

# HIGHLIGHTS

FROM **SCIENCE  
POLICY  
INTERFACE  
SESSIONS**

AT THE 9<sup>TH</sup> ESWI INFLUENZA CONFERENCE  
#ESWI2023



THE NINTH ESWI  
**INFLUENZA**  
CONFERENCE

17-20 SEPTEMBER 2023 | VALENCIA



THE NINTH ESWI  
**INFLUENZA**  
CONFERENCE

The 9th ESWI Influenza Conference took place from 17 to 20 September in Valencia, Spain, as well as online. This report summarises ESWI's interpretation of the key messages from the individual talks within the Science Policy Interface (SPI) track of the conference.

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SCIENTISTS FIGHTING  
INFLUENZA AND  
OTHER ACUTE  
RESPIRATORY VIRUSES

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# Why influenza and RSV disease are a priority for policy makers

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MONDAY 18 SEPTEMBER 2023  
10:45 - 12:20 CET



CHAIR:

**Hanna Nohynek**

*Finnish Institute for Health and Welfare, Finland*

## ➤ How transparent rules of collaboration enable public-private partnerships to benefit EU research

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**Hanna Nohynek**, *Finnish Institute for Health and Welfare, Finland*, described the importance of public-private partnership (PPP) collaboration from a regulatory and public health perspective. The IMI-DRIVE project was set up to measure the vaccine effectiveness jointly as a PPP and to build a collaborative platform for brand-specific influenza vaccine effectiveness. It's a proof-of-concept project for EMA guidance, and was carried out as a 5-years (2017-2022) 10M€ project.

A major achievement was to come up with a transparent public-private mechanism with a functioning governance model for joint Influenza Vaccine Effectiveness (IVE) studies in Europe. It covered shared decision-making, joint funding, transparent reporting, collaboration methods, independent study conduct and scientific committee for results review, high data quality standards, and a public website. Results were fully auditable, with reusable scripts, a user-friendly web annex, full transparency, and accelerated timelines. The network is being expanded with public and academic partners.

Data sharing is not only a key principle of the collaboration; it's a must. It promotes research collaboration; values the site data through scientific publications; attracts more sites to the DRIVE study; and supports post-DRIVE analysis. Upon request, researchers from academia, public health and industry can look at the data and append their own analysis.

In terms of achievements, this public-private, multi-marketing authorisation holder partnership addresses the regulatory commitment. It shows that it is possible to provide real-world evidence data through jointly working between different marketing authorisation holders. The platform also provides yearly brand-specific influenza vaccine effectiveness.

Challenges still need to be addressed. For example, how to keep it up and running, and how to increase the sample size which is currently not big enough due to competition for sites. Another challenge is that the European Centre for Disease Control (ECDC) voted against PPP, with limited opportunities for dialogue. There is also "PPP hesitancy", shown by the lack of public health institutes joining DRIVE. Some countries have strict laws against collaboration with industry.

Also described were two other IMI projects:

- The Respiratory Syncytial Virus Consortium in Europe (RESCEU) aimed to prepare the way for introducing RSV products: monoclonals as well as vaccines.
  - PROMISE furthers RESCUES work and involves 22 world-class organisations that are funded by IMI to advance scientific knowledge in RSV and inform public health strategies. It is looking at novel immunisation tools and therapeutics in Europe.
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**Delegate: Is there any evidence that a PPP may impact the credibility of the institutions?**

**Hanna Nohynek:** This research needs to be done. Governance is extremely transparent, which should alleviate questions about trustworthiness of the results, which should in turn increase trust in PPP.

**Delegate: What is your key message to policymakers to standardise the approach to PPP, if this is the way forward to achieve greater public good?**

**Hanna Nohynek:** In DRIVE we have governance rules that can be extrapolated to individual countries as well as to the EU. If everybody adheres to those rules, the data and results would be of the highest quality. But PPP hesitancy needs to be overcome to make it work.

## ↳ How evidence generated through European collaborative efforts have helped define the RSV burden and prepare RSV surveillance in Europe

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**Eeva Broberg, ECDC**, summarised the history of RSV surveillance in Europe since the European Influenza Surveillance System (EISS) was created to illustrate how disease networks help prepare RSV surveillance in Europe. By 2017, 30 EU/EEA countries had implemented RSV detection in diagnostic laboratories; 27 of these had implemented a surveillance system for RSV. After the establishment of ECDC, EISS was coordinated by ECDC and became the European Influenza Surveillance Network (EISN). Influenza and RSV data from EISN are published on a weekly basis in the ECDC public surveillance atlas (and at the moment in [erviss.org](https://erviss.org)).

When RSV data are examined, it's evident that the RSV season starts, ends and peaks most years almost at the same times in Europe in pre-COVID-19 years. To study RSV more, between 2015 and 2017 the ECDC hosted expert meetings on burden of RSV disease and surveillance in Europe. It was concluded that the disease burden and epidemiological patterns in virus circulation globally are under-studied and very little was known on adults, especially older ones. Work thus started on drafting the case definition, surveillance objectives, and an implementation plan for RSV. The outcome of the 2017 ECDC Advisory Forum was to enhance the existing acute respiratory infection surveillance system and to explore possibilities to establish a sentinel hospital surveillance network and to use registry-based laboratory confirmations to support RSV surveillance

In 2018 WHO established RSV reference laboratories, which led to RSV external quality assessments of the laboratories across the world. Two Public-Private Partnerships (PPPs) (RESCEU and PROMISE) were also established. Major milestones of these projects achieved in 2023 include surveillance data collection and the launch of a surveillance bulletin; immunisation effectiveness protocols; and discussion of the handover of work to the ECDC. Ongoing work of the ECDC is to make RSV a notifiable disease in the EU/EEA countries; a Commission decision on this is pending.

The work of RESCEU and PROMISE has revealed that RSV has a high global disease burden, especially in children under five years old. However, better burden of disease estimates are needed in Europe, especially for the older adults. Collaborative projects and networks are crucial for developing common case definitions, continuous disease monitoring, and filling data gaps such as for burden of disease.

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**Delegate: Is the monitoring system for RSV equipped to look at resource use, hospitalisations, ICU use etc.?**

**Edoardo Colzani (ECDC):** There is some way to go, and it is country-specific. We are trying to work together to have more data available, not only from the sentinel system but also from ICUs. If RSV becomes a notifiable disease, this will put more pressure on countries to provide this kind of data.

## ↳ Importance of surveillance and need for data to monitor flu vaccination rates

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**George Kassianos**, *Royal College of General Practitioners, UK*, described the importance of influenza surveillance. It enables data gathering, analysis, interpretation, monitoring, reporting, evaluation and interpretation of patterns of progression. It increases knowledge, identifies high risk areas, supports healthcare planning, and enables comparisons between various parameters. The surveillance of influenza across the four nations in the UK was described, and how the UK Health Security Agency (UKHSA) collates an annual report and provides weekly influenza outputs during the influenza season, and throughout the year for COVID.

The UKHSA reports on clinical trials, vaccine coverage, monitoring safety and efficacy, disease surveillance, serological surveillance, mathematical modelling and economic analyses to the Joint Committee on Vaccinations and Immunisations (JCVI). The JCVI advises UK health departments on immunisations, makes recommendations concerning vaccination campaigns and schedules for the National Health Service (NHS) and also considers vaccine safety issues. If the JCVI advises the government, the government may or may not take their advice. But if the JCVI recommends the vaccination of children, the government has to carry it out, no matter the cost.

There is a need for influenza vaccination rate monitoring at all levels: GP practice, primary care, area and national. Data was shown explaining vaccination rates in primary care trusts and in schools, and amongst children, older adults and healthcare workers in the UK. Also presented were data collected by the Research & Surveillance Centre of the Royal College of General Practitioners in the UK, which works with 1956 general practices. In hospitals in England, a new surveillance system established in 2020 is Severe Acute Respiratory Infection (SARI) Watch. It reports the number of cases admitted to hospital and critical/IC units on a weekly basis.

Influenza vaccination rates vary widely across Europe. A recommendation is for the ECDC to send this data to heads of states, to encourage them to improve their country's vaccination performance. Engaging pharmacies is another way to increase vaccination rates.

