Measuring Vaccine Confidence: No single metric tells the story

Bringing together fast and slow data to understand the vaccine confidence phenonemon

This figure illustrates the various measurement approaches available to researchers investigating vaccine confidence, and the ways different data sources can be used to understand the phenomenon of vaccine confidence. Surveys and media tracking can provide "fast data," near-real-time estimates of public perceptions of vaccines, which can be analysed to best understand how to engage the public.

Qualitative and epidemiological research, meanwhile, offer "slow data," which takes longer to collect, but can provide deeper insights into the predictors of vaccine hesitancy, the social phenomena that can help or hinder vaccination campaigns, and, in particular, long-term contextual factors that create "fertile ground" for a crisis of confidence. Both fast and slow data can also help identify "prompters," or the factors that can prompt a crisis of confidence, especially when "fertile ground" conditions are present.

Finally, systematic reviews can help synthesise findings from multiple studies across different disciplines, providing researchers and policy-makers with practical wisdom and further issues to study in vaccine confidence.

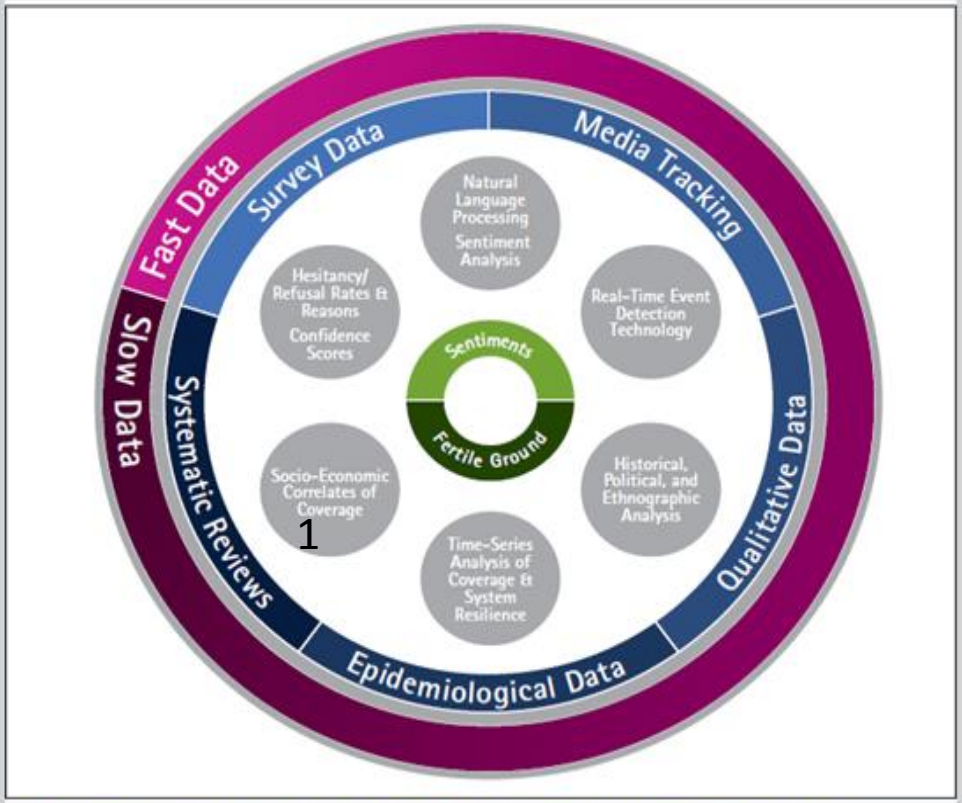


Figure 1: Fast and slow data monitoring cycle
Source: Vaccine Confidence Project. 2015. The State of Vaccine Confidence 2015

http://www.vaccineconfidence.org/The-State-of-Vaccine-Confidence-2015.pdf

Measuring vaccine confidence

1. **Understand nature and scale of waning confidence to inform appropriate interventions**

2. **Monitor changes in vaccine confidence to detect and investigate drops in confidence early**

- *Use diverse types of data, combine different measurement approaches*

Qualitative analysis

- Understand the drivers of changing vaccine confidence, reasons behind drops or gains in confidence
- Identify relevant historical, cultural, political factors

SAGE open-ended questions

1. What are the three major reasons why you should immunize your child?
2. Do you have any worries or concerns when you take your child for immunisation?
3. In your family, what was the reason behind your decision (not) to vaccinate your child last week/month/year?
4. In your personal opinion, why do some persons refuse to vaccinate their children?

