practice comes from marketing, political and social science studies

Need more research for evidence based strategies

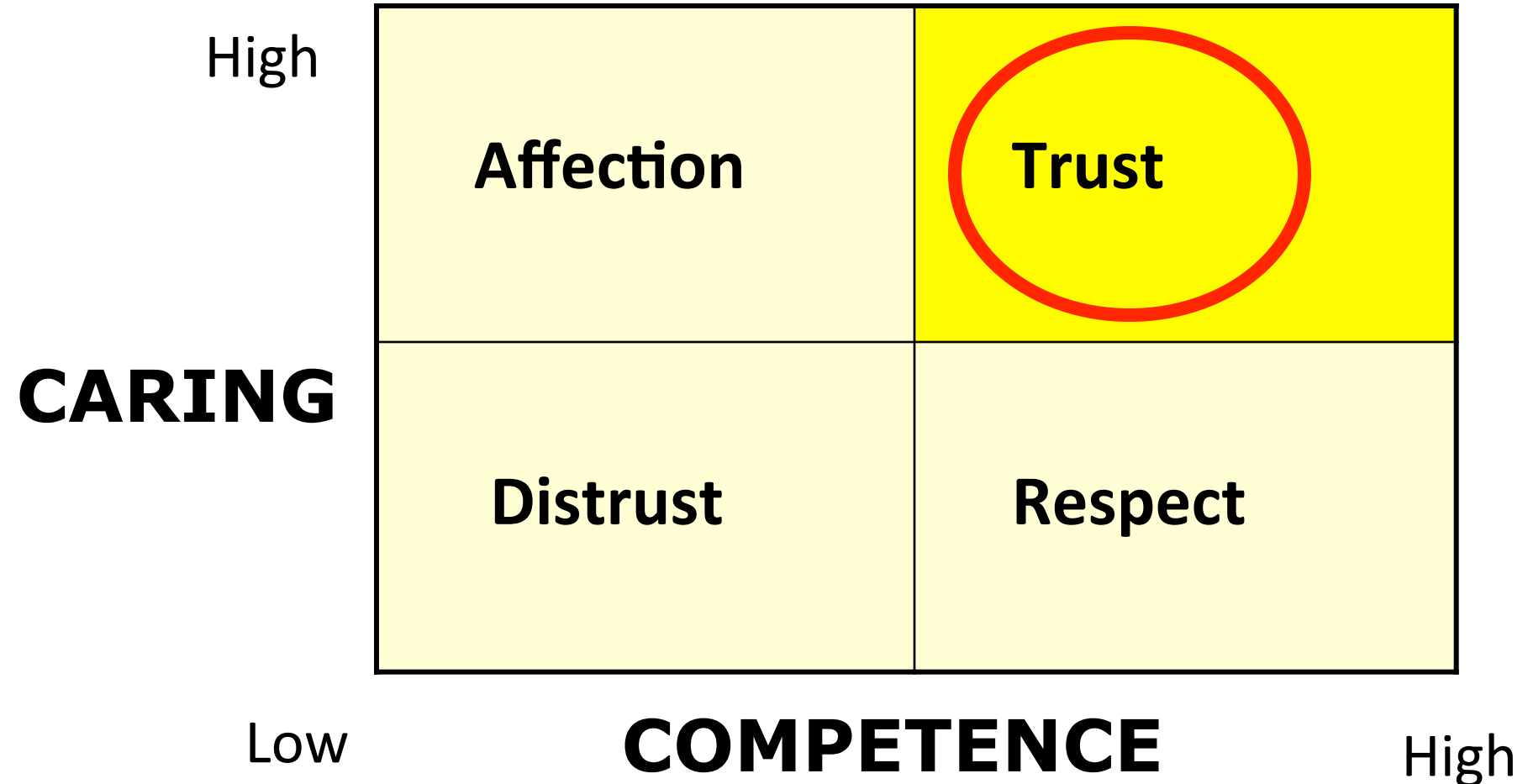
Little research on vaccine hesitancy done in LMIC

Sadef A et al . A systematic review of interventions for reducing parental vaccine refusal and vaccine hesitancy . Vaccine 2013;31:4293-304

Larsen HJ et al. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature,2007–2012. Vaccine 2014; 32(19):2150-9

Yaqub O et al. Attitudes to vaccination; a critical review. Soc Sci Med. 2014 Apr 16;112C:1-11

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

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.. JRSH 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 & Immunotherapeutics 2013; 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 IJ. Vaccine 2010, 28:7207-14

HCP immunization education is key₈

Diagnose if there is a Vaccine Hesitancy Problem

Individual



Do not assume !

