

Public perception and vaccine efficacy for influenza: an interview with Barbara Rath, Vienna Vaccine Safety Initiative

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Your research is focused on finding effective vaccines against influenza. Can you tell me a bit about this?

If you ask a pediatrician whether and when **we** would like to have an effective vaccine against influenza, the answer will likely be 'yes' and 'yesterday'. As clinicians we are not known to be patient. We want to be able to prevent the spread of influenza infections as early as possible and to protect those who are most vulnerable.

The question, *what exactly* an effective vaccine should look like, is an interesting one. We will need to examine carefully which immunization strategy we wish to pursue and which outcomes we want to achieve. Unless we set clear goals, we will have difficulty measuring the progress that we make toward that goal. Ever since the first flu vaccine was successfully developed, newer flu vaccines have needed to compare their safety and effectiveness with the vaccines that already exist. In the near future, we may tailor specific vaccines to specific patient and risk groups, setting our goals to make these vaccines available to those who need them the most.

I think there is still too much inconsistency between the aims of those working at the forefront of vaccine research and development, and the needs of the people for whom the vaccines are designed. We need to explore, without prejudice, what people are really asking for with regard to vaccine prevention [1]. What is the demand side? From a regulatory viewpoint, we need to show that vaccination will improve the way people feel, function and survive, and we need to achieve this goal in a way that works for them. Clinical researchers in modern medicine have the opportunity to act as innovators and translators. It is critical to listen actively and collaborate with patients, in order to answer important questions and provide reassurance in a team environment [2].

The more clinical research I have done, the more I have realized that some of the most brilliant questions, triggering entire areas of research over the years, have originated from questions raised by parents and children. Translational research is an overused term, but as clinicians we can make use of our interlocutor role to advocate for children and their parents and to communicate back to the health agencies and vaccine providers what is needed, and to make suggestions on how we might go about delivering vaccines in the safest and most effective way possible.

What are the key findings of your work in this area? How can we change public perception?

Our first study took place in the city of Vienna, Austria [3]. We interviewed parents who were picking up their healthy children from kindergarten. We used a detailed survey instrument to better understand public perception surrounding the safety and 'necessity' of various vaccines. Necessity to parents, is very similar to what we call vaccine effectiveness. Data collection ended early in 2009, just before the declaration of the flu pandemic by WHO in June

2009. The survey returned some interesting and surprising findings. Data analysis showed that influenza vaccine was in fact, the least popular vaccine among parents. A significant proportion of parents felt that flu vaccines were neither safe nor necessary. In this situation, the addition of fear, such as that evoked by a pandemic, will not help to increase vaccine uptake or confidence – on the contrary, it will make things worse. Thus, any so-called ‘normal’ influenza season provides the opportunity to ‘rehearse’ for a worst-case scenario. We need to realize that in an increasingly interconnected world, a respiratory disease outbreak may occur at any time. We need to outline our goals clearly and put efficient communication channels in place ahead of time, to facilitate bilateral and network communication at a rapid pace. We need to ensure that the immunization systems place children and parents at the center. As we invite parents and families on board, we need to regularly enlist their confidence, help and advice [4].

There is a need for patient and parent organizations to be actively involved at any level, to help us focus our efforts. If a patient tells us that something does not work, we need to be open to their feedback and be seen to take note. If there is a misunderstanding, we need to seek clarification. Misunderstandings are often based in deficient risk communication. Parents and family members have a right to know what a vaccine preventable disease would mean to them, and to have that dialog in a calm, nonthreatening environment. Our ultimate goal should be to get the children on board too, because disease prevention affects their lives and future, after all. There is more work to be done, and we are only at the beginning of this process. It is OK to admit if the current levels of flu vaccine effectiveness are not where we want them to be and that we are working toward improved, long-lasting vaccine protection. If we are open with parents and families, they will appreciate our honesty.

Why is there such a lack of confidence & uptake for the influenza vaccine?

It is a complicated situation. One challenge lies in the risk perception, in other words, the understanding of the disease that we are trying to prevent. The confusion around influenza vaccine is partly due to the use of language itself. Every language that I know or have dealt with in clinical practice (including with the help of translators), uses the terms ‘influenza’ and ‘flu’ synonymously. This means that there is confusion in the general population between ‘real’ (i.e., laboratory confirmed) influenza infection and flu-like illness. Thus, there is a misnomer that impairs vaccine communication. People have collated words and meanings such that the normal common cold is confounded with influenza itself. The result is that patients confuse the (significant) risk associated with influenza with the (comparatively low) risk of the common cold [5].

