

7th Mena Influenza Stakeholders Meeting

WHO Influenza Strategy Development and Vaccine-related Research Priorities

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9 – 10 September 2017
Riga, Latvia

Seasonal influenza

- 1 billion cases yearly
- **3-5 million** severe cases yearly
- **150,000-500,000** deaths yearly

Pandemic influenza

- 4 pandemics in last century
 - “Spanish flu 1918” killed **50-100 million** people
 - “H1N1 pandemic” 2009 killed **~200,000** people
- **0.5 - 4.8% of global GDP lost** in each
- **Will be a next** influenza pandemic

Zoonotic influenza

- H2, H5, H6, H7, H9, and H10 (**H7N9, H9N2, H5Nx**)
- Continuous spreading of avian influenza viruses

Respiratory Outbreaks and Public Health Emergencies

- SARS, MERS-CoV, Ebola, Zika



■ 65 years of global surveillance – GISRS

- 94% population covered by GISRS surveillance in 2016-2017
- > 110 countries with lab capacity detecting zoonotic influenza viruses

■ 47% countries have publically available National (Influenza) Pandemic Preparedness Plans

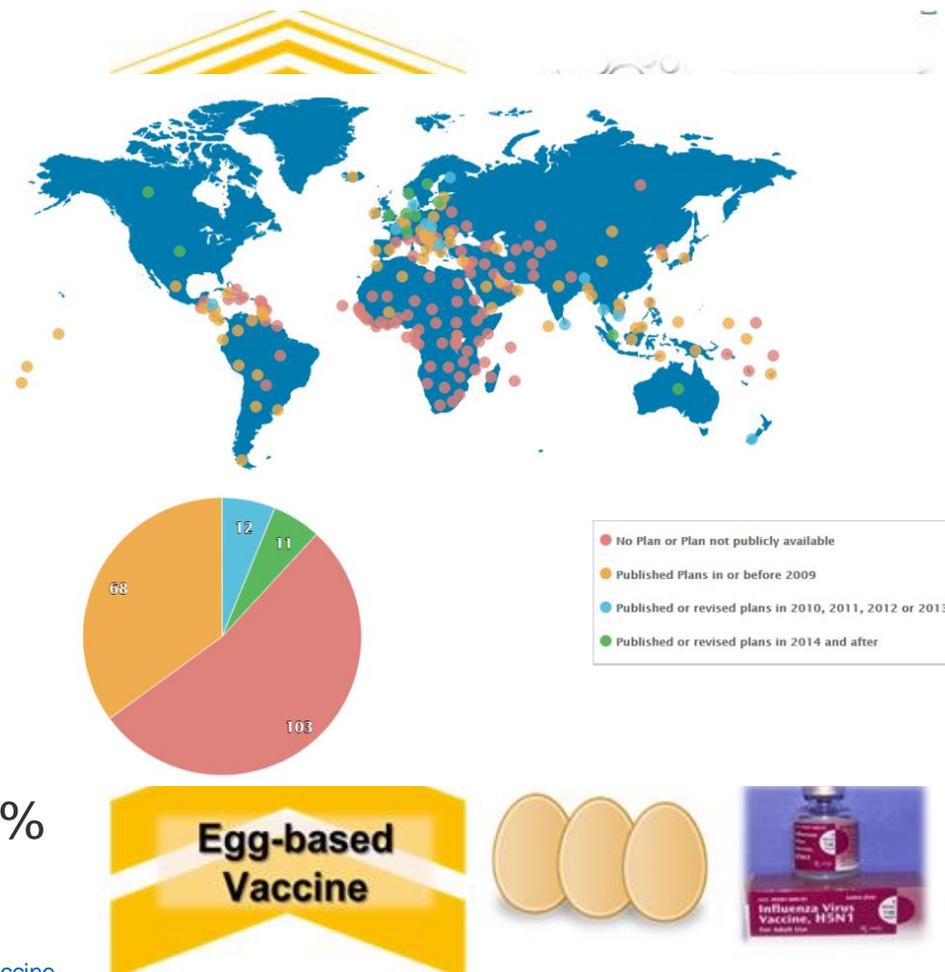
■ Influenza vaccines

- 21% increase in countries with influenza vaccine policies between 2006 and 2016*
- Global influenza vaccine distribution increased by 87% between 2004 and 2013**
- Vaccination reduced influenza-associated mortality by 22% between 2005 and 2013 in the U.S.***