First understand *if* any vaccine concerns.....

Do not plant new concerns did not have

MacDonald NE, Finlay JC. Paediatr Child Health 2013;18(5):265-7

Population/ subpopulation



Analysis of your uptake data-may unmask a problem

Need to determine if
confidence
complacency
convenience

WHO EURO: The Guide to Tailoring Immunization Program- TIP

http://www.euro.who.int/_data/assets/pdf_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf

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

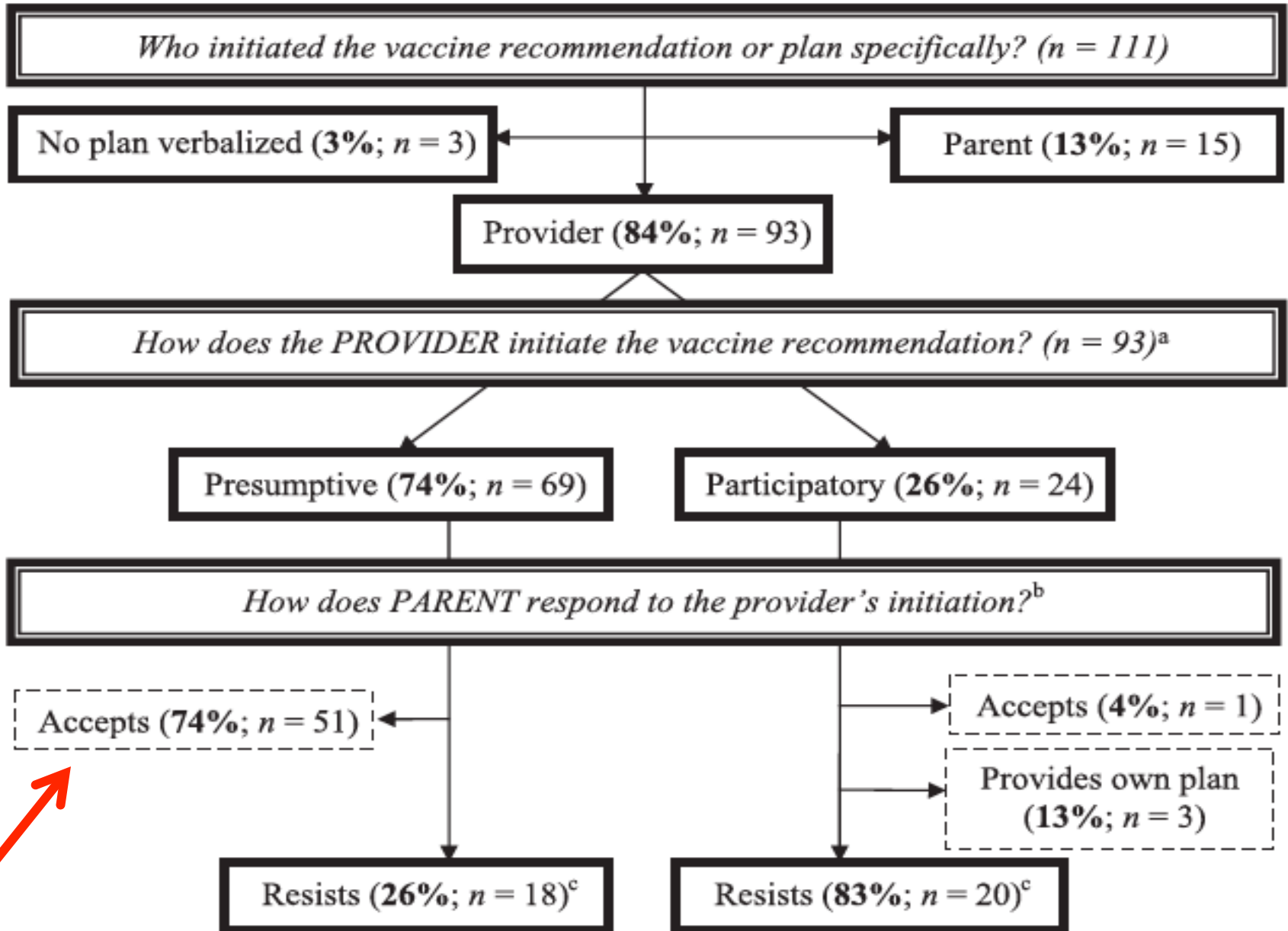
Individual-Decision making *partnership (HCP & Parent/Patient)*