Other survey tools

SAGE survey tools

- Survey questions to assess scale and nature of vaccine hesitancy
- Influences on confidence questions:
  - reliability and trustworthiness of information
  - negative media
  - previous experiences with immunisations
  - effectiveness and/or safety of vaccines

Parent Attitudes About Childhood Vaccines survey (PACV) *Opel et al*

- **15—item survey:**
  - immunisation behaviour
  - beliefs about vaccine safety and efficacy
  - attitudes about vaccine mandates and exemptions
  - trust

- Calculation of a PACV score to **inform vaccine providers of hesitancy levels of patients and adapt communication strategies**

Content domain	Item
Immunization Behavior	Have you ever delayed having your child get a shot for reasons other than illness or allergy?
	Have you ever decided not to have your child get a shot for reasons other than illness or allergy?
	How sure are you that following the recommended shot schedule is a good idea for your child?
	It is my role as a parent to question shots.
	If you had another infant today, would you want him/her to get all the recommended shots?
	Overall, how hesitant about childhood shots would you consider yourself to be?
Beliefs about Vaccine Safety and Efficacy	Children get more shots than are good for them.
	I believe that many of the illnesses shots prevent are severe.
	It is better for my child to develop immunity by getting sick than to get a shot.
	It is better for children to get fewer vaccines at the same time.
	How concerned are you that your child might have a serious side effect from a shot?
	How concerned are you that any one of the childhood shots might not be safe?
	How concerned are you that a shot might not prevent the disease?
	Do you know of anyone who has had a bad reaction to a shot?
Attitudes about Vaccine Mandates and Exemptions	The only reason I have my child get shots is so they can enter daycare or school.
Trust	I trust the information I receive about shots.
	I am able to openly discuss my concerns about shots with my child's doctor.
	All things considered, how much do you trust your child's doctor?

Real-time media monitoring

- Media and social media surveillance offer **real time monitoring of public pulse**

- **Detect changes in public confidence and anticipate emerging issues**

- **Identify prompters of public questioning** adverse events, new vaccine introductions, new research or contextual events…

➢ *Accounts of events, hourly logs of page views, social media monitoring techniques….*

Measuring vaccine confidence: analysis of data obtained by a media surveillance system used to analyse public concerns about vaccines

Lancet Infectious Diseases

Published Online
May 13, 2013
http://dx.doi.org/10.1016/S1473-3099(13)70108-7

Heidi J Larson, David M D Smith, Pauline Paterson, Melissa Cumming, Elisabeth Eckersberger, Clark C Freifeld, Isaac Ghinai, Caitlin Jarrett, Louisa Paushter, John S Brownstein, Lawrence C Madoff