For clinicians to practice good medicine and manage influenza vaccinations, data is extremely important. Primary care needs data to constantly improve vaccination rates and to call/recall patients for vaccination. Public health institutes need data, to monitor disease and vaccination rates. High vaccination rates are essential to reduce visits to GPs and admissions to hospitals. The publication of influenza vaccination rates stimulates discussion and leads to a healthy competition for higher influenza vaccination rates between medical centres and health regions.

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**Delegate:** Do you see inconsistencies within the data between regions in the UK? Could any differences be due to differences in funding?

**George Kassianos:** There are always going to be disparities between regions, sometimes due to finance. What's important is that each region can see how they are doing in comparison to other regions, which will hopefully inspire them to do better.

## ↳ Cost-effectiveness of monoclonal antibody and maternal immunisation against RSV

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**Xiao Li**, *University of Antwerp, Belgium*, showed the competitive landscape of RSV vaccine development, with a number of candidates going through clinical trials. Two candidates recently received market approval: one for a maternal vaccine; the other for a monoclonal antibody. In June, the JCVI issued RSV immunisation advice, and in August the CDC issued a recommendation for the use of Nirsevimab against RSV in infants and young children. In both recommendations, cost-effectiveness analysis was essential to inform their decisions.

RESCEU is aiming to develop robust evidence on RSV disease burden and economic impact across Europe and is engaging a multi-stakeholder community while providing the infrastructure to perform trials. One of its work packages is looking explicitly into the health economic element. The group at University of Antwerp developed a static cost-effectiveness model, and conducted a comparison of potential programmes. These were a year-round maternal vaccine at 90% coverage, and a monoclonal antibody (mAb) at 90% (year-round; seasonal; seasonal + catch-up). Also performed was exploratory analysis on 32 seasonal programmes in Norway. The framework and assumptions were described, including the perspective of the healthcare payer and the partial/full societal perspective. Inputs were from patient registries, literature reviews, and expert opinions. Limitations of the analysis were described.

Lessons learned from this multi-country analysis are that the choice between no programme, seasonal mAb, or seasonal mAb plus catch-up programme depends on a number of factors. These are the country; the intervention price; the interventions' characteristics such as efficacy and duration of protection; the willingness to pay values; the perspective taken; and several key input parameters, especially factors that influence results such as RSV hospitalisations and the quality-adjusted life year (QALY).

PROMISE continues to advance scientific knowledge on RSV to better inform public health strategies and support the development and introduction of novel immunisation tools and therapeutics.

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### **Delegate: How did you address the challenge of assessing the utilities in your questionnaires?**

**Xiao Li:** This is indeed very difficult. The generic questionnaire EQ-5D is not a perfect fit for the young infant, and neither is EQ-5D-Y appropriate to evaluate QALYs. We used EQ-5D as well as asking caregivers and parents. It's not the most robust approach and further work is needed. As to the utilities, these differ between countries but the same utility value can be used across Europe.



## ➤ Panel on influenza and RSV immunisation recommendations from a country perspective

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### **Chair: What is the situation in Spain regarding RSV immunisation?**

**Javier Diez-Domingo**, *Head of Vaccine Research Department, FISABIO*: The Ministry of Health has recommended the use of Nirsevimab for all infants, with a catch-up programme. We have no economic analysis yet; the recommendation is based on the impact of the disease, the expected impact of the programme, and the safety profile. As we had a lot of data on the impact of RSV, especially on hospitalisation, it was thought that immunisation was a must, no matter the price.

### **Chair: “No matter the price” is interesting, as the European Commission likes to put down standards. Should there be a threshold?**

**Xiao Li**: In some countries, such as the UK, standard thresholds exist, with rigid decision-making by the JCVI that uses health economics. Other countries have unofficial, approximate thresholds. It's difficult to set one threshold across Europe as each member state has a completely different healthcare system as well as different perspectives when looking at the disease burden and what is important for public health. The WHO has used GDP as the threshold, but has removed this approach in a recent guideline. It's important to incorporate cost-effectiveness into decisions, because if a programme is reimbursed, the money is coming from taxpayers.

### **Chair: Javier, what about adult immunisation? Is there sufficient data on burden among adults that you could also start immunisation without a cost-effectiveness analysis?**

**Javier Diez-Domingo**: No, we have little data on the impact of RSV in adults. We need to gather more data from Spain and elsewhere. Vaccine hesitancy may also play a role as people should now receive COVID, influenza, RSV and a pneumococcal vaccine; that's a lot of vaccines in a population that is not prepared nor educated to be vaccinated.

### **Chair: What is the UK doing with monoclonals and vaccines?**

**George Kassianos**: The JCVI has instructed the Department of Health and Social Care to formulate a policy for immunisation, and then to start planning. The JCVI says that it could be cost-effective to use seasonal plus catch-up year-long, active immunisation of neonates with monoclonal antibody. It could be cost-effective to use year-long passive vaccination of infants, and active vaccination of pregnant mothers. They say that either approach could work, but the decision is likely to come down to price. As regards older adults, a vaccine is already licensed in the UK for older adults that could be cost-effective to use in the 75s and over.

**Chair**: In Finland, the regulatory authority is conducting a health technology assessment on monoclonals, whereas the Public Health Institute is doing a cost-effectiveness analysis for the vaccines. There needs to be a dialogue between these two bodies, which will take time.

### **Question from the floor: In a maternal immunisation study, a risk of prematurity was found (although the causal relationship is not clear), as well as a 2.6% risk of incidence of fever. Should these be taken into account in the cost-effectiveness analysis when comparing maternal immunisation and monoclonal antibody?**

**Xiao Li**: If such a causal relationship is discovered, it will definitely be taken into account.

**Chair**: In the US, a product has already been licensed for maternal vaccinations, whereas in the EU, the EMA is still looking at the data as to this potential issue of prematurity.

**Delegate**: A baby with RSV is going to incur all kinds of costs, both direct medical and indirect costs such as those relating to the patient's personal support system. When conducting health economic outcome research or a health technology assessment, both direct and indirect costs must be taken into consideration.

**Xiao Li**: In most of our cost-effectiveness analyses we also take into account the full societal perspective, which covers these more indirect costs.

**Chair**: My conclusions are that good quality data is really needed; our public-private partnerships are worth exploring; and it's vital to work with modellers and health economists to arrive at the right conclusions for each specific programme.

# Best practices in vaccination programmes for risk groups and healthcare workers

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MONDAY 18 SEPTEMBER 2023  
16:15 - 17:50



CHAIR:

**Barbara Rath**

*Vaccine Safety Initiative, Germany*

## ↳ Best practices in improving vaccination uptake in hard-to-reach populations, the European perspective

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**Barbara Rath**, *Vaccine Safety Initiative, Germany*

COVID-19 clearly illustrated the imbalances in vaccine access around the world, which is why vaccine equity is a top priority for the United Nations and the WHO. The ImmuHubs Project aims to reduce transmission of vaccine-preventable diseases through an increased vaccination uptake among disadvantaged, isolated, and difficult to reach population groups. The project is co-funded by the European Health and Digital Executive Agency, and is coordinated by the Vaccine Safety Initiative (VIVI) based in Berlin, Germany. It is a partnership of nine institutions in six European countries from academia and the non-profit sector, as well as public health, professional associations, and civic society/patient representation.

ImmuHubs (innovative immunisation hubs) are physical locations where families can meet with vaccine experts. They are located in communities that face the greatest challenges in accessing vaccines and vaccine information, such as disenfranchised populations, isolated and closed communities, and ethnic cross-border populations. The goals are to achieve measurable increases in the willingness to vaccinate; greater accuracy in people's awareness of vaccination; and to identify gaps.

The main tools in ImmuHubs were described in detail. The VaccApp Chatbot is designed to empower parents and caregivers to become active partners in vaccine protection. Its user-friendly design invites lay people to take a closer look at their own vaccination record and the records of their children and family members. This allows individuals to gain clarity about their personal level of health protection and to keep track of immunisation visits. The HealthSurvey app helps people "on the move" keep track of their overall health status, while ScoreApp helps healthcare professionals, patients and caregivers score influenza, RSV and COVID-19 disease severity within 1-2 minutes to improve quality of care, vaccine effectiveness surveillance, pandemic preparedness, and antibiotic stewardship. Other key aspects of the ImmuHubs project are health literacy and citizen science.