- **Motivational interviewing:**
 - engage and motivate to change if hesitant about vaccines
- **First understand *if* any vaccine concerns.....**
 - vary with parent/youth/adult
 - validate why might believe this.....*
 -esp if misinformation and/or misunderstanding*
- **Listen, listen, listen**
 - Be patient but consistent in message:
 - Vaccines safe, effective,**
 - serious diseases can occur if not immunized**

Healey CM ,Pickering L.Pediatrics 2011;127:S127–S133.

Leask J. Target the fence –sitters. Nature 2011; 473:443-445

Tell- Don't Ask: US Study



Emphasize: Safety Monitoring for Vaccines

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

safer than Drugs

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

Exploit Cognitive Shortcuts–

Tell compelling stories

HCPs own Or

- www.immunize.org/reports/ *
- www.cdc.gov/CDCTV/PersonalFluStories/index.html
- www.cdc.gov/polio/stories/india4.html
- *Vaccine Preventable Diseases: The Forgotten Stories- Texas*

Children's Hospital

anchor and recall

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

HCP can provide resources if appropriate

**WHO EURO: If You Choose Not to Vaccinate Your Child ,
Understand the Risks and Responsibilities.**

www.euro.who.int/en/what-we-do/health-topics/disease-prevention/vaccines-and-immunization/immunization-resources-centre

Parent concern-HCW unsure evidence - answer later



^A
*Dr Thazin Mon
Myanmar*



Address Pain Mitigation

Vaccine Pain

Concerns

patient, parent , HCP

44% parents*



measures to mitigate

*Kennedy et al. *Pediatrics* 2011;127 suppl S92-99

perception of benefit

anchor and recall

Vaccine MicroNeedle patches

Taddio et al. CMAJ 2010. 182(18):1989-95 .

Ipp and Taddio. Paediatr Child Health 2011;16:541-543

Harrington et al.. Pediatrics 2012;129:815–822. Brighton

Collab. Vaccine 2012;30:4558-77

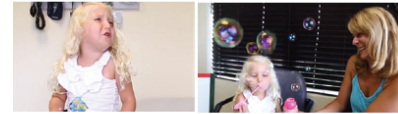
Norman JJ, Arya JM, McClain MA, Frew PM, Meltzer MI,

Prausnitz MR. Vaccine 2014; 32: 1856–1862

Introducing a fun,
light-hearted, and
engaging new video
for parents & health professionals:

It Doesn't Have to Hurt:

Strategies for Helping Children
with Shots and Needles



View the video at:

[pediatric-pain.ca/
it-doesnt-have-to-hurt](http://pediatric-pain.ca/it-doesnt-have-to-hurt)



Centre for Pediatric Pain Research
SCIENCE HELPING CHILDREN



Do your kids get upset about going
to the doctor to get a needle?

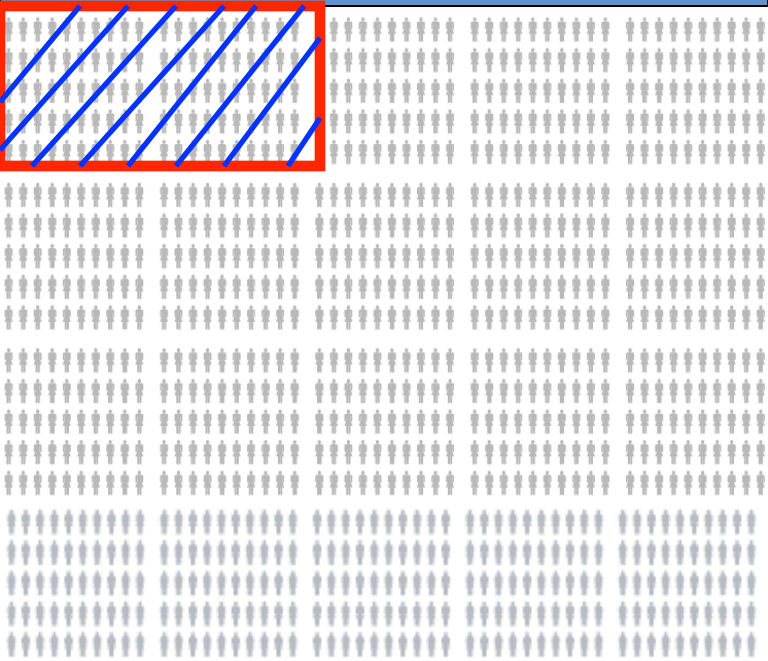
Presented in an
entertaining and
informative way
(& backed by
scientific research!).
Please watch
and pass it on!