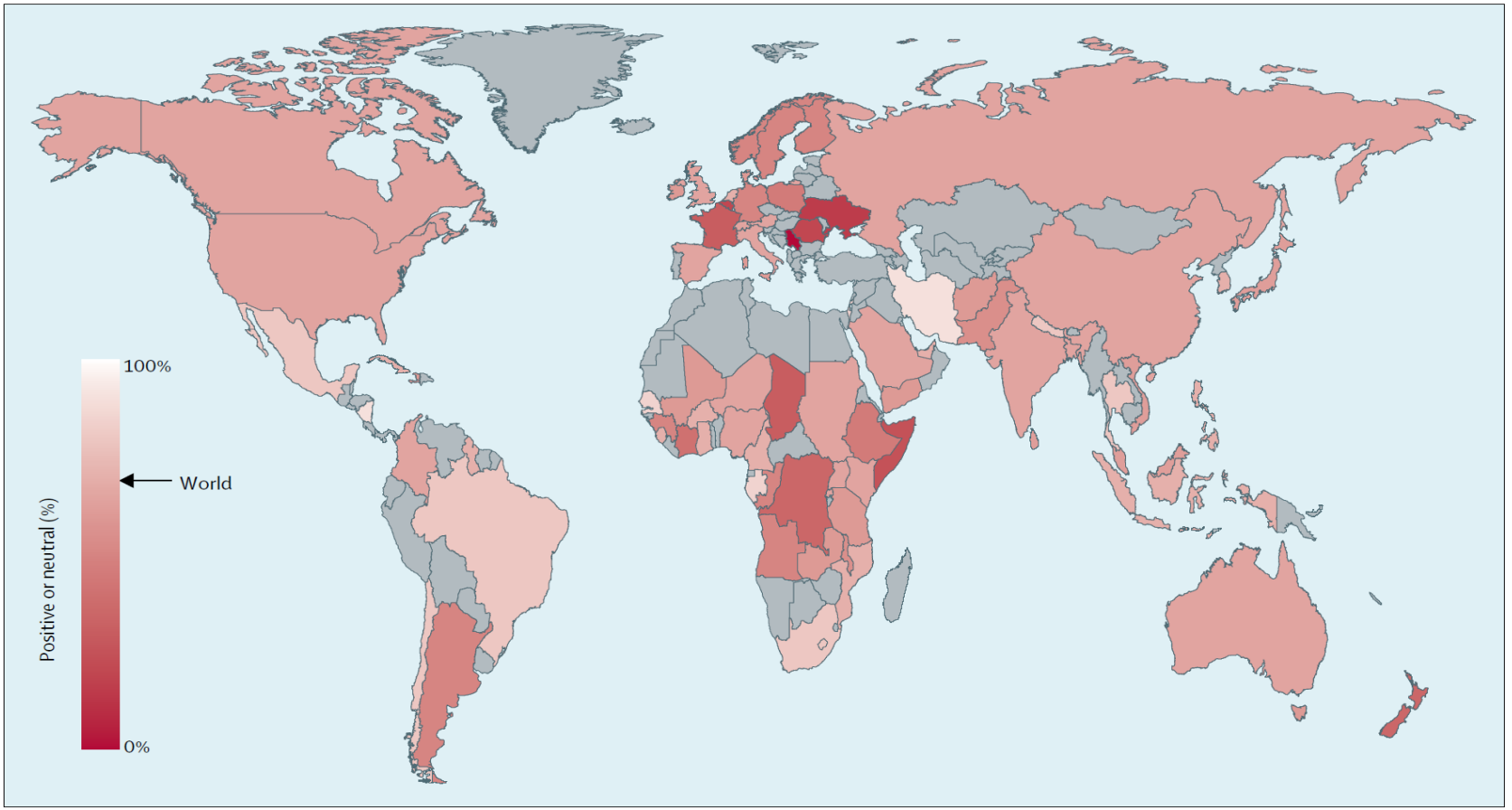


Figure 2: **Proportion of vaccine-related reports categorised as positive or neutral, by country**
Based on analysis of all 10 380 reports. Of the 9655 reports (93%) that mentioned a country or countries, 11 535 countries were mentioned. Countries about which there were fewer than ten vaccine-related reports are shaded grey. The world proportion (69%) is shown by the arrow on scale bar. Country border data are from the Global Administrative Areas database.[24]

HPV vaccines: Global media monitoring at LSHTM

- Media coverage **10 September – 15 November 2015**
- Tool: GoogleAlerts
- Wide search strategy around “HPV vaccine” with **colloquial as well as scientific terms** in English
- Online news media (no social media)
- **Weekly compilation** of news items and weekly review of themes and concerns

- **446 relevant articles identified**
- Wide range of topics in relation to HPV vaccines

Themes identified

- Safety concerns
- Parent association activities
- Vaccines perceived as not needed / doesn't work
- Morality
- Mandatory vaccine resistance (parents and politicians)
- Government actions, EMA review
- References to Japan HPV situation
- References to Denmark HPV concerns
- Pharmaceutical company influence
- Doctor-patient influences
- Benefits and recommendations for HPV vaccine

Side effects of the vaccines

- Many articles with reports from girls who fell ill after receiving the vaccine. Some parents brought the case to court and are seeking withdrawal of the vaccine.

