INCREASING VACCINE UPTAKE: CONFRONTING MISINFORMATION AND DISINFORMATION

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Summary: Despite the availability of safe and effective vaccines, several European countries are experiencing outbreaks of vaccine-preventable diseases. There are several reasons. First, parents may face barriers in accessing health services or may be unaware of the need for, or the means to obtain, immunisation. These problems call for enhancements to health systems, including the ability to address the needs of groups with low uptake. Second, there is extensive disinformation about vaccines, some reflecting a wider distrust in government but some being encouraged so as to undermine that trust. This requires new approaches to messaging, recognising how conventional messages can backfire.

Keywords: *Vaccination, Vaccine-preventable Diseases, Health Communication*

> **#EHFG2018** – Forum 10: Vaccines for all

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Progress and setbacks

The struggle between humans and microorganisms is never-ending. Time and time again, we have achieved remarkable progress only to face setbacks. Successes against vector-borne diseases such as malaria and dengue fever reversed as the mosquitoes took advantage of new ecological niches, such as the pools of water in discarded tyres, or conducive climatic conditions as a result of climate change. Bacteria provided us with a graphic demonstration of the effects of natural selection, as overuse of antibiotics favoured the small number that were resistant, giving them a competitive advantage. In many parts of the world, conflicts and displacement of populations have created even more opportunities for the vectors and the agents that they transmit. Yet, there was one area where progress did seem assured. By harnessing the body's own immune system, vaccinations seem to provide an unassailable weapon against a growing number of infectious agents. Some were major killers, such as tetanus. Others were less often fatal but left in their wake large numbers with severe disabilities, as with polio or meningitis. One disease, smallpox, was even eradicated, while polio seems not far behind. And, unlike the other often temporary successes, the infectious agents involved had no defence. Yet, in mid-2018, newspapers across Europe were reporting outbreaks, and even some fatalities, from measles, a disease that is entirely vaccine preventable.[1]

Although not infrequent, it is easy to forget just how devastating some vaccine-preventable diseases can be. An outbreak in Glasgow in 1907 left over 1,000 people dead.[2] In the closing years of the 20th century it was still killing one million children every year in sub-Saharan Africa. Even those who survived the acute illness were not always safe. About one in 1,000 children infected developed a form of encephalitis that would kill about 10% of them and leave another 25% severely disabled. Why is there a problem with immunisation rates?

Given the potential severity of infection and the availability of a safe and effective vaccine, parents in many countries across Europe are choosing not to have their children immunised. How can this be explained? Could it simply be that memories fade? Maybe. Few parents (and health workers) in Europe will have known a family whose child died from measles today. But the main reasons might lie elsewhere.

We in the health community need to ask if we are doing everything that is possible. At first sight, the act of injecting a vaccine into a child or an adult could not be simpler. But for that to happen, a whole series of arrangements need to be in place. First, health authorities need to know who is eligible to be vaccinated. There must be some sort of register listing the children residing in a particular area, something that is particularly challenging with populations that are mobile, or who are missed by existing systems, such as undocumented migrants. Second, authorities or someone on their behalf need to ensure that affordable supplies are procured and distributed. Third, coverage needs to be monitored, identifying groups in the population among whom uptake is low and developing appropriate responses. Some countries perform these functions very well, but others fail to. This requires resources, which also need to be invested in staff with the appropriate skills. A recent study in Italy has shown how immunisation rates have been affected by cuts to public health spending in some regions.[3]

We also need to ask why some parents actively refuse to have their children immunised. Even though we know that the measles vaccine is extremely safe, many people, including a number of prominent celebrities, believe otherwise. The origins of the story are familiar. In 1998, the Lancet published a study proposing a link between pathological findings in the gut and developmental disorders.[4] That much was uncontroversial. The problem arose from the last two sentences in the study, which stated that most of the children involved had experienced onset of symptoms after immunisation for measles, mumps, and rubella (MMR). It then suggested that future research should look for an association between the syndrome described and immunisation.

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The problem was compounded at the subsequent press conference, when the lead author, Dr Andrew Wakefield, suggested that the three components of the vaccine should be given separately. This was based on a complete absence of evidence that either the combined vaccine was causing the problem or that separating the components would bring any benefit. However, the damage was done. Parents of children with autism began to attribute the condition to their child’s vaccination. Immunisation rates fell dramatically in the United Kingdom and, subsequently, in many other countries, encouraged by irresponsible reporting by some sections of the media, some of which may have been politically motivated.[5]

Numerous subsequent studies have confirmed the absence of any association between immunisation and autism,[6] but this has failed to convince a significant number of people. Authoritative statements by researchers and public health officials have often had the opposite effect to that intended, confirming in the views of those who believe in a link that vaccine advocates are part of a giant conspiracy by a powerful pharmaceutical industry and a malign state. In this, they are joined by others, linked together by social media, who see immunisation as yet another means of control of the population by dark and mysterious forces.