*Ortiz Vaccine 2016

**From 262 to 490 mil doses: <http://eswi.org/knowledge-center/wp-content/uploads/sites/11/2014/07/global-influenza-vaccine-distribution-Vaccine-2015.pdf>

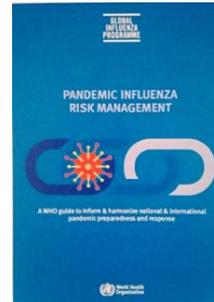
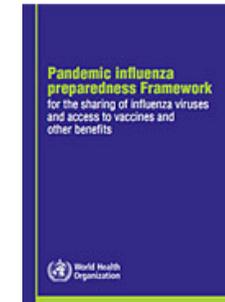
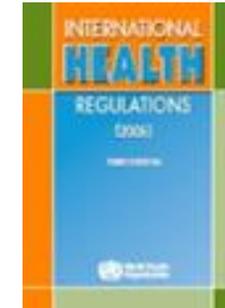
***Based on longitudinal study conducted in USA: <http://www.sciencedirect.com/science/article/pii/S0264410X15002315>



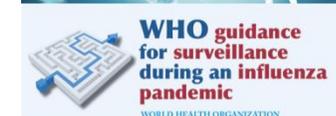
- Influenza virus constantly evolving
 - Knowledge for predicting virus evolution is limited
 - Ongoing detections of zoonotic influenza; pandemic risk continues
- Influenza is killing a lot of people...incidence of severe disease and deaths is not well understood, especially in LMIC
- Vaccine preventable, but
 - Vaccine doses distributed per 1,000 population very low in 89% of countries in 2013*
 - Vaccine efficacy and effectiveness suboptimal
 - Technology mainly egg-based and time needed for production long - unchanged for dozens of year

*Based on hurdle rate of 159 doses distributed per 1000 population, p7 <http://eswi.org/knowledge-center/wp-content/uploads/sites/11/2014/07/global-influenza-vaccine-distribution-Vaccine-2015.pdf>

- 2002: WHO Strategic Plan
- Since then:
 - HPAI H5N1 re-emerged, avian influenza viruses spreading
 - International Health Regulations and Global Health Security initiatives
 - 2006: WHO strategic action plan for pandemic influenza
 - WHO Pandemic Preparedness Planning revisions, PIRM (Pandemic Influenza Risk Management) Framework
 - 2009 H1N1 pandemic and lessons learned
 - 2011: Pandemic Influenza Preparedness (PIP) Framework
 - Various WHO guidance e.g.
 - Influenza Surveillance standards
 - Public Health Research Agenda for Influenza
 - Pandemic Influenza Severity Assessment (PISA)
 - Tool for Influenza Pandemic Risk Assessment (TIPRA)
 - Sunset of the Global Action Plan for Influenza Vaccines (GAP)
 - Public health emergencies on-going



Tool for Influenza Pandemic Risk Assessment



Vision

Global partners work together to reduce the disease burden and societal impact of **seasonal influenza** and reduce the risk of emergence and the impact of **pandemic influenza**.

Scope

Strategy is for a **10 year** horizon, global, and will cover needed progress for actions unique to influenza.

Linkages

Links to IHR, UHC and other **existing strategies** of partners e.g. FAO/OIE and others, and guidance for health systems capacity building and all hazards preparedness.