The aim of SEKI (Strengthening Education and Knowledge on Immunisation) is to develop a shared European platform for vaccine-related education and training activities for healthcare workers and medical students. It features video content, podcasts, and other teaching formats that facilitate vaccine training and continuing medical education. It includes incentives to help vaccine-hesitant healthcare workers prioritise vaccine-related educational content.

## ↳ Best practices in forming multi-stakeholder immunisation coalitions, the USA perspective

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**Litjen (L.J) Tan**, *Immunize.org, USA*

Immunisation coalitions are a key factor for increasing vaccination coverage rates. They unify messages about vaccines, raise awareness about burden of diseases, inform immunisation policy considerations, and coordinate actions to improve National Immunisation Programme implementation. Participants can include individual health leaders, patient associations, civil societies, healthcare professional societies, health authorities, payers, vaccine manufacturers, and others. An immunisation coalition can be initiated by private stakeholders or through a public-private partnership, and can have a clear mission and a formalised governance and structure.

The coalition known as the National Adult and Influenza Immunization Summit is dedicated to addressing and resolving adult and influenza immunisation issues and improving the use of vaccines recommended by CDC's Advisory Committee on Immunization Practices. It started in 2000 with ten partners, and has grown to over 700 partners representing 140 public and private organisations. The coalition has supported mandatory healthcare work immunisations, resulting in influenza vaccination coverage rates of over 90% for healthcare professionals.

Autumn 2023 is likely to present unique challenges for immunisations, with the possibility to give four vaccines (influenza, COVID, RSV, pneumococcal). The National Adult and Influenza Immunization Summit brought together 60 national partners on August 2nd to discuss the best way to assist implementation of three of these vaccines. As a result, a number of tools have been made available: decision-making tools, a vaccination action plan, and a vaccination calendar.

Eight steps were described to successfully start, develop and sustain a National Immunisation Coalition: choose a strong coalition leader; define the initial problem to solve; convince organisations of the value of working together; select a diversity of members and partners; establish governance and structure; partner and collaborate with health authorities; find multiple sources of funding; and engage with the media.

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### **Delegate: How can a coalition build and maintain trust?**

**Litjen (L.J) Tan:** Engagement with the media in a unified and consistent way is extremely important, as is transparency on funding and the decision-making process. Also being clear on the science behind decisions taken, and communicating decisions clearly and effectively.

## ↳ Immunisation research and coalitions in LMICs

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**Marissa Malchione**, *Sabin Vaccine Institute*

The determinants of response readiness among influenza vaccination programmes in low to middle income countries (LMICs) were explored. Severe disparities exist in access to influenza vaccines: 50% of the world's population accesses only about 5% of the global supply of influenza vaccines each year. The Sabin Vaccine Institute therefore sought to identify factors that were driving influenza vaccine coverage in five case study LMICs: Albania, Bolivia, Brazil, South Africa and Thailand. The pre-existing influenza-specific evidence, investment, infrastructure and partnerships were explored to understand if and how they had affected each country's ability to respond during COVID-19. Two methods of data collection were used: a narrative review of the literature, structured around five determinant categories, and key informant interviews across a diverse spectrum of influenza vaccine programme perspectives.

Five themes emerged as consistent indicators of positive programme trajectories and response readiness. 1. Policy- and decision-makers rely on robust data to justify changes to policies such as increasing procurement and expansion of programme funding. It's therefore critical for Ministries of Health to invest in locally relevant surveillance and research, and in building a strong evidence base over time. 2. Alternative procurement solutions are needed, to ensure the availability of vaccines, and timely and affordable access. 3. Frontline healthcare workers drive vaccine uptake. 4. Community-tailored demand generation efforts boost vaccine confidence and uptake. 5. An investment in life course influenza vaccination infrastructure is really investment in broader pandemic preparedness.

The second part of the presentation dealt with some guiding principles of immunisation coalitions in the context of LMICs:

- Surface the global to local perspective, amplifying the voices of communities, especially the implementers in communities like health workers and those at the grassroots.
- Convene multi-sectoral and transdisciplinary stakeholders to leverage expertise and learn from those across sectors and disciplines.
- Embrace heterogeneity, not just between countries but also within countries, focusing on the high-risk, marginalised and hard-to-reach communities.
- Promote sustainability by aiming to create impact with longevity and implementing solutions that are community owned and appropriately tailored to them.

Finally, further aspects of Sabin's work in coalitions were introduced. These include the recently launched Global HPV Consortium, which aims to prevent Human Papilloma Virus infection and drive action towards the elimination of cervical cancer; the Secretariat for the Coalition Against Typhoid; and Sabin's Vaccination Acceptance Research Network.

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### **Chair: How do you engage with media representatives in your work?**

**Marissa Malchione:** Sabin's Immunisation Advocates programme enables us to train, empower and equip the media. We give them the tools and information they need so that they can accurately report on immunisation issues, rally the public to be excited about vaccination, and dispel vaccination myths and disinformation.

**Chair:** In this respect the Science Media Centre is also doing excellent work.

## ➤ The Spanish immunisation coalition: our path forward

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**Jaime Jesús Pérez-Martín**, *President of the Spanish Vaccinology Association (AEV)*

At the beginning of 2022 Spain was faced with the challenge of having an outdated immunisation schedule. This provided the motivation to create a coalition for vaccination. The Spanish Association of Vaccinology, created in 2000, brought together multiple actors and decision-makers in the field of vaccinology in Spain.

The Spanish immunisation coalition's work in changing the vaccination strategy means that Spain now has one of the most comprehensive immunisation schedules in the world. The only vaccines missing are one for Rotavirus, which is currently being evaluated, and an RSV vaccine for pregnant women and adults, which will be available in the coming months.

However, not all problems have disappeared. Currently, the main problem in Spain – as in many countries around the world – is the need for greater awareness about immunisation among adults, risk groups, and healthcare personnel. The coalition has therefore re-oriented its goals and is actively working with other scientific societies to make these target populations aware of the different vaccine recommendations for different patients.

## ➤ Audience debate

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**Delegate: If an influenza pandemic breaks out next week, in terms of vaccination uptake and infrastructure, are we in a better or worse position than before COVID-19?**

**Litjen (L.J) Tan:** The US has built a fairly solid post-COVID vaccination infrastructure that is ready for the next pandemic (possibly H5N1). However, it's fragile in that it depends on the US political environment and political will in the coming year. If the infrastructure is not supported politically, we will be in trouble.

**Chair:** From a European perspective, I am concerned that the ball has been dropped to some degree. It's therefore important for us as advocates of vaccination to use our political leverage to make sure that nobody in the EU thinks that the topic is in any way solved. A harmonised vaccination schedule across Europe would be a powerful tool. I would also like to see lay people encouraged to trigger conversations proactively about vaccination with their GPs.

**Chair: What is the situation in LMICs?**

**Marissa Malchione:** We are not where we want to be. We have done a good job at identifying the gaps, but not necessarily filling them. Great progress has been made on the WHO mRNA Technology Transfer Programme, recognising that we need to combat vaccine nationalism and that vaccines need to be manufactured closer to the places they are needed. But it will take time to ramp up. Vaccine hesitancy and distrust also need to be countered.

# Global health perspectives on acute respiratory virus disease and how to ensure an equitable response/access to vaccines and therapies

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WEDNESDAY 20 SEPTEMBER 2023  
10:45 - 12:20



CHAIR:

**Ann Moen**

*former Centers for Disease Control and Prevention,  
United States of America*

## ↳ Cascading failures in COVID-19 vaccine equity: an overview

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**David Addiss**, *Task Force for Global Health, USA*

Health equity is defined as the principle underlying a commitment to reduce and ultimately eliminate disparities in health and in its determinants. In early 2020, the global health community faced the greatest health equity tests ever. Major efforts were made to promote equitable distribution of COVID-19 vaccines at a global level, including the innovative and ambitious COVAX initiative. However, despite intensive efforts, the hoped for equity was not achieved.