- Suggestions of natural alternatives to vaccination (i.e. mushrooms)

- Prompting readers to look for YouTube videos of girls suffering from the vaccine – i.e. girls convulsing in Colombia

Claims that the vaccines are not needed

"HPV only leads to cervical cancer in 2% of cases"

"Link between HPV and cervical cancer is not clear"

"HPV gets cleared naturally by the body"

"HPV is not dangerous"

"HPV is not prevalent in the West…The vaccine is made for 3rd world countries, not for Western girls"

"The vaccine stops working after 6 years"

Morality

- Vaccinating young girls with a "sex" vaccine
- Against family values
- As HPV vaccine is not transmitted in school, why would it be made mandatory for schools?
- **Canadian Bishop** stating that abstinence is better to protect against HPV than vaccination (old HIV debate)

Mandates for HPV vaccination

- Discussions in the US about making HPV vaccination mandatory for school children:
  - It strips parents from their basic human rights, it is not the state's decision
  - It is criminal and a play by pharmaceutical companies
  - Two republican lawmakers asked school districts to oppose the mandate
  - Focus should be on condom promotion and screening
  - Other countries are withdrawing it from the market

- Letters were sent to parents of unvaccinated daughters in the US, leading to anger among parents:
  - The letter didn't mention that the vaccine was not mandatory
  - Tracking children without parents consent
  - Victory for parents as state revised the letter

Pharmaceutical companies

- Diane Harper, involved in Merck funded research, claims that the risk of cervical cancer is low, that the vaccine has side effects and that all test were done on 15 years old
- Lawsuits against Merck for overstating vaccine effectiveness
- US government information influenced by industry
- Doctors say there is financial corruption in health industry
- All studies are done by drug companies, covering up cases of AEEIs

Doctor-patient rapport tensions

- Parents feel under attack from doctors, and cannot express their doubts without feeling pressured to vaccinate
- Doctors scared to publish anything against vaccines since Wakefield
- Studies showed that doctors are not recommending the vaccine sufficiently: proof that people shouldn't get the vaccine

Strategies to address HPV vaccine hesitancy

Heidi Larson, Emilie Karafillakis
heidi.larson@lshtm.ac.uk
emilie.karafillakis@lshtm.ac.uk

HPV prevention and control board meeting,
27-28 June 2016

Dealing with vaccine hesitancy

1. Identify if and where pockets of vaccine hesitancy exist

2. Monitor public confidence, develop an understanding of scope/context/root causes of vaccine hesitancy

3. Use context-specific, evidence-based strategies (not only communication) to address underlying issues

Getting started with HPV vaccination

Start communication planning early

Allows for formative research & the anticipation of difficult issues

Build a cross-sectoral team

Programme planning team and communication team should integrate relevant sectors early

Plan for the hard-to-reach girls

May also be the girls who are at higher risk of developing cervical cancer and would benefit most from the vaccine

Communication should reach girls through channels they trust

Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

Communication with vaccine receivers

- Feel informed: discuss vaccination with daughters
- Opportunity to reach women with screening messages
- Most effective if administered before sexual activity.
- Factual and straightforward

- Why do they need multiple injections in 6 months
- Understand normal side effects
- When she is older she should still go for screening
- Channel of information for friends and family

Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

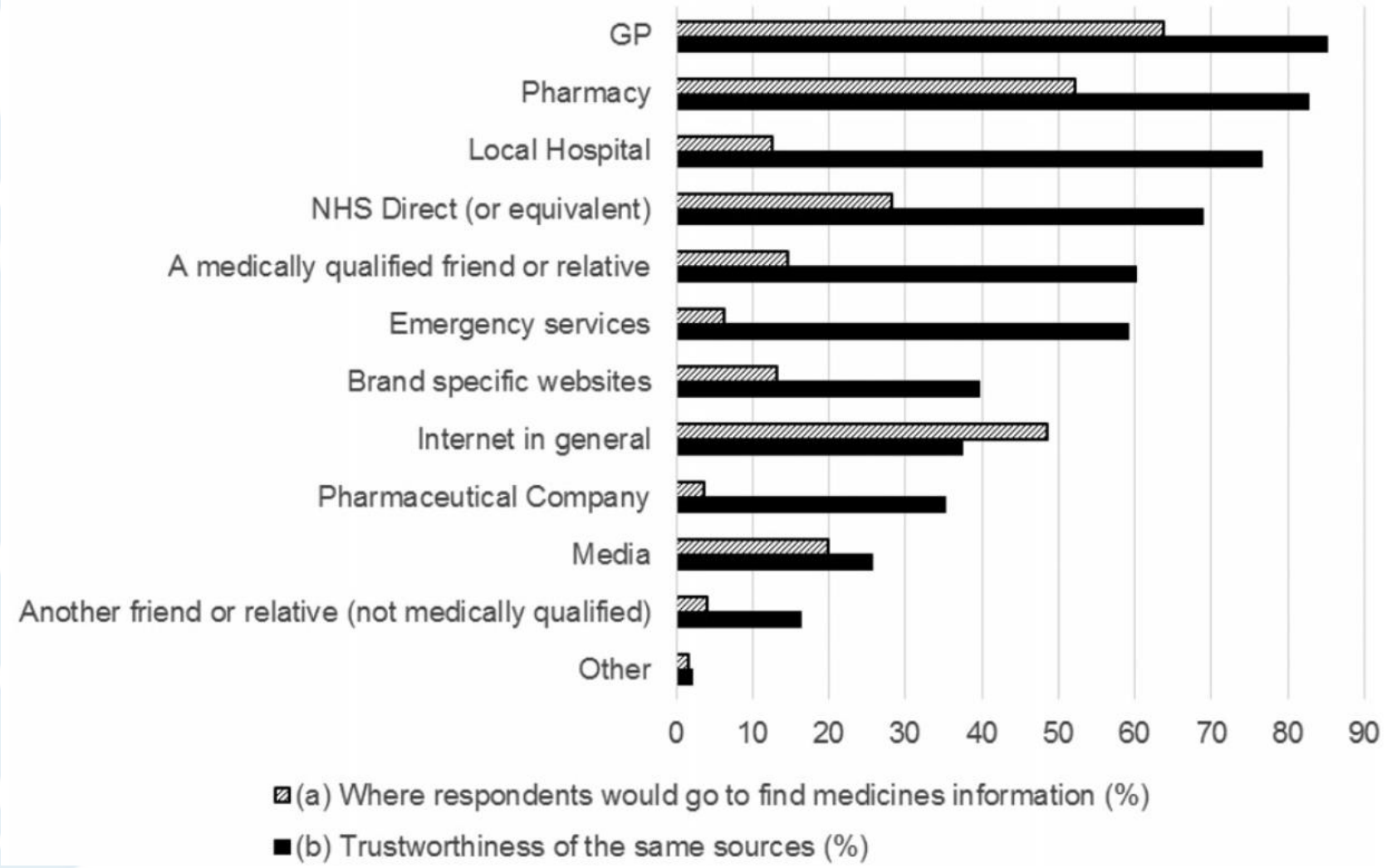
Communication with and from vaccine providers

- **Teachers should have:**
  - Specific training
  - Formal opportunities to coordinate with HCW
  - Access to materials they can use

- May have questions about the HPV vaccine
  - Need to be equipped to be a trusted source of information
  - Benefit from: training on vaccine, interpersonal communication skills with girls and families.