- **Collaborative, rapid, transparent global sharing** of influenza viruses, genetic sequence data and other key information
- **Effective preparedness, risk assessment and response** to influenza health emergencies
- **Effective global inter-sectoral and public-private partnerships** for risk management for seasonal, pre-pandemic and pandemic influenza
- **Early adoption and promotion of research innovations** that improve influenza preparedness and reduce disease burden

- **Goal 1: (Seasonal)**

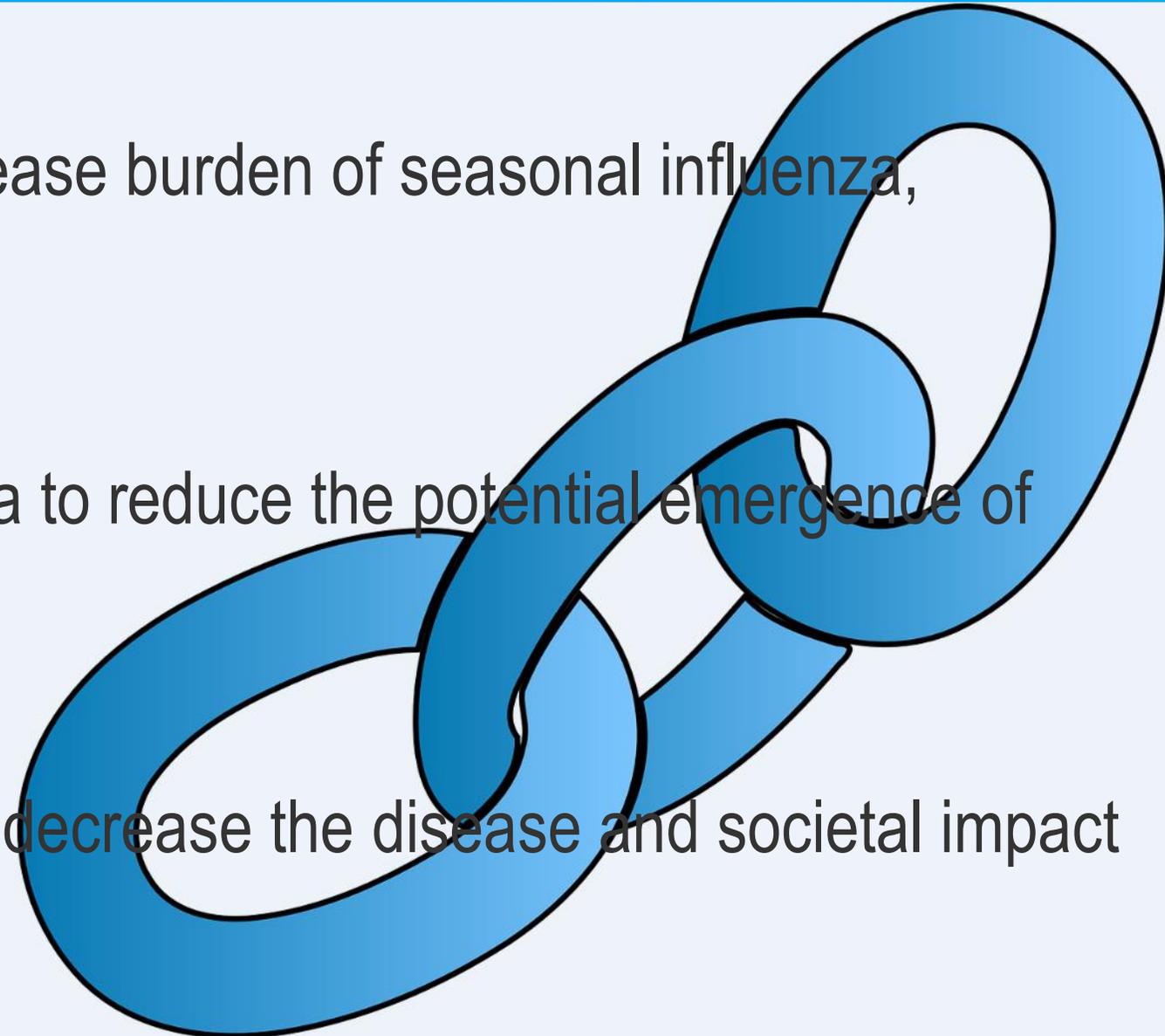
Mitigate the societal impact and disease burden of seasonal influenza, especially in vulnerable populations