What can be done?

So, what can the health community do when faced with a situation like this? First, and most obviously, there is a need to address those weaknesses that we have some control over, ensuring that there are systems in place that are adequately resourced, staffed by professionals with the requisite skills. Public health professionals have a critical role in asking why some groups in the population have persistently low rates of immunisation. Could it be that the services that provide immunisation are simply inaccessible or inconvenient? This is certainly true for some marginalised groups, such as Roma in some countries of Central Europe.[7] Or could it be misinformation, where parents are simply unaware of the benefits of immunisation or the means by which they can obtain it for their children? This could be because the available information is in a language they are unable to read or written in a way that conveys an unintended message. However, obtaining these answers can be difficult, requiring a high level of skills in qualitative research, coupled with a long process of building trust with the communities concerned.

The design of appropriate systems to ensure high levels of uptake should, as far as possible, be informed by research. However, this is an area where there are some significant gaps. We have recently completed a systematic review on the role of the health system in immunisation. While there is a wealth of research on the individual determinants of immunisation, showing how factors such as family income, education, ethnicity, and much else can play a role, there is much less on the optimal way to develop and implement mechanisms that maximise uptake, especially among marginalised populations.

There is also one thing that health authorities across Europe could do relatively easily, but so far have not done. This is to coordinate vaccine schedules internationally. There are often good reasons why these differ, reflecting priorities of the authorities concerned or epidemiological specificities, but often they are simply a product of history. Improved coordination would benefit families who move between countries. But further, and as importantly, it would remove the opportunity exploited by the anti-vaccine movement to point to such differences as evidence of uncertainty about vaccine effectiveness, even though this is clearly not the case.

A different situation arises when the problem is not misinformation but disinformation. This refers to information that is deliberately spread knowing it to be false.

Disinformation can emerge and spread for many reasons. Some relate to a generalised distrust in governments, but there is also now growing evidence of deliberate manipulation on social media, using immunisation as one of a number of opportunities to actively undermine that trust for broader political purposes.[8] Another, related phenomenon is the perception that powerful vested interests, in this case the pharmaceutical industry, are concealing the truth about its products, again sometimes part of a wider issue of distrust of those perceived to be powerful.

It may be possible, through a process of reasoning, to encourage those holding certain beliefs to work through the arguments until it becomes clear to them that there is a logical fallacy or incoherence. It is better that people to see for themselves, rather than be told what to believe. However, care is necessary as provision of the information needed to tackle misinformation can easily backfire. There is now a large body of research showing that the authoritative correction of a myth can, counterintuitively, reinforce belief in it among those whose views are challenged.[9] One American study found that providing high-quality evidence that MMR did not cause autism actually reduced the probability that families convinced that it did would have their child immunised.[10] Moreover, authoritative evidence must compete with a mass of contrary advice, now easily found on the intranet. The concept of motivated reasoning describes how people actively search for evidence that confirms their prior belief and reject anything that challenges it. A study of uptake of vaccine against human papilloma virus (HPV) found that people who believed that it encouraged promiscuous behaviour actively sought evidence that it might not work.[11]

Another challenge is that talking about misinformation can actually normalise it. For example, simply by talking about refusal to have one's children vaccinated may create an impression that it is widespread and thus socially acceptable.[12] Here the media plays an important role, as efforts to present opposing views in the interest of balance can give the impression that disagreement is widespread even where there is overwhelming consensus, as with climate change.

Finally, it is easy for pro-vaccine messages to disparage inadvertently those who decline immunisation, portraying them as irresponsible. Social identity theory tells us that this may be seen as an attack on groups who already feel excluded from mainstream society, with one Australian study finding that some parents identified vaccination as a marker of compliance with what was termed the "toxic practices of mass industrial society".[13]

There are, however, things that can be done to tackle false beliefs and associated disinformation. When addressing myths, the starting point should not be the myth itself, but rather the facts. Then, the myth can be introduced and debunked, before concluding with the scientific facts.[14] Repeating the myth simply reinforces it.

It is also important to keep the messages simple. There may be many good reasons for children to be immunised, to protect them as individuals and also to create herd immunity. However, the more complex the rationale for immunisation, the more likely many people are to seek the much simpler answers, even if illogical and incorrect, peddled by the anti-vaccine community. A tantalisingly simple lie may be more attractive than a complex truth.

It is also important to understand people's overarching worldviews and try to find common ground. In some cases, where concerns about immunisation relate fundamentally to the individual values, as in the example of HPV above, it may be better simply to set the facts to one side and address those values, showing how they need not be incompatible with immunisation.[15] Where possible it is better to seek coherence with a broader view (such as concerns about government intervention or manipulation by the pharmaceutical industry) and limit the challenge to the specific disinformation.

