Vaccine hesitancy: what an infectious disease specialist can do?

Olivier Epaulard
Infectious Diseases
Grenoble-Alpes University Hospital
Grenoble, France
Disclosure statement

• None to declare
I/you/we are not here to discuss that ...

- Available vaccines are efficient
  - Some work extraordinarily
  - Some work less but sufficiently to be recommended

- Available vaccines are extremely safe
  - They do not trigger multiple sclerosis
  - They do not trigger autism
  - They do not trigger macrophagic myofasciitis
  - Some of them, extremely rarely, trigger Guillain-Barré syndrome
Today’s narrative

• State of vaccine hesitancy
• Its roots are complex
• It is expressed by many
• It is part of a bigger scheme
• Who is talking/acting?

• And ... What can we do, as ID specialists?
The state of vaccine hesitancy
FIGURE 1
Attitudes about vaccination: a continuum.
Bringing your child to the clinic for vaccinations is LITERALLY like bringing your child to AUSCHWITZ!!!

Learn the DEADLY TRUTH. naturalnews.com
Their first injection was a vaccination.

Protect your children from vaccinations.

Vaccinations leave a lasting psychological belief that injecting is beneficial. Studies have shown that children who are vaccinated are 85% more likely to inject heroin than those who are not.

Vaccinations. Don’t lose your child to drugs.

Call 1-800-128-093 for more information.
Her first injection was a **VACCINATION**...

It began in a doctor’s office... It ended in JUNKIE TOWN!

Vaccinations leave a lasting impression in children that injecting is beneficial. Studies show that children who are vaccinated are 87% more likely to inject marijuana then those who are not. Vaccinations... Don’t lose your children to drugs.
What kind of arguments are used?

Vaccine 30 (2012) 3778–3789

Anti-vaccine activists, Web 2.0, and the postmodern paradigm – An overview of tactics and tropes used online by the anti-vaccination movement

Anna Kata*

McMaster University, Psychiatry and Behavioural Neurosciences, 555 Sanatorium Road Hamilton, Ontario, Canada L9C 1C4
"I'm not anti-vaccine, I'm pro-safe vaccines":

"Vaccines are toxic!":

"Vaccines should be 100% safe":

"You can't prove vaccines are safe":

"Vaccines didn't save us":

"Vaccines are unnatural":

"Choosing between diseases and vaccine injuries":

"Galileo was persecuted too":

"Science was wrong before":

"So many people can't all be wrong":

"Skeptics believe…":

"You're in the pocket of Big Pharma":

"I don't believe in coincidences":

"I'm an expert on my own child":
Les vaccins, cause potentielle de douleurs articulaires chez les jeunes, selon des études

Des études indiquent que les vaccins sont une cause potentielle de douleurs articulaires chez les enfants

Tracey Watson, 18 mars 2019
Association d’Entraide aux Malades de Myofasciite à Macrophages
En bref

Newsletter n°5 - 16.03.2019
Consultez la lettre d'information sur la nouvelle formule en ligne.
Téléchargez la newsletter...

Faire un don à la LNPLV
⇒ Nouveau
Vous pouvez nous aider en faisant un don ponctuel à notre association
⇒ Mettez d'avance...

Actualités
⇒ Consultez la page d'actualités et notre page Facebook

La Ligue est sur Facebook
Retrouvez-nous sur la page officielle de la LNPLV.
Actuaités, témoignages...

Accueil

Vous vous sentez solidaire de notre action pour la liberté vaccinale, mais vous hésitez pour l'instant devenir adhérent...
Aidez-nous en faisant un don ponctuel à la Ligue.

Faire un don

Recherche sur le site

Propulsé par HelloAsso
Site officiel du PR HENRI JOYEUX

Pr Henri Joyeux
Cancérologue

Site Officiel du Professeur Henri Joyeux

Le Professeur Joyeux de la Faculté de Médecine de l’Université de Montpellier (Pr. honoraire), Chirurgien Cancérologue & Conférencier, s’engage au service de votre santé par ses messages de prévention des cancers: nutrition & comportements de santé.
Mandatory vaccines: French people are trapped by the law and the industry!

Pétition

à l'attention
de Madame la Ministre de la Santé.