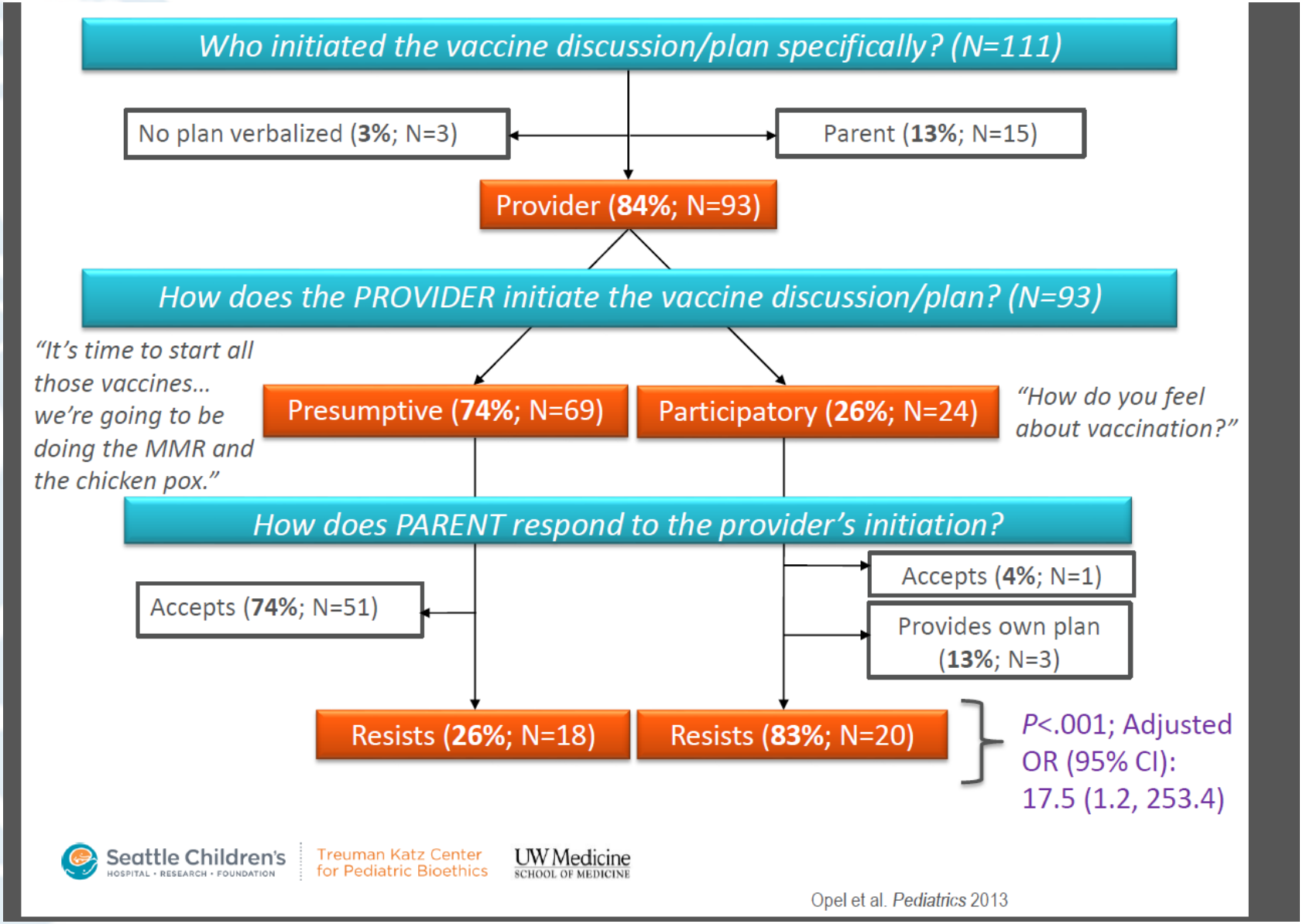
Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

GPs: most trusted source of medical information in Europe



Bouder F, et al. Transparency in Europe: A quantitative study. Risk Analysis (2015)

Be presumptive then engage dialogue



D Opel, Assistant Professor, University of Washington, ppt, Annecy, Sep 2015

Helping Health Care Providers

Tips and Time-savers for Talking with Parents about HPV Vaccine

Recommend the HPV vaccine series the same way you recommend the other adolescent vaccines. For example, you can say "Your child needs these shots today," and name all of the vaccines recommended for the child's age.

Parents may be interested in vaccinating, yet still have questions. Taking the time to listen to parents' questions helps you save time and give an effective response. CDC research shows these straightforward messages work with parents when discussing HPV vaccine—and are easy for you or your staff to deliver.

