



SCIENCE TALKS

A microscopic image of virus particles, likely influenza, rendered in shades of red and blue, serving as a background for the event title.

MYTHS AND FACTS ABOUT VACCINATION

Press Event

TUESDAY 3 NOVEMBER 13:00 - 15:30 CET

AT THE OCCASION OF THE #WOHC2020 VIRTUAL EDITION 30 OCT - 3 NOV 2020

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IN COLLABORATION WITH



VAXVOX - Science Talks is a credible reference network of spokespersons on science-related vaccine issues and thus unites vaccination advocates worldwide.

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SINCE VACCINES HAVE ELIMINATED AND REDUCED MOST VACCINE-PREVENTABLE DISEASES, PEOPLE TEND NOT TO REMEMBER JUST HOW DEVASTATING THESE LIFETHREATENING DISEASES CAN BE. VACCINATION IS THE MOST COST-EFFECTIVE MEDICAL INTERVENTION EVER INTRODUCED AND, TOGETHER WITH CLEAN WATER AND SANITATION, IT HAS ELIMINATED MANY INFECTIOUS DISEASES THAT ONCE KILLED MILLIONS OF PEOPLE. A REPORT OF THE WORLD HEALTH ORGANIZATION STATES THAT TODAY VACCINES PREVENT 2,5 MILLIONS DEATHS PER YEAR.

Every minute five lives are saved by vaccines worldwide.

VAVOX believes scientists have the moral obligation to “talk back”. Communication is crucial, sharing and explaining scientific insights are of critical importance. Good researchers will tell the truth, even if their findings are different from what they had anticipated or hoped. Breakthrough advances in medical knowledge happen through years of dedicated research conducted by many researchers across numerous studies.

VAXVOX wanted to share insights with members of the press and inform them about what we – as scientists - think needs to be done in order to deal with the threat of non-vaccination to global health and mankind.

VAXVOX and the European Union of Science Journalists’ Associations invited members of the press to join a virtual event, part of the #WOHC2020 virtual edition.

1 | What vaccination means for mankind



PIERRE VAN DAMME
University of Antwerp, Belgium

The aim of vaccination is to protect someone who is susceptible against an infectious disease for a certain time, even for the duration of their life through booster vaccinations. Vaccines offer the opportunity to control, reduce, eliminate or even eradicate an infectious disease. Many studies show that immunization reduces hospitalization and deaths caused by infectious diseases by up to 90%. Moreover, it is possible to totally eliminate a disease in a region of the world or the planet as a whole. For example, polio has been eliminated in a number of continents; the most recent success being Africa in 2020. Polio is now only present in Afghanistan and Pakistan. Smallpox has been totally eradicated. We hope to be able to do that with polio and measles, although to eradicate measles will require significant additional efforts.

A vaccine needs to be well administered, which means adequate training being given to the vaccinators, whether they are doctors, nurses, pharmacists or other medical staff. Education is vital, which involves good communication to handle the questions arising from parents.

Reaching a certain level of immunization is very important, in order to control, eliminate or eradicate a disease. A certain immunization rate in a population is needed to attain herd immunity. For a COVID-19 vaccine, an immunization rate of 60-70% might be sufficient. For measles it's 95%; the remaining 5% will be protected indirectly. This is important because some people can't be vaccinated, such as children undergoing cancer treatment. This also illustrates the tension between individual protection on the one hand and collective protection on the other, which raises the issue of whether vaccination should be mandatory. Consequently, sensibilisation campaigns to convince the population of the need to increase the immunization rate are essential.

Complacency is a more recent challenge as people don't directly see the consequences of infectious diseases. Convenience is another challenge, which relates to issues such as opening hours or accessibility of a vaccination centre. It's important to keep a low threshold for vaccination. Public confidence in vaccination requires investment in communication at all levels, including the policymakers and on social media. Scientists need to try and translate scientific evidence-based information into common language and common practice.

2 | What are immunization programmes? An overview

SIDDARTHA SANKAR DATTA
WHO Regional Office for Europe, Denmark



A national immunization programme is designed to prevent disease, disability and death from vaccine-preventable diseases across all age groups. It operates within the framework of an overall health policy. An effective immunization programme is like a well-oiled machine consisting of several components, all of which need to function smoothly together without any weak links.

Vaccines promote health amongst individuals and communities. They have rapid impact on reducing the burden of disease, and save lives and health care costs. With the exception of safe water, nothing else, not even antibiotics, has had such a major effect on the reduction of deaths, illness and disability as immunization.