Nombre de signatures :

1 150 142
Dr. Andrew Wakefield Deals with Allegations
NEW DOCUMENT:

“Pathways for Vaccine Damage”

OPEN LETTER TO THE WHO
FROM INTERNATIONAL ORGANISATIONS
ON THE ISSUE OF VACCINE SAFETY.
Where there is RISK – there must be CHOICE
It concerns a lot of people
Research Paper

The State of Vaccine Confidence 2016: Global Insights Through a 67-Country Survey

Heidi J. Larson, PhD, Alexandre de Figueiredo, MSc, Zhao Xiaohong, BSc, William S. Schulz, MSc, Pierre Verger, PhD, Iain G. Johnston, PhD, Alex R. Cook, PhD, Nick S. Jones, PhD

a Department of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, UK
b Institute for Health Metrics and Evaluation, University of Washington, Seattle, UK
c Department of Mathematics, Imperial College London, UK
d Saw Swee Hock School of Public Health, National University of Singapore, Singapore
e INSERM, UMR912, Economics and Social Sciences Applied to Health & Analysis of Medical Information (SESSTIM), Marseille, France
f INSERM, UMR912, Economics and Social Sciences Applied to Health & Analysis of Medical Information (SESSTIM), Marseille, France
g Aix Marseille Université, UMR_S 912, IRD, Marseille, F-13385, Marseille, France
h INSERM, F-CRIN, Innovative clinical research network in vaccinology (F-REIVAC), GH Cochin Broca Hôtel Dieu, Paris, France
i School of Biosciences, University of Birmingham, UK
j Department of Statistics and Applied Probability, National University of Singapore, Singapore
"The French ministry of health works with the pharmacy industry to hide the truth regarding the toxicity of vaccines."

<table>
<thead>
<tr>
<th></th>
<th>Yes (%)</th>
<th>Totally Yes (%)</th>
<th>Mostly Yes (%)</th>
<th>No (%)</th>
<th>Mostly No (%)</th>
<th>Not at all (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENSEMBLE</strong></td>
<td>55</td>
<td>17</td>
<td>38</td>
<td>45</td>
<td>26</td>
<td>19</td>
</tr>
</tbody>
</table>
Favourable to vaccination in general
- Very: 80.2%
- Somewhat: 17.1%
- Not: 2.7%

« My role is to convince patients to vaccinate, even when they are reluctant »
- No: 10.3%
- Yes: 89.7%
Original article

General practitioners' perceptions of vaccination controversies: a French nationwide cross-sectional study

M. Le Marechal 1, L. Fressard 2, 3, N. Agrinier 1, 4, P. Verger 2, 3, 5, C. Pulcini 1, 2, 6,*

1) Université de Lorraine, EA 4360 APEMAC, Nancy, France
2) Aix Marseille Univ, INSERM, IRD, SESTIM, Sciences Economiques & Sociales de la Santé & Traitement de l’Information Médicale, Marseille, France
3) ORS PACA, Observatoire régional de la santé Provence-Alpes-Côte d’Azur, Marseille, France
4) INSERM, CIC-1433 Épidémiologie clinique, CHRU de Nancy, Nancy, France
5) INSERM, F-CRIN, F-Reach (Innovative clinical research network in vaccinology), France
6) CHRU de Nancy, Service de Maladies Infectieuses et Tropicales, Nancy, France
<table>
<thead>
<tr>
<th>Health Topic</th>
<th>All (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B vaccine (HBV) and multiple sclerosis</td>
<td></td>
</tr>
<tr>
<td>Not at all/Not very likely</td>
<td>84.2</td>
</tr>
<tr>
<td>Somewhat/Very likely</td>
<td>10.9</td>
</tr>
<tr>
<td>Don't know</td>
<td>4.9</td>
</tr>
<tr>
<td>Aluminium adjuvants and Alzheimer's disease</td>
<td></td>
</tr>
<tr>
<td>Not at all/Not very likely</td>
<td>70.2</td>
</tr>
<tr>
<td>Somewhat/Very likely</td>
<td>8.8</td>
</tr>
<tr>
<td>Don't know</td>
<td>21.1</td>
</tr>
<tr>
<td></td>
<td>All (%)</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Human papillomavirus vaccine and multiple sclerosis</td>
<td></td>
</tr>
<tr>
<td>Not at all/Not very likely</td>
<td>83.3</td>
</tr>
<tr>
<td>Somewhat/Very likely</td>
<td>4.6</td>
</tr>
<tr>
<td>Don't know</td>
<td>12.0</td>
</tr>
<tr>
<td>Vaccines containing adjuvants and long-term complication</td>
<td></td>
</tr>
<tr>
<td>Not at all/Not very likely</td>
<td>59.8</td>
</tr>
<tr>
<td>Somewhat/Very likely</td>
<td>28.9</td>
</tr>
<tr>
<td>Don't know</td>
<td>11.4</td>
</tr>
</tbody>
</table>
Roots are complex
Semantic network analysis of vaccine sentiment in online social media