Many of these efforts focused largely in the end of what has been called the equity deficit cascade. They dealt with allocation and delivery of vaccine once it was available at the last mile. This focus left out upstream factors that may have reduced the potential for equity downstream. These factors include public policy, intellectual property laws, trade agreements and barriers, and national policies for vaccine procurement, especially in high-income countries. Also left out were vaccine discovery, investments in science and manufacturing, and vaccine performance, along with aspects of vaccine development, management, manufacturing and scale-up.

All of the factors in the equity deficit cascade have a limited perspective on the whole. This creates a siloed approach in sectors, with little visibility on the systemic constraints and challenges faced in achieving equity. Instead, a systems approach to understanding public health and its ethical challenges is necessary. It involves looking at decisions that are made at each step in the equity deficit cascade:

- Is equity valued or even considered? Are decision-makers aware of the downstream equity implications of their decisions?
- What are the incentives that shaped those decisions, interests and motivations, both personal and professional?
- Assuming that decision-makers are interested in equity, what constraints do they face – personal, organisational, legal, regulatory, or systemic – that could limit their options?
- What are the justifications? What is the rationale constructed for decisions? Why are they not necessarily in favour of equity?

An exploration of such issues could hold lessons for vaccine equity, health equity, and equity in general. A systems approach is therefore needed, to move beyond equity as an abstract principle to embedding it and realising it in programmes.

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**Chair:** How would you go about ensuring we don't just focus on the last mile?

**David Addiss:** It would be good to have access to decision-makers at each point in the cascade, to engage them in an inquiry, understand their constraints and challenges, and discover where along the cascade could we get the most impact if we were able to adjust incentives and other aspects. Maybe a Lancet Commission or another group could convene such a high-level group.



## ↳ Supporting equitable capacity building in countries to support delivery of vaccines and therapeutics

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**Alfred Douba**, *Félix Houphouët-Boigny University, Côte d'Ivoire*

The steps necessary in the delivery of vaccines were described, along with the problems identified during each stage, mainly in Côte d'Ivoire. Problems identified include the delivery of vaccines after working hours, even at night; insufficiency of positive storage capacity, ultra-cold chain equipment, and equipment for vaccine delivery at negative temperature at the regional storage unit; insufficiency of storage capacity at the health district storage unit; and a lack of coolers and vaccine carriers at the health facility storage unit. Proposed solutions include better communication of delivery hours to storage teams; making multi-dose vaccine vials; renewing refrigerated vehicles; and acquiring vehicles for vaccines delivery at negative temperature. It is also necessary to extend vaccine storage capacity; increase delivery frequency of vaccine; and acquire sufficient coolers and vaccine carriers.

The vaccine delivery problem could be solved through collaboration between countries and partners. Joint planning is necessary to identify problems that can be solved in the short, medium, and long terms. Monitoring and evaluation are necessary to make sure solutions are implemented. Strong leadership from the Ministry of Health and beyond the government is needed for compliance with commitments.

At the same time, it's essential to sustain the gains made during the COVID-19 pandemic. Many countries developed new cold chain capacities, data systems and innovative delivery strategies. Countries should catalogue these gains and develop a plan to maintain the new systems and equipment by integrating them into routine immunisation programmes with routine maintenance. Countries should also assess weaknesses in their delivery systems and develop preparedness plans to target upgrades to their systems.

The final point is the need to support equity in development of vaccine delivery capacity. Vaccine delivery in an emergency heavily relies on currently available capacities. Global partners and countries therefore need to use the lessons learned from the COVID-19 pandemic to support the development of stronger vaccination programmes and the delivery system for routine immunisation programmes. They should also focus on sustaining gains, especially the support of cold chain equipment and delivery vehicle maintenance programmes; integrating gains in data systems into routine programmes; planning for a future surge; and supporting programmes to address hesitancy and demand for routine immunisations.

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### **Chair:** How would you suggest that countries begin working together to make improvements?

**Alfred Douba:** Countries and partners need to sit together and make a plan to improve capacity within countries. However, the agenda of partners is often not the same as the country's needs. If they could sit together and build a joint agenda that would be a useful starting point.

## ↳ Equitable production capacity in countries with lessons from GAP and the mRNA vaccine hub project

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**Christopher Chadwick**, WHO

The Global Action Plan (GAP) for influenza vaccines was established in response to the threat of H5N1. It was a 10-year strategy from 2006 to 2016 with the goal of ensuring enough vaccines to immunise 70% of the global population with two doses (10 billion doses). This would be achieved by increasing the evidence-based seasonal vaccine use; expanding vaccine production and the related regulatory capacity within the countries; and conducting further R&D for better vaccines. It involved setting up a Technology Transfer Initiative; providing funding to WHO by BARDA; and providing sub-grants and technical assistance to 14 manufacturers in LMICs.

A framework was used to assess the effectiveness of the technology transfer. Called the contingent effectiveness model, it postulates that five determinants – transfer recipient, transfer supplier, transfer object, transfer medium, and demand environment – are interconnected and all play a role in determining how effective is tech transfer. Six further criteria are then used to assess the effectiveness: out the door; market impact; opportunity cost; political reward; human capital; and public value. These were described in detail, and how they were applied to the GAP grantees to show that the project was generally a success.

The mRNA technology transfer programme has a similar approach and mechanism to GAP. Its objectives are to establish or enhance sustainable mRNA vaccine manufacturing capacity in regions with no or limited capacity, and to build human capital for regulation and bio manufacturing in LMICs. The programme started in 2021 through an expression of interest. The first launch meeting of the entire network was held in April 2023.

It's important that lessons learned from GAP are applied to mRNA technology transfer. For example, it was learned that for tech transfer, establishing vaccine production capacity is not only about increasing the supply; there is the demand aspect too. So political will, whole-of-government and multi-sectoral coordination and collaboration are necessary. Tech transfer is not always a quick fix for increasing access to vaccines during a pandemic; it's time- and resource-intensive. So long-term planning, support, trust and vision are required. Moreover, sustainability can't be driven by global priorities alone. Pandemic production capacity can only be sustained if it's made for seasonal vaccines, which is not necessarily the case for every country. Sustainability during the inter-pandemic period should be driven by national/regional priorities and disease burden, and should be considered throughout the entirety of the project.

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**Delegate:** How did you factor into the mRNA technology transfer that mRNA vaccines may not prove to be the technology to use for influenza vaccines?

**Christopher Chadwick:** An advisory committee on product development for vaccines assessed whether to go for mRNA only. Based upon their advice we will potentially look at other platforms along the way. If we don't use mRNA vaccines we will have built up human capital and some production facilities that could be used for something else.

**Delegate:** To protect people against infectious disease, you need a vaccine, and you need the demand and the uptake, which was one of the objectives of the GAP programme. Can you give a flavour of the demand and the uptake issues in the countries where you have successfully implemented the tech transfer?

**Christopher Chadwick:** Nearly 100% of the output from Bio-Manguinhos in Brazil is secured by the government. The BiologicalE Institute of India is arguably one of the most successful vaccine manufacturers in the world, but India has no national influenza vaccination policy so there's very little demand. Institut Torlak in Serbia has a product that was licensed in 2020 and the government has procured a little, but there are no preferential procurement possibilities.

## ↳ Efficiency and equity in genomic surveillance of respiratory viruses

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**Simon De Jong**, *Amsterdam University Medical Center*

Genomic surveillance is a critical component of public health preparedness and response, particularly for identifying and detecting novel variant viruses. Due to its importance, sequencing efforts have increased hugely over the last decades. In 2022, approximately seven million sequences were deposited in GenBank. However, respiratory virus genomic surveillance infrastructure is extremely unequally distributed globally, with high rates in Europe and the US, and low rates in Africa. Furthermore, 50% of global sequencing output is accounted for by only 5% of the global population. On the other hand, 50% of the global population presents less than 1% of global sequencing output. Given the very wide range of observed sequencing rates for SARS-CoV-2, the question was asked what are meaningful minimum sequencing targets for effective and efficient genomic surveillance, and what are the functional upper bounds?