Immunization has immense value; the return on investment of childhood vaccination is estimated at 44 times the cost of vaccination when the broader economic and social benefits of immunization are considered. The WHO has identified immunization as one of the flagship initiatives within the overall objective of “leaving no-one behind.”

A national immunization strategy is the backbone of an immunization programme in any country. It should consider technical, operational, programmatic and social criteria. Developing and implementing a national immunization programme should be based on evidence-informed decisions. The ministries of health play a pivotal role.

Ultimately, the success of any immunization programme lies with the people using it, hence the importance of convenience, accessibility and clear communication to the community on the value of vaccination. An informed community is more likely to participate in the immunization programme. Community engagement is therefore key to success of any immunization programme.

The full public health value of vaccination goes beyond its direct impact in reducing deaths, long-term disability, and suffering caused by vaccine-preventable diseases. The vaccines add value by reducing the overall burden of disease on families, society and the health system, and contribute to the fight against antimicrobial resistance.

3 | How is a vaccine included in immunization programmes: procedure

ANDREW POLLARD

Oxford Children's Hospital, United Kingdom



In the UK, the Joint Committee on Vaccination and Immunization (JCVI) advises UK health departments on immunization, taking into consideration the evidence on the burden of disease, on vaccine safety and efficacy, and on the impact and cost-effectiveness of immunization strategies. The JCVI appraises this evidence from a wide range of sources. Also in the UK, the NHS Constitution gives recommendations based on an assessment which demonstrates cost-effectiveness of immunization.

A huge amount of work has been done over the last 25 years around the world to improve immunization and we have lots of evidence on the success of these approaches. In many countries throughout the world a significant decrease in under-five mortality over the years has been observed, which is largely due to vaccination.

Demonstrating impact demands having good surveillance in place. Decisions on assessing a new vaccine are made on the basis of safety and immunogenicity data; efficacy and safety; cost-effectiveness; post-marketing safety monitoring; and epidemiology.

Even after vaccines are implemented, vaccines are continually monitored and the data reviewed as to where changes are necessary, an example being the addition of booster doses.

Outbreak pathogens is a very important area for vaccine development for the protection of individuals and those responding to outbreaks. Every year multiple outbreaks of diseases occur, some of which are vaccine preventable.

Challenges for immunization programmes lie ahead. These include public confidence in immunization; political support for immunization; robust evidence-based recommendations; strong economic arguments for immunization programmes; and the need to maintain strong systems to monitor vaccine impact and the changing epidemiology. Future priorities for immunization committees include reviewing vaccines to address childhood diseases; improving current adult vaccines; and developing vaccines for high-risk populations and against nosocomial infections and outbreak pathogens.

COVID-19 vaccination update

AB OSTERHAUS

RIZ, University of Veterinary Medicine, Hannover, Germany
Chair of the One Health Platform



When considering vaccines for emerging infections, some key points to consider are the need to shorten development times, the new developments in vaccine development, and regulatory hurdles. Vaccine development times typically take a long time. For example, work has been ongoing for over 30 years to find an HIV vaccine – with no success. The traditional timeline takes 10-15 years from exploratory phase through preclinical work, clinical trials, FDA review and approval, and manufacturing. With COVID-19, a vaccine is needed now, which means accelerating the timeline to around two years without cutting corners, particularly on safety.

In regard to a COVID-19 vaccine, of about 65 potential candidates, 36 are in phase 1, 14 in phase 2, and 6 are approved for very early and limited use.

It's also worth noting that different types of vaccine are being investigated, and progress is moving extremely quickly in all the different areas of research. As to when the world will have sufficient COVID-19 vaccine doses, many challenges still need to be overcome in the areas of production, distribution and administration. The largest producer is suggesting that there will not be enough COVID-19 vaccine for the whole world until 2024. However, vaccines could be expected to be available early/mid 2021. This in itself leads to the challenge of equitable distribution: how can we secure COVID-19 vaccine availability for the world and not just for a limited number of countries?

Safety is essential, confirmed in part by toxicology studies in animals, and vaccination studies in animals and humans. Efficacy studies are ongoing and are being partly confirmed by antibodies and protection in animal models and in human studies. Communication to increase vaccination acceptance is crucial.

5 | What needs to be done?

PIERRE VAN DAMME
University of Antwerp, Belgium



The total vaccination system is a highly complex one, in which every component needs to be in place before success is achieved. The science is also complex and involves a number of different fields, such as logistics, delivery, implementation, etc., before reaching the very important immunization rate that produces herd immunity. The impact of vaccination is clearly more than its impact on health but has a positive effect also on economic health, human development, societal well-being, and future generations.