Gloria J. Kang\textsuperscript{a,b}, Sinclair R. Ewing-Nelson\textsuperscript{b}, Lauren Mackey\textsuperscript{b}, James T. Schlitt\textsuperscript{a,b}, Achla Marathe\textsuperscript{b}, Kaja M. Abbas\textsuperscript{a}, Samarth Swarup\textsuperscript{b,*}

\textsuperscript{a}Department of Population Health Sciences, Virginia Tech, USA
\textsuperscript{b}Biocomplexity Institute, Virginia Tech, USA

\textsuperscript{a}Department of Population Health Sciences, Virginia Tech, USA
\textsuperscript{b}Biocomplexity Institute, Virginia Tech, USA

- Polo vaccine
- Compromised immunity
- Pregnant women
- Shingles vaccine
- Americans
- SV40 vaccine-autism link
- Vaccine ingredients
- Thimerosal
- Vaccine industry
- CDC
- Pharmaceutical companies
- Mainstream media
- Vaccine safety
- Vaccine efficacy
- Vaccine reactions
- Dr. Paul Offit
- Vaccines are safe
- Vaccine damage
- Vaccine reactions
- Vaccine safety
- Vaccine efficacy
- Pandemic flu
- Flu shots
- Monosodium glutamate
- Neurotoxin
- Formaldehyde
- Rational doctor
- Rational scientist
- Human biology
- Aluminum
- California government
- SB 277
- Toxic chemical ingredients
- Children
- Autism
- Genetically susceptible children
The French ministry of health works with the pharmacy industry to hide the truth regarding the toxicity of vaccines

<table>
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<th>Mostly Yes (%)</th>
<th>No (%)</th>
<th>Mostly No (%)</th>
<th>Not at all (%)</th>
</tr>
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<td>55</td>
<td>17</td>
<td>38</td>
<td>45</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>Vote at 2017 presidential election</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jean-Luc Melenchon</td>
<td>65 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emmanuel Macron</td>
<td>32 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine Le Pen</td>
<td>68 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anti-vax: The truth about the harmful effects of vaccines is being deliberately hidden from the public.

- Brexiters: 13
- Remainers: 5
- Trump voters: 25
- Clinton voters: 9
Associations between population based voting trends during the 2016 US presidential election and adolescent vaccination rates

Manika Suryadevara a,*, Cynthia A. Bonville a, Donald A. Cibula b, Joseph B. Domachowske a, Amar C. Suryadevara c

a Department of Pediatrics, SUNY Upstate Medical University, Syracuse, NY 13210, United States
b Department of Public Health and Preventive Medicine, SUNY Upstate Medical University, Syracuse, NY 13210, United States
c Department of Otolaryngology and Communication Sciences, SUNY Upstate Medical University, Syracuse, NY 13210, United States
Meningococcus vaccine coverage

\[ y = -0.277x + 94.173 \]

\[ R^2 = 0.0838 \]
HPV vaccine coverage (1st dose)

y = -0.5384x + 86.48
R² = 0.4025
THE TRUTH IS OUT THERE

and we want to believe again...
MULDER

SCULLY SCULLY 2020

THE TRUTH IS OUT THERE
THE NATION SEES A HERO.
SHE SEES A THREAT.

HOMELAND
For the last time Carrie, I am not what you think I am.
THE COMPLETE FOURTH SEASON

HOUSE OF CARDS

KEVIN SPACEY
ROBIN WRIGHT

VOLUME FOUR
CHAPTERS 40-52

© by author
We are addicted to such paranoid fictions

• The goods are the bads
• Maybe the bads are the goods
• The government/administration lies (again and again)
• Powerful people have hidden agenda

• The world is finally saved because someone figures it all
Trust in institutions may be fragile, and once damaged, may take considerable time and effort to repair.
Vaccine hesitancy has consequences
Diphtheria cases are reported in Europe in unvaccinated children: in Spain (2015) ...
Anvers: une petite fille de 3 ans décède des suites d'une diphtérie

L.D. Publié le jeudi 17 mars 2016 à 15h52 - Mis à jour le vendredi 18 mars 2016 à 00h07
... In Italy (2016) ...
Measles vaccine coverage after Wakefield paper (1998) in England and Wales, and measles cases