[http://www.youtube.com/
watch?v=KgBwVSYqfps](http://www.youtube.com/watch?v=KgBwVSYqfps)

[http://pediatric-pain.ca/it-
doesnt-have-to-hurt](http://pediatric-pain.ca/it-doesnt-have-to-hurt)

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

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

Gigerenzer G, Edwards A BMJ 2003;327:741-4. Rifkin E, Bouwer E. The Illusion of Certainty: Health Benefits and Risks. New York, Springer 2007. Offit P, Coffin S. Vaccine 2003;22:1-6

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

Frame Vaccine Message

Anxious about negatives:

vaccine 99% safe

better / more effective

than 1 % side effects

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

Gerend MA, Shepherd JE. Health Psychology 2007; 26:745-52.

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

Beware: Vaccine Message Impact

Pro-vaccine messages **not** always work as intended
 Effectiveness may vary with parental vaccine attitudes

e.g, study messages designed to reduce vaccine misperceptions, increase MMR uptake *Nyhan B et al Pediatrics 2014;133:e835-42*

TABLE 3 Effects of Interventions on MMR Intention

	All	Vaccine Attitudes		
		Least Favorable	Somewhat Favorable	Most Favorable
Autism correction	0.52* (0.32–0.84)	0.36* (0.20–0.64)	1.12 (0.36–3.52)	2.98 (0.48–18.36)
Disease risks	0.98 (0.54–1.77)	0.96 (0.50–1.86)	1.23 (0.29–5.30)	0.82 (0.12–5.45)
Disease narrative	1.09 (0.62–1.94)	0.87 (0.45–1.68)	2.26 (0.60–8.45)	7.29 (0.64–82.77)
Disease images	1.29 (0.73–2.26)	1.20 (0.64–2.26)	2.00 (0.71–5.67)	0.86 (0.09–8.48)
Somewhat favorable toward vaccines (baseline: least favorable)	7.61* (4.74–12.22)			
Most favorable toward vaccines (baseline: least favorable)	16.19* (7.16–36.59)			
<i>N</i>	1751	678	529	544

Key: test messages in advance of use; tailor to fit

Partisans see unfavorably slanted content as even more polarized than is- *Gunther AC et al Comm Res 2012;39: 439-57*

Targeted may work: Vax hesitant mothers of 2 week olds – video, info– increased uptake. *Williams et al Acad Pediatr 2013: 475-80*

Use Social Media

Exploit pro-vaccine messages –

Rick Mercer (Canadian comedian) +ve rant on flu vaccine

[http://
www.youtube.com/
watch?
v=whks4DUPvXM&feat
ure=youtu.be&a](http://www.youtube.com/watch?v=whks4DUPvXM&feature=youtu.be&a)



consider **tweets**, **emails** with same message

twitter



*3 text messages ↑
flu vaccine uptake in
minority pop*

*1. risk of disease,
vaccine safety
2 & 3. dates, place
clinics*

Stockwell et al JAMA 2012; 307:1702-08

Little data on impact social media LMIC

Do not Dismiss Children from your Practice over Vaccine Refusal



Frustrating BUT - small minority

Worth time and effort

– child's best interest

Consider referral to “expert in vaccines” – may refuse

Dismissal not prompt parent to immunize;

not in best interest of child

Complex legal, ethical and public health issues

e.g. may cluster, no care, no opportunity change

- WHO EURO: pamphlet - *If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities.*

Halperin B, Melnychuk R, Downie J, Macdonald N. Paediatr Child Health 2007;12(10):843-5.