Last words

Almost two decades into the 21st century, it seems remarkable that children in Europe are still dying from a disease that is entirely preventable with a safe and effective vaccine. If the first duty of government is to protect its people, then this is an area that is in need of urgent attention.

References

1 Kmietowicz Z. Measles: Europe sees record number of cases and 37 deaths so far this year. *BMJ* 2018;362:k3596.

2 Pennington H. Why can't doctors be more scientific? *London Rev Books* 2004;26(13):28–9.

3 Toffolutti V, McKee M, Melegaro S, Ricciardi W, Stuckler D. Austerity, measles and mandatory vaccination: cross-regional analysis of vaccination in Italy 2000–2014. *Eur J Publ Health* (in press).

4 Wakefield AJ, Murch SH, Anthony A, et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet* 1998;351(9103):637–41.

5 Greenslade R. The story behind the MMR scare. Available at: https://www.theguardian.com/society/2013/apr/25/mmr-scare-analysis

6 Miller E. Measles-mumps-rubella vaccine and the development of autism. *Semin Pediatr Infect Dis* 2003;14(3):199–206.

7 Duval L, Wolff F-C, McKee M, Roberts B. The Roma vaccination gap: Evidence from twelve countries in Central and South-East Europe. *Vaccine* 2016;34:5524–5530.

8 Dyer O. Vaccine safety: Russian bots and trolls stoked online debate, research finds. *BMJ* 2018; 362:k3739.

VACCINATION IS THE SOLIDARITY OF THE MANY FOR THE FEW

By: Xavier Prats-Monné

Summary: Vaccination saves lives. It protects our citizens of all ages and reduces illness, contributing to longer life expectancy. Yet, several EU Member States and neighbouring countries are currently facing unprecedented outbreaks of vaccine-preventable diseases due to insufficient vaccination coverage. To support Member States in addressing this challenge, on 26 April 2018, the Commission adopted an ambitious proposal for a Council Recommendation and a Communication that aim to improve vaccination coverage and reduce the risk of vaccine preventable diseases across the Union.

Keywords: *Vaccination, Vaccine Preventable Diseases, European Commission, Council Recommendation, Sustainable Development Goals*

Vaccination: a success story that needs to be told

Young Europeans can go through seasonal flu without much risk of serious complications; the older people amongst us cannot: in an average year, more than 40,000 Europeans die because of complications from flu, most of them aged over 65. And while most of us can suffer rubella without fear – this is not so for a pregnant woman whose unborn child is at risk.

Yet a substantial number of citizens, mostly in Europe and in other advanced economies, see vaccination as an unnecessary or even dangerous burden. These fears must be taken very seriously and addressed – even if hesitancy about vaccination, especially among health professionals, presupposes an extraordinary lack of trust in science and cynicism about how our societies work: it implies that a global network of doctors, nurses, policymakers, researchers and international organisations, such as the World Health Organization (WHO), are intentionally harming adults and children, either for money or indifference, by exposing them to an unnecessary health risk through vaccines.

Thanks to vaccines, our societies achieved the eradication of smallpox, one of the most devastating diseases known to humankind, which caused at least 300 million deaths in the 20th century alone. In comparison, 100 million people died during the 20th century either directly or indirectly as a result of war and armed conflict.[1]

Vaccination also enabled the near elimination of polio and the prevention of countless deaths from many other

9 Skurnik I, Yoon C, Park DC, Schwarz N. How warnings about false claims become recommendations. *J Consumer Research* 2005;31(4):713–24.

10 Nyhan B, Reifler J, Richey S, Freed GL. Effective messages in vaccine promotion: a randomized trial. *Pediatrics* 2014;133(4):e835–42.

11 Kahan DM, Braman D, Cohen, GL, Gastil J, Slovic P. Who fears the HPV vaccine, who doesn't, and why? an experimental study of the mechanisms of cultural cognition. *Law Hum Behav* 2010;34(6):501–16.

12 Cialdini RB, Demaine LJ, Sagarin BJ, Barrett DW, Rhoads K, Winter PL. Managing social norms for persuasive impact. *Social influence* 2006;1(1):3–15.

13 Attwell K, Smith DT, Ward PR. 'The Unhealthy Other': How vaccine rejecting parents construct the vaccinating mainstream. *Vaccine* 2018; 36(12):1621–6.

14 Rossen I., Hurlstone MJ, Lawrence C. Going with the Grain of Cognition: Applying Insights from Psychology to Build Support for Childhood Vaccination. *Front Psychol* 2016;(7):1483.

15 Tannenbaum MB, Hepler J, Zimmerman RS, et al. Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychol Bull* 2015;141(6):1178–204.

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