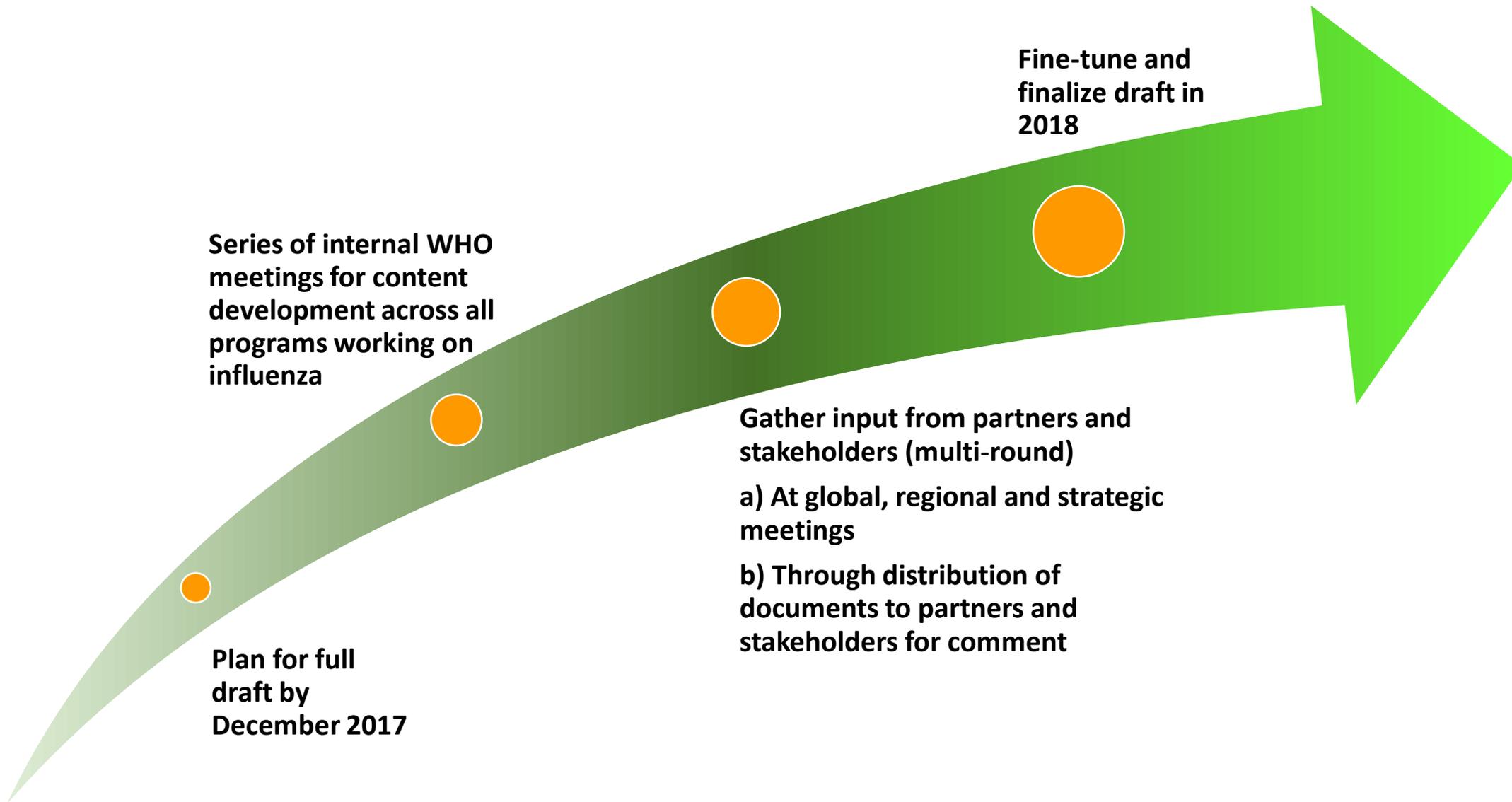
- **Goal 2: (Zoonotic)**

Reduce the risk of zoonotic influenza to reduce the potential emergence of pandemic influenza

- **Goal 3: (Pandemic)**

Improve pandemic preparedness to decrease the disease and societal impact of pandemic influenza