Measles vaccine coverage after Wakefield paper (1998) in England and Wales, and measles cases

Measles and MMR statistics.
http://researchbriefings.files.parliament.uk/documents/SN02581/SN02581.pdf
COMMENTARY

Vaccine confidence plummets in the Philippines following dengue vaccine scare: why it matters to pandemic preparedness

Heidi J Larson\textsuperscript{a,b}, Kenneth Hartigan-Go\textsuperscript{c}, and Alexandre de Figueiredo\textsuperscript{d,a}

\textsuperscript{a}Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, UK; \textsuperscript{b}Department of Health Metrics & Evaluation, University of Washington, Seattle, WA, USA; \textsuperscript{c}Stephen Zuellig School of Development Management, Asian Institute of Management, Makati City, The Philippines; \textsuperscript{d}Department of Mathematics, Imperial College London, London, UK
Situation Report 2
Measles Outbreak

20 February 2019

Current Situation

Between 1 January and 18 February 2019, 9,267 measles cases including 146 deaths were officially reported through the routine surveillance system from the Philippines Department of Health (DoH): a 266% increase with the same time period in 2018 (see Table 1).

Since the declaration of an outbreak in five regions on 11 February 2019, a surge in the number of measles cases is observed (see Figure 1), caused by the rapid spread of the disease, which is highly contagious; increased awareness of parents to take their sick children to the nearest health facility, as per DoH’ advise; as well as improved reporting.
Vaccine hesitancy is part of a bigger scheme
VACCINES

WHAT ARE THE RISKS?

VaccineChoiceCanada.com
<table>
<thead>
<tr>
<th>Conspiracy Theory</th>
<th>Totally agree</th>
<th>Totally disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiding of vaccine adverse effects</td>
<td>43%</td>
<td>41%</td>
</tr>
<tr>
<td>Lady Di has been murdered</td>
<td>34%</td>
<td>42%</td>
</tr>
<tr>
<td>Illuminati manipulate the society</td>
<td>27%</td>
<td>34%</td>
</tr>
<tr>
<td>Immigrant participate in a replacement plan</td>
<td>25%</td>
<td>59%</td>
</tr>
<tr>
<td>Banknotes featured secret messages</td>
<td>23%</td>
<td>47%</td>
</tr>
<tr>
<td>World sionist plan</td>
<td>22%</td>
<td>46%</td>
</tr>
<tr>
<td>CIA controls drug traffic</td>
<td>19%</td>
<td>50%</td>
</tr>
<tr>
<td>USA gov. plot the 9/11</td>
<td>17%</td>
<td>58%</td>
</tr>
<tr>
<td>Plane trails are chem trails</td>
<td>15%</td>
<td>64%</td>
</tr>
<tr>
<td>Americans never went on the moon</td>
<td>9%</td>
<td>73%</td>
</tr>
</tbody>
</table>
**Anti-vax** The truth about the harmful effects of vaccines is being deliberately hidden from the public.

**Immigration** The government is deliberately hiding the truth about how many immigrants really live in the country.

**Islam** Immigration to this country is part of a bigger plan to make Muslims a majority of the country's population.

### Breakdown

- **Anti-vax:**
  - Brexiters: 13
  - Remainers: 5

- **Immigration:**
  - Brexiters: 47
  - Remainers: 14
  - Clinton voters: 12

- **Islam:**
  - Brexiters: 31
  - Remainers: 6
  - Clinton voters: 3

Nov. 2018
“We are being remade in the late modern age to act as the autonomous, utility maximising individuals that neo-classical economists imagine us to be.

Elevation of the market as the highest order of human interaction supplants ideals such as communal solidarity. Choice, responsibility, agency, making ‘good’ decisions and looking after your own are the hallmarks of our current age.

Why would we vaccinate to protect the community when it’s all about the individual?”
Twitter, 2006 to 2017.
~126,000 stories tweeted by ~3 million people more than 4.5 million times.

Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information.
The spreading of misinformation online

Michela Del Vicario\textsuperscript{a}, Alessandro Bessi\textsuperscript{b}, Fabiana Zollo\textsuperscript{a}, Fabio Petroni\textsuperscript{c}, Antonio Scala\textsuperscript{a,d}, Guido Caldarelli\textsuperscript{a,d}, H. Eugene Stanley\textsuperscript{e}, and Walter Quattrociocchi\textsuperscript{b,1}

\textsuperscript{a}Laboratory of Computational Social Science, Networks Department, IMT Ati Studi Lucca, 55100 Lucca, Italy; \textsuperscript{b}IUSS Institute for Advanced Study, 27100 Pavia, Italy; \textsuperscript{c}Sapienza University, 00185 Rome, Italy; \textsuperscript{d}ISC-CNR Uos “Sapienza,” 00185 Rome, Italy; and \textsuperscript{e}Boston University, Boston, MA 02115
The ecosystem
Vaccine Free is Healthy, Caring and Wise

www.StopMandatoryVaccination.com

Photography Copyright © 2015 Larry Cook
Infectious diseases specialists

Antivax activists

Mainstream media

Governments

General practitioners

Paediatricians

General population (including hesitant)
Research fuels fears as more outbreaks of

NEW ALLEGATIONS ON MMR

MMR safe? Ball’s column suggests this is one scam that’s getting

SINCE Dr Andrew Wakefield first triggered the furore over a possible link between autism, bowel disease and the measles, mumps and rubella triple jab in 1998, the controversy has not died down. Now a study by the respected Exeter Medical Library has said, on the basis of 11 pieces of data, the world’s highest-ever evidence of MMR’s link to autism is flawed. The study, which was published last month in the UK’s Journal of the Royal Society, is the latest in a string of scientific papers that has led to a resurgence of anti-vaccination sentiment. Dr Wakefield, who once owned a cancer diagnostics company, has been under fire for his work.

Dr Tim Jefferson, who is listed as the author of the study, said: ‘There is no evidence that MMR causes autism. There is no evidence that MMR causes bowel disease. There is no evidence that MMR causes any other disease.’

Cervical drug expert hits out as new doubts raised over death of teenager

Compare this with the coverage page, wrong under the

ESCHER COLLECTIVE

ESCHER COLLECTIVE
Misleading media reporting?
The MMR story

Justin Lewis and Tammy Speers

Figure 1 | Frequency of messages in MMR stories. This figure shows the presence of key messages in television, radio and press reports about the measles, mumps and rubella (MMR) vaccine in national media in the United Kingdom from January to September 2002. Data from ref. 9.
Les Décodeurs répondent à vos questions sur les vaccins

Le MONDE | 12 07 2017 à 15h31 • Mis à jour le 14 02 2018 à 11h59 |
Par Les Décodeurs

Abonnez-vous à partir de 1 €  Reagr  Ajouter  →  Partager (135)  Tweetez

Le passage de 3 à 11 vaccins obligatoires en 2018 a relancé le débat sur la vaccination. Pour vous aider à y voir plus clair entre questions légitimes et fausses informations, Les Décodeurs proposent plusieurs analyses sur le sujet :

- Question n°1 : la justice européenne a-t-elle reconnu le lien entre sclérose en plaques et vaccination contre l’hépatite B ?
- Question n°2 : l’obligation vaccinale est-elle contraire aux droits du patient ?
Infectious diseases specialists

Antivax activists

Mainstream media

Governments

Paediatricians

General practitioners

General population (including hesitant)
Recent Outbreak in Brooklyn and Queens

As of April 8, 2019, there have been 285 confirmed cases of measles in Brooklyn and Queens since October. Most of these cases have involved members of the Orthodox Jewish community.

The initial child with measles was unvaccinated and acquired measles on a visit to Israel, where a large outbreak of the disease is occurring. Since then, there have been additional people from Brooklyn and Queens who were unvaccinated and acquired measles while in Israel. People who did not travel were also infected in Brooklyn or Rockland County.

Vaccination Requirement in Brooklyn

On April 9, the Health Commissioner ordered (PDF) every adult and child who lives, works or resides in the following ZIP codes and has not received the measles, mumps and rubella (MMR) vaccine to be vaccinated:

- 11205
- 11206
- 11211
- 11249

People who demonstrate they are immune from measles have a medical condition that prevents them from receiving the vaccine will not need to get vaccinated.
Today we are declaring a public health emergency,
This will mandate vaccines for people
living in the affected area.
The Department of Health will issue violations
and fines to people who remain unvaccinated.
It’s crucial for people to understand
the measles vaccine works.
It is safe. It is effective. It is time-tested.
and specifically we’re making clear
that unvaccinated students will not be allowed in schools
« Citizen consultation on vaccine », France, 2016
11 mandatory vaccines

Vaccinal dictatorship is coming!
Compulsory vaccination and rates of coverage immunisation in Europe

Measles vaccination coverage in EU/EEA.

Blue countries are below the European average, green are above.