CDC RESEARCH SHOWS:	The "HPV vaccine is cancer prevention" message resonates strongly with parents. In addition, studies show that a strong recommendation from you is the single best predictor of vaccination.
TRY SAYING:	HPV vaccine is very important because it prevents cancer. I want your child to be protected from cancer. That's why I'm recommending that your daughter/son receive the first dose of HPV vaccine today.
CDC RESEARCH SHOWS:	Disease prevalence is not understood, and parents are unclear about what the vaccine actually protects against.
TRY SAYING:	HPV can cause cancers of the cervix, vagina, and vulva in women, cancer of the penis in men, and cancers of the anus and the mouth or throat in both women and men. There are about 26,000 of these cancers each year—and most could be prevented with HPV vaccine. There are also many more precancerous conditions requiring treatment that can have lasting effects.
CDC RESEARCH SHOWS:	Parents want a concrete reason to understand the recommendation that 11–12 year olds receive HPV vaccine.
TRY SAYING:	We're vaccinating today so your child will have the best protection possible long before the start of any kind of sexual activity. We vaccinate people well before they are exposed to an infection, as is the case with measles and the other recommended childhood vaccines. Similarly, we want to vaccinate children well before they get exposed to HPV.
CDC RESEARCH SHOWS:	Parents may be concerned that vaccinating may be perceived by the child as permission to have sex.
TRY SAYING:	Research has shown that getting the HPV vaccine does not make kids more likely to be sexually active or start having sex at a younger age.
CDC RESEARCH SHOWS:	Parents might believe their child won't be exposed to HPV because they aren't sexually active or may not be for a long time.
TRY SAYING:	HPV is so common that almost everyone will be infected at some point. It is estimated that 79 million Americans are currently infected with 14 million new HPV infections each year. Most people infected will never know. So even if your son/daughter waits until marriage to have sex, or only has one partner in the future, he/she could still be exposed if their partner has been exposed.

cdc.gov/vaccines/who/teens/for-hcp/hpv-resources.html

Communication with and from the media

Can be champions for HPV vaccination through accurate reporting and prominent placement of stories

Information gap: media report misinformation from other sources. May be targeted by anti-vaccination groups.

Organise special pre-campaign briefing sessions for journalists

HPV vaccine halves cervical cancer risk, Queensland study shows

Population-based study gives real proof that it is saving lives and minimising future health costs, says researcher

Researchers in Queensland carried out the study. Photograph: Burger/Phanie/Rex

Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

Communication from governments

Be credible. Should not withhold information to avoid embarrassment or concerns about prompting "panic"

Express empathy. Acknowledge how people are feeling, to build trust

Show respect. Never be paternalistic, either withholding information or dismissing concerns

Be the first to provide information. Don't withhold it.

Be accurate. And respond as quickly as possible.

Promote action. Positive steps people can take encourages them to feel more in control and empowered.

Source: Centre for Disease Control and Prevention (CDC)

The TIP tool (WHO European Region) 2013

The Guide to Tailoring Immunization Programmes (TIP) aims to provide proven methods and tools to assist national immunization programmes (NIPs) design targeted strategies that increase uptake of infant and childhood vaccinations. The Guide provides tools to identify susceptible populations, determine barriers to vaccination and implement evidence-based interventions.

The strategies outlined in this Guide may be used at any time to maintain high coverage rates, but may be particularly valuable when pockets of low vaccination coverage or increased susceptibility to VPDs are identified. The Guide may be used independently by Member States or implemented in conjunction with technical support from the WHO Regional Office for Europe.

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

Materials and channels – keep it simple

- Use every opportunity
- Develop a frequently asked questions (FAQ) reference guide
- Language and materials girls can relate to and have fun with (HPV)
- Telephone hotlines
- A mix of channels is important, including radio and television, school, health workers and church
- Targeted at hard-to-reach populations
- Internet and social media

Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

Examples of public information material

Online communication material

- Improve visibility
- Easy-to-understand facts on vaccination
- Highlight ability of parents to protect all children
- Examples of successful cases (i.e. elimination)
- Transparent: past errors/vaccine side effects
- No criticism of hesitant populations
- Empowering individuals to ask questions
- Monitoring of hesitant populations and websites to detect changes in beliefs

UNICEF (2013). Tracking anti-vaccination sentiment in Eastern European Social Media.

Communication is…

A process. People need time to learn, absorb and confirm information and then make a decision and act on it.

Community engagement. It is a conversation and not a lecture.

Equity. It plans to reach harder-to-reach populations.

An investment. Effective evaluated communication activities cost money and time.

Imperfect. Communication involves human beings, and we cannot predict what people will think or do in every situation.

Adapted from: World Health Organization, 2013. HPV Vaccine Communication: Considerations for a unique vaccine.