Influenza vaccine-related research priorities

- **2016: update**

- **Goal:** advance science to address unmet public health needs

- **Objective**

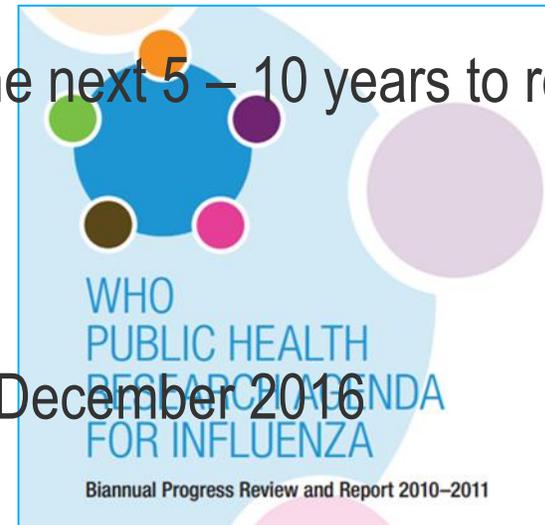
- To identify priorities in influenza research for the next 5 – 10 years to reduce
 - the burden of seasonal epidemic influenza
 - the risk and impact of pandemic influenza

- **The process**

- Established Technical Working Groups
 - Convened a technical consultation meeting in December 2016
 - Opened for public comments (2 months)

- **The focuses**

- Identify unmet public health *needs* and knowledge *gaps*
 - Develop corresponding research recommendations *with prioritization*
 - Identify potential measurable indicators for *monitoring and evaluation* on public health impacts of the recommendations



2009

2010-2011

■ Outlines:

- **Stream 1:** Reducing the risk of emergence of a pandemic influenza
- **Stream 2:** Limiting the spread of pandemic, zoonotic and seasonal epidemic
- **Stream 3:** Minimizing the impact of pandemic, zoonotic and seasonal epidemic influenza
- **Stream 4:** Optimizing the treatment of patients
- **Stream 5:** Promoting the development and application of modern public health tools

- **Substream 3.1: Determining disease burden and social impact**
 - Assess the timeliness, quality and sustainability of influenza disease **surveillance**. Determine the timing, disease and economic **burden** of seasonal and pandemic influenza. Assess influenza **vaccine effectiveness, impact and cost–benefit – highest priority**
 - Determine the best approaches for **applying** influenza disease burden data, coupled with cost–effectiveness analyses, **to inform** influenza control programmes – **short term**
 - Impact of influenza in different **socioeconomic settings – short-term**
 - Evaluation of the **social impact** (e.g. disruptions in commerce, health-care systems, public safety and societal functions) of seasonal and pandemic influenza – **short-term**

- **Substream 3.2: Improve immunogenicity, availability and delivery of influenza vaccines**
 - Investigate methods to improve the vaccine **strain selection** process and to characterize optimal vaccine strains, including the establishment of vaccine strain libraries – **highest priority**
 - Conduct studies to enhance the clinical applications of **existing vaccines**, including improvements in production, duration and breadth of protection; safety and immunogenicity profiles; and dose-sparing formulations, especially for high-risk groups – **highest priority**
 - Evaluate systematically the steps in vaccine production to reduce bottlenecks in the production of vaccines, and improve the processes of **rapid response**, surge capacity, rapid deployment and tracking of vaccine usage – **highest priority**

- **Substream 3.2: Improve immunogenicity, availability and delivery of influenza vaccines** *-continued*
 - Conduct studies to optimize and standardize **animal models** to be used in preclinical evaluation of new vaccines – **short term**
 - Develop **new vaccines**, vaccine platforms and formulations that are safe and have enhanced immunogenicity, as well as vaccine **delivery systems** with improved ease of storage and administration, especially for use in under-resourced settings – **highest priority**
 - Identify **correlates of protection** for different vaccines, including development and standardization of methodologies – **highest priority**
 - Develop innovative clinical trial methodologies to study the effectiveness and safety of **novel vaccines** for pre-licensure and post-licensure vaccine evaluation and vaccine effectiveness studies, and examine and develop ways to harmonize the regulatory processes – **short term**

- **Substream 3.3: Public health policies to reduce the impact of disease**
 - Evaluate existing and new **policies and strategies** to optimize vaccine uptake and improve vaccine acceptability (e.g. policies targeting risk groups versus the general population) – *long term*
 - Study the role of **social science** research in establishing social, ethical and legal standards in public health policy application, and address the public perception of influenza and its impact on societies, particularly in under-resourced populations – *long term*

- Current status
 - Editing, layout
 - Publication – by the end of 2017
- Advocate research priorities
- Development of monitoring and evaluation tools

- Influenza - unique
 - Will-be an influenza pandemic

■ Can we beat influenza?