This study explicitly looked at the concept of diminishing returns by quantifying for each individual sequencing rate, how much variant detection could be sped up, for example by increasing by one sequencing rate per million people per week.

This was done by using a global epidemic model simulating 10,000 instances of global variant spread. Using epidemic simulations, country-specific SARS-CoV-2 sequencing rates and turnaround times were applied to when and where in each simulation the variant would first be detected. This led to the finding that two sequences per million per week should be sequenced at a turnaround time of 14 days. This would result in a 7% increase in sequencing output globally.

The study concluded that relatively small increases in global sequencing output in the right places can substantially improve respiratory virus genomic surveillance in ways that even large increases in places with established surveillance infrastructure cannot. For countries that already possess strong surveillance capacity locally, it is likely that investments in this global minimum surveillance capacity will yield greater public health impacts and further increases in sequencing capacity locally. This suggests that post-pandemic, establishing global surveillance capacity – even at basic levels – is the frontier, and should be the focus of activities in this field.

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### **Delegate: What are the components of this turnaround time of two weeks?**

**Simon De Jong:** It encapsulates the whole process from obtaining the sample from the patient, getting it to a sequencing lab, and sharing the sequence results. Turnaround time needs to be as short as possible, because reductions in turnaround time are often more efficient than increases in sequencing rate. Two weeks is a feasible target, but it's a guideline and is country dependent.

### **Chair: Did the model take into consideration the geographic distribution of the sequences?**

**Simon De Jong:** Geographical representation is incredibly important but it is not yet incorporated in this model. When dealing with a large country, it is important to consider whether the sequences should come from just the capital or every region or a number of regions.

# Intervention strategies for the management of ARVI

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TUESDAY 19 SEPTEMBER 2023  
14:10 - 15:45



CHAIR:

**Nabil Jamshed**

*European Health Management Association (EHMA),  
United Kingdom*

## ↳ The diagnostic testing requirements for efficient mass distribution and use of antivirals

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**Alvin Han**, *University of Amsterdam*

Antivirals such as Oseltamivir, Zanamivir and Baloxavir are important treatments to lower the likelihood of severe disease outcomes for influenza, RSV, and COVID-19. Because of their effects, efficacy and ease of oral dosing, oral antivirals have the potential to lower disease burden substantially at the population level. A variety of studies have estimated considerable reductions in infections and severe disease outcomes, provided these antivirals can be distributed to between 20% and 50% of symptomatic cases. However, these studies often overlook the testing requirements to support the distribution of these antivirals. A study was conducted to calculate how many tests are needed to diagnose between 20% and 50% of symptomatic cases. The example taken was for the spread of Omicron BA.1 in the EU between December 2021 and March 2022, when there were around 70 million cases. The average test positivity rate during this period of time was 20%. Using simple statistical theory it was found that to detect 20% of these cases, at least 80 to 400 million tests need to be conducted during this period of time. To detect more cases, even more testing would need to be done.

In reality, in some parts of the EU, tens of thousands of people were being tested per day. But in many LMICs less than 20 tests per 100,000 persons per day were being conducted; a number which is currently less than 10 tests per 100,000 people per day.

A number of other scenarios were studied. The overall conclusion was that antivirals are unlikely to reduce SARS-CoV-2 transmissions at the population level, simply because of the way they are currently being distributed. Most countries are currently testing too little for any meaningful population-level test-and-treat programmes. Substantial investments are necessary to increase testing rates and make sure that people get access to diagnostics, to encourage them to come forward to test early when they are infected.

In addition, ideally the testing and administration of the antiviral should occur in the same clinical interaction. Moreover, increasing vaccination coverage is likely to be more effective if the aim is to lower disease burden during these times. The results are based on COVID-19 but similar conclusions could be expected with influenza antivirals.

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**Chair:** What might be the optimum strategy to reach the maximum coverage of population when combining the antiviral with another treatment, such as vaccines?

**Alvin Han:** A number of strategies are possible. One would be to only test high-risk individuals. Another is to make sure that high-risk individuals are treated once a test comes back positive. The fundamental issue is still the willingness to test in an endemic post-emergency phase setting. That is the crux of the issue; public health agencies need to encourage people to get tested.

## ➤ The state-of-the-art of antivirals for Acute Respiratory Virus Infections, their current role and potential

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**Michael Ison**, *National Institute of Allergy and Infectious Diseases, USA*

A number of agents are available for the treatment of influenza: M2 ion channel inhibitors, neuraminidase inhibitors, polymerase inhibitors, and (potentially) antibody-based therapies. The M2 inhibitors are generally not used because of widespread circulation of resistance among seasonal viruses. Four approved neuraminidase inhibitors are available. Early therapy with Oseltamivir within the first 48 hours in otherwise previously healthy patients results in about a one-day improvement of clinical recovery from influenza. The earlier the therapy, the greater the benefit, as well as a markedly shorter length of hospitalisation and a much lower rate of mortality. The wider availability of more rapid testing will allow these benefits to be achieved.

Immunocompromised patients are also likely to achieve clinical benefit from therapy beyond 48 hours because of higher viral load and longer shedding. However, they have a higher risk of developing resistance over the course of their therapy. A trial demonstrated a higher dose of Oseltamivir could help reduce the emergence of resistance in these patients. Another class of medications – polymerase inhibitors such as Baloxavir – is available for the treatment of outpatients for influenza. Either Baloxavir or Oseltamivir result in more rapid clearance of Influenza A virus and faster recovery of symptoms. For influenza B, Baloxavir was found to be more efficacious than Oseltamivir.

A combination therapy of for example Baloxavir plus Oseltamivir for hospitalised patients demonstrated a much more rapid clearance of virus but no obvious clinical benefit in terms of clinical recovery. This is an area to be researched further. The real benefit of combination therapy was a reduction in resistance.

Clear guidelines exist for appropriate treatment of outpatients and inpatients with COVID-19. These generally recommend antiviral therapy early, within the first five days. In the US, Ritonavir-boosted Nirmatrelvir or Remdesivir are preferred. Remdesivir is hard to deliver as it requires IV. Molnupiravir is considered second line therapy, although data suggests similar benefits.

Hospitalised patients are far more complex and could benefit more from but host-directed therapies than from antivirals. This highlights the need for further research to better understand biomarkers that can help predict when antivirals are helpful and when immune modulators are more helpful.

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**Delegate: Has a study evaluated the treatment of severe co-infections involving combinations of antivirals to treat both influenza and COVID-19?**

**Michael Ison:** No large studies, but I think the guidance would be to treat both infections. With most of the therapies, there should not be any significant drug-drug interactions.

**Delegate: What is the optimal therapy for high-risk patients (stem cell transplant, lung transplant etc.), for severe influenza that could lead to pneumonia?**

**Michael Ison:** A combination therapy of Baloxavir and Oseltamivir; perhaps a higher dose of Oseltamivir for the highest risk populations. If the patient had influenza B, then definitely Baloxavir. If the patient is sick and in hospital, I probably would give serial dose testing.

**Delegate: For immunocompromised, hospitalised patients with pneumonia, do you recommend a PCR test if they are being treated for a long time?**

**Michael Ison:** The US IDSA CDC guidelines recommend longer courses in immunocompromised patients. I typically start with 10 days of treatment. On day 9 I would test. If it's still positive, particularly if the patient is symptomatic, I would give an additional dose of Oseltamivir.

## ↳ Health policy and social implications of the vaccination campaign aimed at preventing Acute Respiratory Virus Infections outbreaks

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**Federica Morandi**, *Catholic University Sacro Cuore, Italy*

Research was conducted to analyse how the different strategies adopted by Italian regional healthcare systems dealt with the spread of COVID-19, and what are the consequences of COVID-19 in terms of equity of access to health services. The different vaccination strategies were also analysed, as well as the effect of the pandemic on the healthcare workforce.

What was highly noticeable was that the regions in Italy did not respond in the same way. Some regions very promptly and properly managed the pandemic right from the start. Others were unprepared, lacked resources, and were unable to take actions in a timely or appropriate way. Despite these challenges, four times in Italy more than 700,000 vaccine administrations were given in one day.