Communication and engagement

- Most parents do vaccinate. This majority should be supported - they can be powerful advocates
- Understand specific reasons for concern at a local level to address concerns locally
- Messaging and messages matter
  - Narratives are powerful tools to communicate
  - Communicating the risks of not vaccinating is important
- Support providers to engage in conversations with parents about vaccination
- Best practices should be collected and shared

LJ Tan, Chief Strategy Officer for the Immunization Action Coalition, ppt, Lisbon, March 2015

Examples of public information material

Australia: http://hpv.health.gov.au/

ICO (Institut Català d'Oncologia) Information Centre on HPV and Cancer: http://www.hpvcentre.net/index.php

PATH: http://www.path.org/vaccineresources/hpv.php

British Colombia: http://immunizebc.ca/diseases-vaccinations/hpv

UK: http://www.nhs.uk/Conditions/vaccinations/Pages/benefits-and-risks.aspx

WHO: http://www.who.int/immunization/hpv/communicate/en/

For more information, see the report of the WHO SAGE Vaccine Hesitancy Working Group:

Link to full revised report here (12 November 2014)

Appendices

Summary of WHO SAGE conclusions and recommendations on Vaccine Hesitancy

Arabic pdf, 402kb | English pdf, 474kb | French pdf, 539kb | Spanish pdf, 460kb

Related links

SAGE working group dealing with vaccine hesitancy

Report from the October 2014 SAGE meeting

Strategies for addressing vaccine hesitancy - A systematic review (October 2014)

Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007-2012 (Larson H., et al.)

Mapping vaccine hesitancy—Country-specific characteristics of a global phenomenon (Dubé E., et al.)

The Guide to Tailoring Immunization Programmes (TIP) WHO/EURO

The State of Vaccine Confidence Report 2015

Journal of Vaccine

Vaccine Special Issue

Survey questions

Arabic | English | French

http://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/

The State of Vaccine Confidence

Key recommendations

■ When introducing a new vaccine, think beyond the vaccine and the vaccination to consider the contextual historical as well as current societal and political factors that could influence public confidence in the vaccine and the vaccination programme. Sometimes the solution lies outside the vaccination programme.

■ When countering a negative rumour or conspiracy theory, consider the "fertile ground" factors that make the rumour popular in the first place. Sometimes changing delivery strategies, or actors can dispel rumours, which are just the fac of other underlying issues.

■ Religious figures can be strong allies for immunisation programmes, as they are invested in the well-being of their followers. When excluded, religious leaders can also become barriers to public confidence in vaccines. Do not dismiss public concerns just because they are based on faith instead of

Sometimes the solution lies outside the vaccination programme.

■ **Vaccine confidence is not just about vaccines** – confidence in and by providers and political leaders is key.

■ **Health science alone cannot achieve immunisation goals** - political and social scientists are needed along with risk and decision-making experts.

■ **Confidence building within the health sector itself is important** - providers need to feel confident in the safety of the vaccines they are recommending and confidence in answering the growing questions from parents. Providing an

public engagement. This will take different forms in different settings, but is universally vital. The listening and engagement process needs to start from the planning stages and throughout implementation of vaccination programmes. Sentiments can, and do, change. Listening and engagement needs to be ongoing.

■ **Trust is built over time, brick by brick, from individual acts of goodwill.** It requires genuine care for and accountability to the general public. The task that stands before public health leaders is to listen to their publics, hear their concerns, and take them seriously.

THE VACCINE CONFIDENCE PROJECT

www.vaccineconfidence.org

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Home About Research Archive Contact

Latest News

News archive

1. China: Women flock to Hong Kong for HPV inoculations
2. Oman: Medical exam a must for Haj pilgrims
3. Switzerland: Polio scare – WHO extends travel restrictions
4. Pakistan:Shortage of syringes for BCG vaccine puts kids' lives at risk
5. China: Authorities to Arrest 125 More Suspects in Sensational Vaccine Scandal

Confidence Commentary:

Vaccine crisis in China — act now to rebuild confidence

Blog archive

Heidi Larson | 17 May, 2016 Share:

Click here to view the original post by Heidi Larson, Ruoran Li, and Xiong-Fei Pan on the BMJ blog.

The recent unfolding of a five year old story of two million doses of vaccines illegally procured and sold across China is a confidence breaker. Worse, it is not a

Literature

Literature archive

Association Between Vaccine Refusal and Vaccine-Preventable Diseases in the United States

VK Phadke, RA Bednarczyk, DA Salmon, SB Omer. 2016. *JAMA*. 315(11):1149-1158 doi:10.1001/jama.2016.1353

Sociodemographic Predictors of Vaccination Exemptions on the Basis of Personal Belief in California