- Great efforts are being made to prepare better
- ... but far from “ready”

■ World’s defence: GISRS – benefiting everyone

- Global mechanism existing for 65 years
 - **Support it... strengthen it... be part of it...**

■ Partnership and shared responsibilities – **the** way forward



EDITORIAL

Can we beat influenza

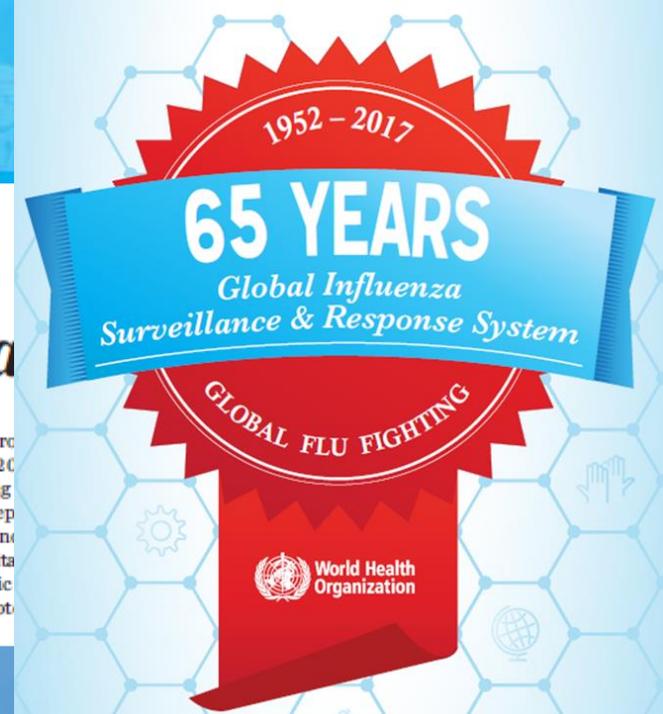
For the past 65 years, the Global Influenza Surveillance and Response System (GISRS), coordinated by the World Health Organization (WHO), has engaged in open and efficient sharing of information, viruses, and responsibilities. The GISRS's effectiveness and success can be attributed to several generations of dedicated scientists and to the engagement of over 100 countries, often with limited resources. Currently, only two influenza A viruses and two influenza B clades are circulating and causing disease in humans, but two additional subtypes of influenza A viruses are circulating in nature (14 in birds and two in bats). Of these, six occasionally infect humans, providing an ever-looming pandemic threat. However, there is still a lack of fundamental knowledge to predict if and when a particular viral subtype will cause an epidemic. We therefore still fail to predict influenza pandemics, and this must change.

The GISRS's objectives are to alert the world to impending influenza epidemics or pandemics and to mitigate the global impact of influenza. The GISRS currently consists of 152

challenges. Proclimaxed in 2011 following Influenza Preparedness sharing and Fair and equitable use of genetic should promot



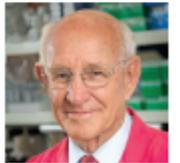
“We...still fail to predict influenza pandemics, and this must change.”



of the WHO to develop the best possible countermeasures—the Protocol's impact is promising but will need to be thoughtfully managed.

Among the needs of the GISRS is the priority to develop better vaccines and antiviral agents to control influenza. Vaccine production has not changed much in decades; it remains a lengthy egg-based process. Furthermore, vaccine efficacy, especially in the elderly, is unsatisfactory and requires annual updates. Universal vaccines that protect against all influenza subtypes are being researched and hold

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Thank You