Some conclusions from the research were drawn. At a policy level, the organisational models adopted by the regional governments during the emergency and their consequent response depend both on past decisions and strategies adopted before the pandemic. Anti-fragile behaviour (the ability of an organisation to actually become stronger under stress) can make regional healthcare systems not just stronger. Although the number of healthcare workers increased during the pandemic, thus fixing problematic situations, new and different strategies will be necessary to make the healthcare system more prepared for new and unknown events. The pandemic has allowed the development of innovations in a very short time and it is now necessary to adopt a model to systematically share knowledge and ensure sustainability for future crisis preparedness. At a social level, it is fundamental that communication strategies about vaccinations are well managed in order to avoid hesitancy. The effect of COVID-19 vaccination had positive effects in terms of spillover effect.

## ↳ Round table discussion

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Speakers plus **Marco Goeijenbier**, *ESWI*

### **Marco Goeijenbier: What could be the potential role for antivirals in small outbreaks in nursing homes?**

**Michael Ison:** We have a lot of observational data and a few prospective studies in this area. Nursing home patients tend to be frail, elderly, and with a lot of comorbid conditions. Antivirals can directly benefit these patients by reducing acute morbidity and mortality, and can also prevent onward transmission. Treating the index patient may decrease the amount of shedding. Providing prophylaxis or preventive therapy across a unit to prevent transmission or treat patients early can markedly improve outcomes in those patients.

### **Marco Goeijenbier: Would prophylaxis be only for patients, or for nursing staff too?**

**Michael Ison:** We see with multiple outbreaks of COVID-19 and influenza that it's often the staff who are bringing the infection into the facility. Staff need to be screened when they enter a facility and they need use face masks to protect themselves and residents when respiratory virus is circulating in the community. The same applies to hospitals. We conducted a 10-year study in a hospital and found that 17% of influenza cases among hospitalised patients were nosocomial.

### **Marco Goeijenbier: What is the vaccination willingness among healthcare workers in Italy?**

**Federica Morandi:** After the preliminary period of voluntary vaccination – which was already successful – we introduced compulsory vaccination for healthcare workers. The number of healthcare workers who resisted vaccination was extremely low. A social media campaign was conducted to show nurses and physicians getting their jabs in hospitals. This helped to stimulate vaccination among the general population.

### **Chair: A pandemic doesn't happen straightaway. It starts with an outbreak that leads to an endemic that becomes a pandemic. How might machine learning and data modelling help?**

**Michael Ison:** At the beginning of an outbreak, very strong surveillance is essential, but AI may not be much help at that point. Cases need to be detected to enable quarantine and treatment relatively early. After getting that surveillance data, data modelling is incredibly helpful in policymaking as it shows what might happen if nothing is done.

**Alvin Han:** Early surveillance is vital for data modelling; the more data, the better the model, and the better the public health resources can be targeted at combatting the pandemic. Infectious disease modelling also needs to take socio-economic inequalities into account, which currently it does not.

### **Chair: How can vaccine hesitancy be countered?**

**Federica Morandi:** Clear communication is key. In Italy, a lot of fake news was originating from people with no scientific background. We can counter this with strong, clear, scientific communication on the components of a vaccine, the risk issues, the safety etc. in a way that takes into consideration people's cultural, religious, and personal requirements.

### **Chair: What can we do better in the community as regards modelling and clinical trials?**

**Michael Ison:** From a clinical trial perspective, the pandemic has changed the way we do research. We do more fully remote trials, to the extent that the doctor who is doing the study never actually physically sees the patients. It's not possible for every study but can help to engage people who otherwise would not normally come to a clinic. However, it leaves some under-represented populations even more under-represented because they might not have the internet access, the language, the competence etc.



**Alvin Han:** From the modelling side we have learned that people do not behave homogenously. In the models we make, it's easy to make broad assumptions which may not reflect how people interact. The collection of micro data with more specific information on where people live and work, their health, their GP visits etc. can provide data with an unprecedented level of resolution that is extremely helpful for modellers to understand both the contact networks that exist within populations, and the dynamics of the spread of disease. This is important because respiratory illnesses are spread by people coming into contact with each other.

**Michael Ison:** Where the modelling world has been very successful is how the models have been accessible to the general public. In March 2020, people didn't understand epi curves or the science behind modelling; now everyone's an epidemiologist! This of course creates a challenge for communicators, because there may be caveats within the model that the general public may not appreciate, or projections may not materialise. Helping people understand what we can and can't do with modelling is still an area for further education.

**Marco Goeijenbier: It's great to talk about vaccination and antivirals but items such as PPE and masks can significantly affect testing and an outbreak. How can these be optimised?**

**Michael Ison:** The fact that the media is still debating face masks is quite troubling and is confusing the general public. We have to do a better job at communication, although it's going to be difficult to generate the data to prove to the public that masks are helpful. We also have to do better at countering misinformation.

**Delegate: Some healthcare workers suffered from Long -COVID have never gone back to work. Data from the UK suggests that 30% of doctors who caught COVID in their practices have never returned to work. In addition to PPE, masks and antivirals, how can we help our healthcare workers?**

**Federica Morandi:** We have to invest more in healthcare workers. This means investing in the design of new organisational structures and positions. It means investing more in training – not only technical training but also for the behavioural aspects, to increase their competencies in terms of behavioural relationships. And we have to make healthcare roles more interesting, safer, and financially more attractive.

# Communication: raising awareness on the burden of disease

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TUESDAY 19 SEPTEMBER 2023  
16:15 - 18:00



CHAIR:

**Stefania Maggi**

*ESWI Board Member,  
National Research Council of Italy, Italy*

## ↳ Communication techniques and strategies

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**Emilie Karafillakis**, *Vaccine Confidence Project, United Kingdom*

Strong, clear communication on the benefits of vaccination to the general public and specifically healthcare professionals is vital. However, it's not just about risk and benefits. While it's good to communicate on how safe and effective vaccines are, a lot of other factors have to be taken into consideration, such as misinformation, trust, emotions, fears, social identity, social norms, and ideologies, all of which need to be integrated into any communication strategy that tries to improve confidence in vaccination.

Governmental communication is vital, but can backfire if done improperly. It must be credible, timely and accurate. It should express empathy and show respect, and promote direct positive actions. Various materials and channels to reach the public were described, along with the importance of finding the right tool for the right audience, such as knowing which social media platforms are used by specific communities or age groups. Dealing with the media is equally important, which means engaging with the media from the start, and developing strong and close cooperation between authorities, scientists and journalists. Online communication material has its own specific requirements which have to be addressed.

Healthcare professionals also need to be targeted by communication strategies, and given the right tools to communicate about vaccines. Unfortunately, training for healthcare professionals on vaccination topics and on communication skills is often lacking. Communication techniques for healthcare professionals facing hesitant patients include balancing scientific facts with personal stories; being respectful and listening to their fears; gaining patients' trust; and being aware that correcting myths does not always work. Two further approaches were described that could improve confidence in consultations with healthcare professionals. One is to be presumptive by specifically initiating the vaccine discussion and vaccination plan. This can be more effective than having open questions. The second is a four-step motivational interviewing process. This is a quick way for healthcare professionals to use behavioural techniques to try to convince people in the long term. It involves establishing a relationship of trust; understanding the specific determinant of a person's hesitation; offering the appropriate information; and respecting the autonomy of the person.

In conclusion, the majority of people will get vaccinated and vaccinate their children, and should be supported as they can be powerful advocates alongside health providers. Any communication strategies should think about how to engage the public. Understanding the specific reason for concerns at a local level is necessary to address concerns locally so that communication strategies can be targeted at local communities. The messaging and the messages matter; narratives are powerful tools to communicate the risks of not vaccinating. What works and what does not work needs to be tracked so that best practices and lessons learned can be shared.

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**Chair: With older patients, is it better to emphasise the risk of not vaccinating or the benefits of vaccination?**

**Emilie Karafillakis:** As most people are concerned about the risk aspects, it can be helpful to use that language, but without going into the language of fear, which could cause unnecessary stress and the potential of a negative reaction.