Nowadays parents have concerns about immunization; more so than 30-40 years ago when immunization was more accepted as routine. It's thus essential to clearly communicate the multiple benefits of vaccination for everyone, everywhere. The challenge is also to offer booster immunization for the elderly and to travellers, and to understand that the work of vaccination does not finish in school with children's vaccines.

Immunization has to be tailored to the specific situation in different countries. It's also important to support immunization through National Immunization Technical Advisory Groups and consider new immunization programmes, which also demands a certain flexibility in the current immunization schedules. The importance of surveillance is also critical, in terms of safety, impact, monitoring, and to thoroughly document the impact of immunization. And of course all this has to be carried out while gaining and maintaining public trust, along with the political will to support immunization programmes.

Q&A Session

Q: How is COVID-19 hampering national immunization programmes?

A: The WHO recommendations for a roadmap on how to implement COVID-19 vaccination include three different perspectives. What is the epidemiological scenario of COVID-19 in an area? What is the vaccine supply? What is the overall public health strategy of the country? As these answers differ, tailoring an immunization programme is key. A “one size fits all” solution will not work.

Q: When will a COVID-19 vaccine be available?

A: Unprecedented efforts are being made to produce a safe and effective COVID-19 vaccine. Of 200 candidate vaccines, 40 have moved into advanced clinical trials and 10 into phase 3 clinical trials. It's critical that any vaccine is safe and effective so all trials need to be conducted with due diligence.

Q: What's the latest information on the safety and efficacy of the Russian COVID-19 vaccine?

A: There are a number of initiatives in Russia involving various technologies. It's not clear if published data on safety aspects is available to provide a clear evaluation. The news looks promising but it's too early to talk about safety and efficacy of a new vaccine as little is known about the regulatory process being implemented.

Q: Is the development of the COVID-19 vaccine going so fast that safety might be compromised?

The trials are being run at the normal rate and are under the normal, high regulatory environment in Europe and the US. Every stage has to be scrutinized by the regulators as usual. So safety is not being compromised at all, and must not be compromised. Where time has been gained is that knowledge already existed on coronaviruses and the likely targets for an immune response, and a genome sequence was made available within days. Moreover, many platform technologies exist which enable products to be prepared very quickly for testing. Finally, governments and international funding agencies have made sure that the finances are available.

Q: Would a COVID-19 vaccine be able to confer long-term immunity, as there are reports of re-infection?

A: The reports of reinfections are relatively uncommon, which is reassuring. A more pertinent question is whether they are at risk of serious disease again in the future, which we don't know at the moment. Regarding a COVID-19 vaccine, time is needed to properly evaluate the duration of protection.

Q: Is COVID-19 vaccine-induced enhanced susceptibility to infection likely to be an issue?

A: The issue here is that after a person is vaccinated, there is an increased risk of more severe disease. This is certainly one of the aspects that the safety and monitoring boards are investigating very closely. It is difficult to evaluate this phenomenon in a trial setting because it involves looking for a clinical signal between the group that gets the vaccine and the control group.

Q: The success rate of the influenza vaccine is only around 50%. Is a COVID-19 vaccine likely to be more effective?

A: It's useful to note that the influenza vaccine is aimed at older people, whose immune response system is continually weakening; the older you become the less efficacious the vaccine will be. 50% for the flu vaccine is already good, although not good enough and further work needs to be done to improve it. Regarding a COVID-19 vaccine, if it could reduce hospitalization and deaths by 50% that would already be a significant benefit. And even a lower efficacy would have a huge health impact.

Q: What are your recommendations to prepare society for a COVID-19 vaccination programme?

A: We need a vaccine that is shown to work safely. People need to know about and be reassured on the safety data from the large trials. The communication of science is an important issue too. The public is familiar with the concept of clinical trials which means we can provide more information on these to the public than we could decades ago.

Q: What's the danger of COVID-19 mutating, requiring the vaccines to be changed in the future?

A: Coronaviruses are RNA viruses so the chance of mutation is high. However, the virus is in a landscape where mutation isn't necessary, so mutation is not expected to be a major problem.

Q: Has COVID-19 dropped in mortality during the second wave?

A: Probably not. The social restrictions have slowed the speed of infection; without restrictions things would look very different. Also, deaths are fewer than during the first wave because a lot more is known about the best treatment for people suffering from COVID-19. However, there should be no room for complacency; people in risk groups are still at risk.



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