Mandatory vaccination has been marked with a lined background.
Usefulness and harmfulness of vaccines (median and IQT 25-75) according to the answer to the question:

« Will making vaccines mandatory increase your trust in vaccines? »

Daudel et al - Submitted
Un vaccin pour la protéger contre les HPV

Pourquoi ?

Pour qui ?

Où ?
Cancer du col de l'utérus : que sont les papillomavirus ?

LE VACCIN EST UN BONUS IMPORTANT POUR LES FEMMES
Medical populism

• A political style based on performances of public health crises that pit ‘the people’ against ‘the establishment.’

• Thabo Mbeki's HIV denialism and the Philippines’ dengue vaccination scandal are examples of the populist logic of forging vertical divisions between the people and the establishment (e.g. the West, big pharma, medical experts).
Sources and Perceived Credibility of Vaccine-Safety Information for Parents

**TABLE 2** Parental Report of Levels of Trust of Certain People for Vaccine-Safety Information

<table>
<thead>
<tr>
<th>Source</th>
<th>A Lot, %</th>
<th>Some, %</th>
<th>Not at All, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child(ren)’s doctor</td>
<td>76</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>Other health care providers</td>
<td>26</td>
<td>70</td>
<td>4</td>
</tr>
<tr>
<td>Government vaccine experts/officials</td>
<td>23</td>
<td>61</td>
<td>16</td>
</tr>
<tr>
<td>Family and friends</td>
<td>15</td>
<td>67</td>
<td>18</td>
</tr>
<tr>
<td>Parents who believe their child was harmed by a vaccine</td>
<td>8</td>
<td>65</td>
<td>27</td>
</tr>
<tr>
<td>Celebrities</td>
<td>2</td>
<td>24</td>
<td>74</td>
</tr>
</tbody>
</table>
The Impact of the Parent-Physician Relationship on Parental Vaccine Safety Perceptions

Michael Kundi\textsuperscript{*}, 1, Patrick Obermeier\textsuperscript{2}, Stephanie Helfert\textsuperscript{1}, Hiba Oubari\textsuperscript{1}, Stefan Fitzinger\textsuperscript{1}, Jeong A. Yun\textsuperscript{1}, Martin Brix\textsuperscript{1} and Barbara Rath\textsuperscript{2}

\textsuperscript{1}Center for Public Health, Medical University of Vienna, Austria. National Vaccination Council, Austrian Ministry of Health, Austria

\textsuperscript{2}Department of Pediatrics, Division of Pneumonology-Immunology, Charité University Medical Center, Berlin, Germany

Reported sources of informations about vaccines
Adolescents trust physicians for vaccine information more than their parents or religious leaders

Daisy S. Griffin*, George Muhlbaier*, Daniel O. Griffin. Adoelscents trust physicians for vaccine information more than their parents or religious leaders. *Schenectady High School, Department of Social Studies, P.O. Washington, NY 10034, USA

*Columbia University Medical Center, Department of Biochemistry and Molecular Biophysics, New York, NY 10032, USA


e01006

Fig. 6. Trusted sources for vaccine information. (n = 105).
Commentary

Motivational interviewing: A promising tool to address vaccine hesitancy

Arnaud Gagneur a,b,*, Virginie Gosselin b, Ève Dubé c

a Centre hospitalier universitaire de Sherbrooke (CHUS), Université de Sherbrooke, Sherbrooke, Québec, Canada
b Centre de recherche du CHUS, Sherbrooke, Québec, Canada
c Institut national de santé publique du Québec, Québec, Québec, Canada
• Four main principles:
  – avoid the righting reflex,
  – listen with empathy,
  – explore and understand the patient’s own motivations,
  – encourage and support self-efficacy, i.e. the confidence the patient’s ability to change

• Five steps:
  (1) asking open questions,
  (2) affirming,
  (3) reflective listening,
  (4) summarizing,
  (5) informing and advising only if the permission is given by the patient beforehand
• Around a third of the students felt **insufficiently prepared** for questions about vaccination, especially for **communicating with patients**

• The mean knowledge score was 26/45

• Lecture courses were considered effective by only 11%, whereas **practical training** was significantly associated with better perceived preparedness
Infectious diseases specialists

Antivax activists

Mainstream media

Governments

General practitioners

Paediatricians

General population (including hesitant)
First M87 Event Horizon Telescope Results. I.
The Shadow of the Supermassive Black Hole

The Event Horizon Telescope Collaboration
(See the end matter for the full list of authors.)

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