Butterheim A et al Human Vaccines & Immunotherapeutics 2013; 9:8, 1819–1824

http://www.euro.who.int/_data/assets/pdf_file/0004/160753/If-You-Choose-Not-to-Vaccinate.pdf

Opel J et al Pediatrics. 2014;133(3):526-30

WHO EURO: Vaccine Safety Events: Managing the Communications Response

- Step by step practical guide for response to real or perceived AEFI
- http://www.euro.who.int/_data/assets/pdf_file/0007/187171/Vaccine-Safety-Events-managing-the-communications-response.pdf



Increasing public attention to event and increasing impact on public trust-dictates need for response

What, when, where, why, how and who steps

Internet



**Australian
Vaccination Network Inc.**

Because every issue has two sides

Consumer Warning: NSW Fair Trading has directed Australian Vaccination Network to change its name because it regards the name to be misleading.
The Australian Vaccination Network is challenging this Direction and the challenge is currently before the NSW Administrative Decisions Tribunal

**March 2014
Lost appeal to
keep it's name-
forced to change
Lost charity
status for fund
raising**



**Australian
Vaccination-skeptics Network Inc.**

Because every issue has two sides

Formerly known as "Australian Vaccination Network Inc."

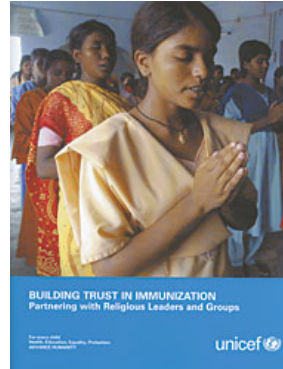
Blogs

**WHO EURO – working with major health
bloggers Eastern Europe esp to educate about
VPD, vaccines- aim vaccine positive
information in blog**

Collaborate with Community

Politicians: Fed/Prov/State /Municipal

Community leaders
Business leaders
Religious leaders



UNICEF: BUILDING TRUST IN IMMUNIZATION Partnering with Religious Leaders and Groups
www.unicef.org/ceecis/building_trust_immunization.pdf

Work with organizations
Peds, PH, NGOs etc
Public "power"

"Calgary bishop's HPV vaccine ban putting thousands of girls at risk: MDs"
National Post June 26, 2012

Musto R et al. BMC Public Health. 2013 Jul 9;13:640. doi: 10.1186/1471-2458-13-640.

Guichon JR et al. Prev Med. 2013 Nov;57(5):409-13

Kirkwood K. Open Med. 2008;2(4):e111-3.

Grabenstein JD. Vaccine 2013;31:2011-23

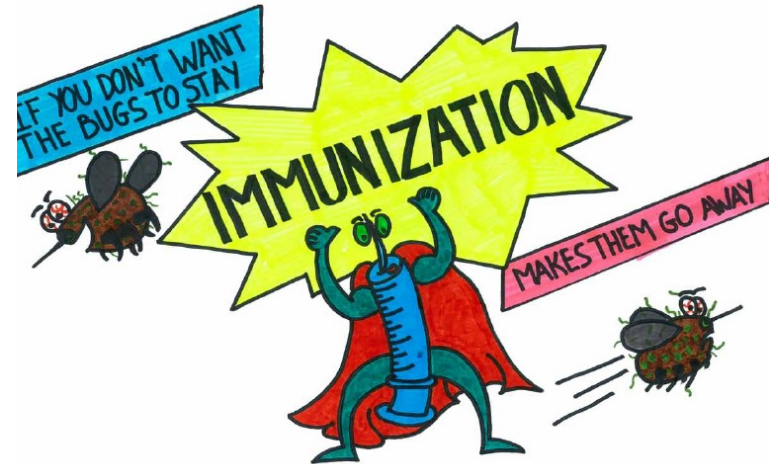
saves time, resources,
adds voice, enhances HW message credibility



Shape Children's Beliefs on Vaccine Necessity, Benefits, Safety

Start early:

- **Primary:** what vaccines are, why needed, benefits, safety
- **Secondary:** weave into history, science and health
- **Engage expert teachers and students - many resources**



*2010 National Immunization Poster
Context. Canada. Public Health Agency of
Canada.*

*Teachers Kit, National Immunization Poster Contest. Canadian Coalition for
Immunization Awareness & Promotion and the Public Health Agency of Canada.*

<http://www.immunize.cpha.ca/en/events/imm-poster-contest.aspx>

Opel D, Marcuse E. Human Vaccines & Immunotherapeutics 9:12, 2672–2673

Addressing Risk & Vaccine Hesitancy

1. Be well educated about vaccines, up-to-date with own imm.
2. Understand importance of vaccine beliefs; Work on trust;
Dx if hesitancy problem
3. Do not under estimate parental value of vaccines
4. How introduce vaccines matters: “Tell don’t ask”
5. Words matter: be fair, be truthful, frame message
6. Tell stories VPD; “nonstory” vaccine receipt
7. Address pain with immunization
8. Don’t dismiss from your practice
9. Use social media, personal messaging, tailor messages to fit
10. Consider court challenge websites for Non truth telling
11. Work with community and other partners
12. Educate children/youth about vaccines