**Delegate: Should we do away entirely with the term “vaccine hesitancy” but talk more of “vaccine acceptance”?**

**Emilie Karafillakis:** Yes, which is why our group is called the vaccine confidence project!

**Delegate: How can we communicate more effectively to ethnic and deprived communities, which traditionally have extremely low vaccination rates?**

**Emilie Karafillakis:** Ethnic minority groups certainly need to be better targeted by specific communication strategies. It starts with acknowledging the challenge, then identifying these pockets, understanding the specific concerns of these communities, and addressing them with targeted communication. A lot of work needs to be done as mistakes have been made, and trust needs to be (re)established.

**Delegate:** Many GPs are already overburdened and simply do not have the time to spend on some of the actions you suggest.

**Emilie Karafillakis:** We are aware that GPs often don't have the time to discuss vaccination issues in depth, but that does not mean that the topic should not be addressed. The motivational interviewing technique is specifically designed to be conducted within a standard 10-minute consultation. It's important to find opportunities to integrate these discussions in a consultation. In parallel, more could be done by training healthcare professionals in vaccination issues right from the start so that it becomes a naturally addressed topic in consultations.

## ➤ Perception and cognitive aspects of raising awareness

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**Frederic Boudier**, *University of Stavanger, Norway*

The science of risk perception, or understanding how people relate to risks, was described. One of the big discoveries was that people do not relate to risk as the statistics might suggest. This is validated by 60 years of research and several replication studies. Moreover, there is more to disease perception than the disease itself.

The results of a study to understand the variability of risk preferences for influenza vaccination among older adults pre- and post-COVID-19 were presented. It was found that influenza is generally perceived as a moderate risk, although this risk increases with age. National variations on mitigation measures were found to vary considerably, while attention needs to challenge ingrained perceptions. Post-COVID-19, influenza is now perceived as less severe than COVID-19, which points to a need to raise influenza awareness. As to the perception of vaccines, an increase in the desirability of vaccination was observed, as well as a decrease in the perception of potential side-effects and possible interactions with drugs or other vaccines.

A small-scale project in Norway and Pakistan was conducted to assess the views of healthcare professionals, looking at a number of issues including how they view the barriers that may prevent people from taking the COVID-19 vaccines, and the challenges that healthcare professionals faced in communicating COVID-19 vaccination. In both countries, healthcare professionals strongly felt that they needed more reliable information to provide to patients as they are aware of their powerful position to give advice and potentially influence people's decision making. The main distinction between the two countries came down to the mechanisms of what makes people want or not want the vaccine, and how misinformation is generated and spread. Healthcare professionals in Pakistan put a greater emphasis on misconceptions and "ignorance" than in Norway, where the media is predominantly blamed.

It was concluded that this branch of science can generate valuable evidence on perception and cognition that can be of great benefit. However, it is context based: the socio-economic, national and political contexts matter, and need to be routinely studied. It's also essential to consider respiratory viruses in an integrated way, rather than consider influenza and COVID-19 in isolation. More attention needs to be paid to the role of healthcare professionals in risk communication, to raise awareness and correct misconceptions. In this regard, healthcare professionals could make more use of science-informed risk communication such as mental models. A final message is that more training and education on risk communication is needed..

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**Delegate: If healthcare professionals have such an important role in communication, has there ever been an overarching effort to provide the circumstances in which they can actually take the necessary time – and receive the necessary reimbursement – to speak with their patients about vaccination?**

**Frederic Boudier:** There are ways that our field can help healthcare professionals even in their challenging daily contexts, such as mental models, and communicating via leaflets, apps and other formats. In some countries patients could have greater and closer contact with pharmacists for these kinds of questions. More systematic research and hands-on thinking is necessary.

**Delegate: Is there a role for randomised controlled trials and trialling interventions to improve communication?**

**Frederic Boudier:** Trials are not my area of expertise, but I am aware that fewer people are keen to take part in trials these days, which maybe points to a trust issue. From a risk communication perspective my thoughts would be how to re-engage and regenerate trust in that process.

## ↳ Facts and fallacies about vaccination, an independent information document about vaccination in healthcare

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**Ted van Essen**, *ESWI Board Member, The Netherlands*

Research conducted in the 1990s highlighted some of the problems that the general public has with vaccination. Thirty years later, research is still throwing up similar issues, and has also shown that among nurses in the Netherlands the proportion of anti-vaxxers is higher than in any other group. One reason is the lack of education on vaccination received by nurses in the Netherlands.

The vaccination rates in the Netherlands since the 1980s were charted, along with the work conducted by the Dutch Influenza Foundation to improve the rates with targeted campaigns. These have generally been successful, and the foundation's mission has changed over the years to encompass other respiratory diseases. Its latest campaign is called "Winter Fit". The foundation is also targeting healthcare professionals, which currently have an extremely low uptake of vaccination.

The latest document produced by the Dutch Influenza Foundation was described. Entitled "Facts and Fallacies about Vaccination" it acknowledges the actual questions that people have on vaccination. It was pointed out that just because people have questions, that doesn't make them anti-vaxxers; they simply have questions and are open to receive the answers. Examples of the questions raised in the internet document were described (follow <https://influenzastichting.nl/facts-and-fallacies-about-vaccination/>.) The basic English text is also available to download from the foundation's website for use in other countries.

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**Delegate:** The group that I find most difficult to convince about vaccine safety are pregnant women; they are more hesitant to vaccinate themselves than their newborn babies. This might be because influenza and COVID vaccines were initially forbidden for pregnant women before being allowed. Do you have any tips?

**Ted van Essen:** The book has a question about pregnancy. Education is key, but unfortunately midwives in the Netherlands don't get a single hour of vaccinology in their education. Hopefully the availability of Pertussis and RSV vaccines that are specifically recommended for pregnant women will change the overall view of vaccines for pregnant women.

## ↳ Panel and audience discussion

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### **Chair: What practical steps are there, going forward?**

**Frederic Boudier:** We need to generate more evidence around communication, which could make a big impact. Moreover, the role of the healthcare professional is very important. From a government perspective, it's not just about making a top-down campaign. We have to understand more about the dynamics of perception and relationships in society.

**Emilie Karafillakis:** It's good to remind ourselves that communication is not a magic bullet to solve low vaccination rates. Moreover, vaccine decision-making isn't always about vaccine benefits and risks. The COVID-19 pandemic has shown how government mandates and restrictions on individual liberties can significantly affect mental health, particularly of young people, and also affected people's trust in governments and in vaccines by extension. All of these aspects need to be taken into account when developing strategies.

### **Delegate: Has your group looked at any tactics that work to dispel vaccination myths?**

**Emilie Karafillakis:** Yes, tools have been developed that aim to respond positively to these myths but without repeating them (which can reinforce rather than dispel myths). One technique is to divert attention away from the myth to talk about the positives of vaccine safety, for example. At the same time, by not talking about a myth, you don't want to appear you are not taking someone's concerns seriously. There's a delicate balance to reach.

**Ted van Essen:** I can understand this suggestion not to address a myth directly. However, in the case of the myth that vaccination causes autism I think we have to strongly and directly refute this with the evidence. We have found a strong correlation between fiercely denying this myth by giving people the facts, with a positive uptake of the COVID-19 vaccine.

**Emilie Karafillakis:** Yes, every situation has different needs, and in certain situations it might be more beneficial to talk directly about a specific myth to dispel the untruths.

# RSV: looking towards the future

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TUESDAY 19 SEPTEMBER 2023

10:45 - 12:20



CHAIRS:

**Peter Openshaw**

*ESWI Board member, Imperial College London,  
United Kingdom*



**Stefania Maggi**

*ESWI Board Member, National Research Council  
of Italy, Italy*



## ↳ How 8 years of public-private partnerships have prepared Europe for RSV immunisation

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**Charlotte Vernhes**, *Sanofi, France*

Innovative Medicines Initiative (IMI) and IHI (Innovative Health Initiative) – the largest healthcare public-private partnership – have a budget of 7.9 billion euro. IMI1 was established in 2008, followed in 2014 by IMI2. Currently their work has been taken over by IHI, which has a much broader cross-sectoral scope beyond pharmaceutical companies to incorporate medical technologies and diagnostics.