Another major issue, especially in children, is that there are many other respiratory infections that mimic influenza infection, in other words, present with very similar signs and symptoms. We have researched the question and showed that based on clinical signs and symptoms alone, we cannot tell the difference. We need diagnostic tests to help us distinguish different types of respiratory viral infection, early in the course of illness, when antiviral medications are most effective. In public health communication, we should avoid suggesting that doctors or lay people could diagnose influenza ‘clinically’. Certain symptoms or patterns may indeed be more common in influenza infection, but the same symptoms also appear regularly in any of the other forms of respiratory viral infection. This means that there is no specific clinical feature that would allow us to rule in/out any specific type of respiratory viral infection. Until now, some textbooks suggest stereotypical clinical pictures that do not hold up in clinical reality [6].

Patients who have received a vaccine and feel ill several weeks later will want to know whether their vaccine has worked for them or not. To answer this question, we need sensitive, cost-effective point-of-care diagnostics allowing us to give us the answer during the patient consultation, to help us take the right decisions at the right time, and to communicate them in a transparent way [7,8]. We also need to be able to tell how severe a case is, compared with others in a similar age/risk group, and whether a vaccine was able to mitigate disease severity if break-through disease occurred [9,10].

Closing feedback loops is an important part of vaccine communication, not only with regard to influenza vaccines. We should consider setting up specialized vaccine communication clinics at academic medical centers. We need to provide the opportunity to follow up with patients after vaccine administration providing advice and further examination if there are any concerns of adversity. This accountability message is often lacking in modern day medicine, with frequently changing providers in hospitals and group practices. Continuity of care is not easy to achieve, especially in pediatrics, where different caretakers (parents and other relatives, guardians) may accompany the same child to different medical visits. Vaccine consultations by private practitioners should be reimbursed properly, as are other types of consultation [11]. Vaccine safety training and education for medical students and healthcare professionals must be improved, standardized and updated regularly [12]. If we do not learn this lesson now, with 80,000+ measles cases in the European region in 1 year alone, we will never learn it.

Do you think we should roll out a universal vaccine recommendation for influenza like they have in USA?

Personally, I tend to think positively. The simpler a public health recommendation, the more likely it is to be implemented properly. The current US recommendation for the influenza vaccine to be given to everyone from 6 months upward, is clear and straightforward. Similar recommendations have been rolled out in the UK and Finland. Several countries have also worked on facilitating access to influenza vaccines, some have begun to involve pharmacies, for example. As we are working toward better healthcare delivery, we should continue to improve vaccine access, affordability and information [13]. Usually, vaccine recommendations and package inserts are written for prescribers and less so for the patients [14]. They need to be made more transparent and embedded in a human-centered healthcare system. Immunization is not an isolated act. It is part of a life-long strategy for better health.

What are your predictions for the next 10–15 years? What do you hope to see in terms of influenza vaccinations?

I hope that we take an educated approach and learn the lessons that each influenza season provides. There is a trend toward greater international collaboration in basic and clinical research, but also in other relevant areas, such as health economics. Interdisciplinary research is a necessity. Social sciences and information technology will help us understand the spread of rumors and scares via the social media. Messages are no longer confined by language barriers but are translated automatically into other languages or cultural contexts, increasing the risk of miscommunication. While researchers are working to incrementally improve the safety and effectiveness of vaccines, we need to start thinking about the impact of vaccines on the individual. If we choose our priorities according to the needs of the patients and/or vaccine recipient themselves, we will get there. As mentioned above, this should be accompanied by a modernization of healthcare and delivery systems, creating greater levels of consistency and accountability. We must think about ways to improve quality of care in all settings, including community and low-income settings [15,16]. We may be able to use mobile health, telemedicine and other digital tools to help us provide better care at all levels.

As pediatricians, we say “the best friend of the pediatrician is the follow-up”. This applies to vaccination, as well. A vaccine given to an individual should have a positive health impact for a lifetime. We need more long-term studies to measure these effects, including the health benefits for other household members. The concept of life-long vaccine protection requires user-friendly vaccination records that will accompany the vaccine recipient for a lifetime [17]. The medical profession aims to provide greater transparency, and medical records are an important part of that [18].

A patient who leaves the medical office or clinic should have had the time to ask questions and update vaccinations, if necessary. A patient who is unwell needs to know (as do their next of kin), which signs and symptoms to watch for and when to return to see a professional, ideally someone they are already familiar with. Accessibility and accountability will help to increase trust in vaccines, which is intrinsically linked to trust in science and the healthcare system in general. There is a lot of scientific progress and technology out there to support us, but we cannot take the human aspect out of the picture. I think communicating science is critical [19,20].

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