**Vaccines are safe, effective,
serious diseases can occur if not immunized**

Websites

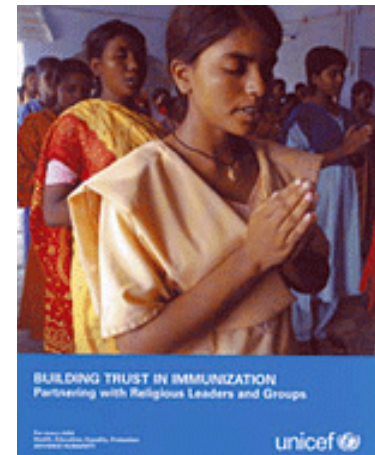


WHO: www.who.int/immunization/en/

List websites meet WHO quality criteria

www.who.int/immunization_safety/safety_quality/vaccine_safety_websites/en/index.html

www.unicef.org/ceecis/resources_1462.html



Vaccine Communication Resources

Websites

www.cdc.gov/vaccinesafety

www.immunizationinfo.org (Nnii)

www.immunize.org (IAC)

www.dovaccinescausethat.com

www.fda.gov/cber/safety

www.vaccinateyourbaby.org

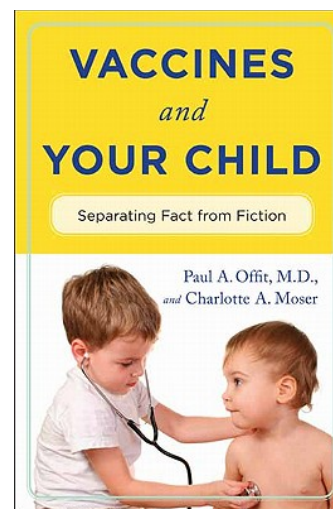
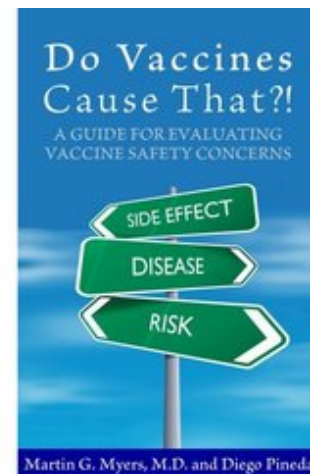
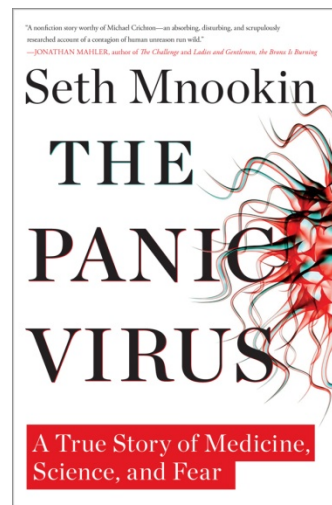
www.voicesforvaccines.org

[www.caringforkids.cps.ca/handouts/
immunization_information_on_the_internet](http://www.caringforkids.cps.ca/handouts/immunization_information_on_the_internet)

www.vaccineinformation.org/

[www.euro.who.int/en/what-we-do/health-topics/
disease-prevention/vaccines-and-immunization/
immunization-resource-centre](http://www.euro.who.int/en/what-we-do/health-topics/disease-prevention/vaccines-and-immunization/immunization-resource-centre)

[www.bccdc.ca/NR/rdonlyres/
DADA3304-7590-48AC-8D2C-65D54ADFC77E/0/
CDC_IC_Tool.pdf](http://www.bccdc.ca/NR/rdonlyres/DADA3304-7590-48AC-8D2C-65D54ADFC77E/0/CDC_IC_Tool.pdf)



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Objectives / Outcomes

Following this presentation, the learner will be able to

- **define vaccine hesitancy**
- **outline factors that influence parental acceptance of vaccine**
- **describe strategies to address vaccine hesitancy**
- **access resources useful in working with parents, HCP on vaccine hesitancy**