In terms of RSV, in 2015 no prophylaxis existed for older adult or for all infants - only for high-risk infants, and the burden outside high-risk children was virtually unknown. Today three new immunisation solutions – one monoclonal antibody and two vaccines – are approved in the EU for RSV prevention in infants, pregnant women, and older adults.

During the past eight years, the [RESCEU](#) and [PROMISE](#) projects have combined the efforts of 22 partners from eight countries to prepare Europe for the arrival of these immunisation solutions. It is a great example of collaboration, featuring vaccine companies (including competitors), three medical centres, national health services, five universities, five research institutes, two public health institutes, a patient representative network and a project management organisation.

The work has included documenting the impact of COVID-19 on RSV epidemiology; harmonising methods and approaches to detect and report RSV activity in Europe; working on standardised safety and effectiveness endpoints and a generic protocol for post-marketing evaluation; defining a novel score for RSV infections in young children; assessing the impact of RSV on asthma; and validating some of the biomarker candidates identified.

To demonstrate the end-to-end impact of these projects, the five key building blocks of this work were described in detail. 1. An interdisciplinary European network of RSV experts, including early career researchers and patient representatives, to pool resources and expertise to tackle RSV. 2. Furthering the understanding of RSV, associated disease and biomarkers. 3. Characterising the true burden and cost of RSV disease. 4. Setting the stage for Europe-wide RSV surveillance. 5. Raising RSV disease awareness.

There is still much work to be done. This includes documenting the burden of RSV in specific populations; expanding RSV diagnostic capacity in clinical practice; strengthening RSV surveillance; planning for new preventive options; and achieving immunisation targets.

## ↳ Epidemiology and surveillance

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**John Paget**, *ESWI Associate Member, the Netherlands*

RSV is the most common cause of acute lower respiratory infections in children, infecting 60-70% of children before the age of one year. Although less studied in adults, it is still an important (and under-detected) respiratory infection in this group, particularly older adults. Seasonality is similar to that of influenza.

Burden of disease data is more readily available from the US, where RSV leads to up to 80,000 hospitalisations each year among children younger than five years, and up to 160,000 hospitalisations per year among adults 65 years and older. Estimates for Europe indicate that an average of one in every 100 children aged 0-4 years is hospitalised due to RSV every year in the EU, and that 92% of 158,000 adult hospitalisations per year in the EU are in the 65+ age group. Estimates of RSV disease among children in primary care in the EU are being calculated, as are mortality figures.

The WHO Global Influenza Surveillance and Response System (GISRS) has recently been expanded to include RSV and other respiratory pathogens, and renamed GISRS Plus. Plans are in progress in Europe to publish an integrated surveillance bulletin for COVID-19, influenza and RSV. In addition, a PROMISE RSV Surveillance Bulletin is to appear every two weeks to provide data on RSV only, including types and age distribution.

Overall, there is a general lack of burden of disease estimates for RSV (and influenza) in the EU as a whole and in individual member states. Work is being done to plug these gaps. The primary care impact is important and a wealth of data will be coming out soon, for example from the ComNet and ComEU projects. Hospitalisation estimates are now becoming available, but more work needs to be done on mortality estimates in Europe.

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**Delegate:** Being able to identify cases in older adults is difficult, with a possible problem with PCR tests, is that true?

**Peter Openshaw:** Yes, in our Chronic Obstructive Pulmonary Disease (COPD) cohort study, we missed a number of cases by relying solely on PCR. When we looked serologically, we could see a lot of blips, which were quite transient but which aligned with symptomatic episodes of RSV. The impact of vaccination could therefore be greater than current estimates based on PCR.

**Delegate:** A comment: the data can suggest that not many babies die from RSV between zero and 11 months of age, but this is largely due to the great efforts put into their care to prevent deaths. Without such medical intervention the mortality rates would be much higher.

## ↳ Potential economic benefit of RSV prevention in Europe

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**Maarten Postma**, *University of Groningen, Netherlands*

In June the JCVI advised that both passive immunisation (monoclonal antibody) for newborns, and active maternal immunisation (vaccines) could be cost-effective over a range of potential prices that combine the cost of the product and its administration. This covers older adults as well as neonates and infants. A number of studies following up on this advice were presented. One study suggested base-case maximum cost-effective prices of around £200 as estimated against around £20,000 per QALY.

It was suggested however that vaccines can offer broader benefits beyond the normal quality-adjusted life years (QALYs). These include potential productivity gains, peace of mind, scientific spillover, strengthening the healthcare system, carers' QALYs, educational and leisure time gained, sustainability, and others.

Efficacious and safe RSV vaccines are on the brink of full Health Technology Assessments and the consequent decisions for both infants and older adults. RSV vaccines seem to be potentially cost-effective at realistic prices. They could be even more cost-effective with a seasonal approach, and if future herd immunity considerations are taken into account. Within a consistent methodology, transparent approaches could be developed and applied on broader impacts. From the long list of potential benefits, it was thought that the three most attainable benefits would be carers' quality of life, peace of mind, and healthcare system strengthening.

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**Peter Openshaw: RSV has a major impact, particularly in childhood, in LMICs. Has any economic analysis been done to suggest what pricing might be possible in such countries?**

**Maarten Postma:** I am not aware of any. This type of work is generally done first in high-income countries and then adapted to the LMIC situation.

**Delegate:** I believe there is a UNIVAC decision-support model (a proportionate outcomes static cohort model) that has explored the potential cost-effectiveness of two RSV prevention strategies: a single-dose maternal vaccine and a single-dose long-lasting monoclonal antibody for infants.

## ↳ RSV Vaccines: what's in the pipeline?

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**Joanne Wildenbeest**, *UMC Utrecht, Netherlands*

The target groups for RSV vaccinations are maternal; infants less than six months; children above six months; and older adults.

The first RSV vaccine, developed in the 1960s, was given to children between the age of two months and seven years, but proved unsuccessful, resulting in the pause of such work. An important milestone for vaccine development was the discovery in the early 2000s of the pre- and post-fusion configuration of the RSV F protein, which led to the discovery that antibodies against the epitopes of the pre-fusion configuration of the RSV F-protein are much more effective in neutralising the virus. Since then there has been a rapid increase in vaccine trials. These include classical subunit vaccines which are now mainly aimed at the RSV preF protein; immuno-prophylaxis with monoclonal antibodies against pre-fusion or both pre- and post-fusion sites; recombinant vectors vaccines; mRNA vaccines which have become a focus of development since the COVID-19 pandemic; and live-attenuated vaccines given intranasally which may be interesting for young children.

As a result, just one year ago various phase-three studies were ongoing on RSV vaccines: paediatric (Nirsevimab, Clesrovimab); maternal (RSVPreF, RSVPreF3); and older adults (RSVPreF, RSVPreF3, Ad26.RSV). In addition, the Bill and Melinda Gates Foundation has started a phase-one trial for a long-acting monoclonal antibody, RSM01, which they aim to produce primarily for LMICs where the RSV burden is the highest.

All this recent work means that RSV prevention solutions are now available for all infants, with long-acting monoclonal antibodies and maternal vaccination that are market approved. Also available are two market-approved products against RSV for older adults, with a third one nearing approval. In the near future, a range of childhood vaccines are being developed.

With all these vaccines available or coming available, it's worth paying attention to a number of other considerations. These include cost-effectiveness of these treatments; programmatic challenges; the efficacy of maternal vaccination versus immunisation with monoclonal antibodies; indirect effects; and a continuing focus on safety.

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**Stefania Maggi: Is there any difference in parental acceptance of monoclonal antibodies and vaccines?**

**Joanne Wildenbeest:** I am not aware of a difference, although I am aware of parents who are wary about giving their children too many vaccines. There is still a lot of work to do to make parents aware about RSV and what can be done to prevent it.

**Delegate:** Research on bovine RSV showed that in calves born in winter, the mother's milk was neutralising the virus. This potentially shows the value of monoclonal antibodies to neonates, and then vaccination later in life; in toddlers where this issue is not relevant. This is a critical topic when deciding on what intervention to give at what age.

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