# Respiratory Disease Surveillance in the Americas
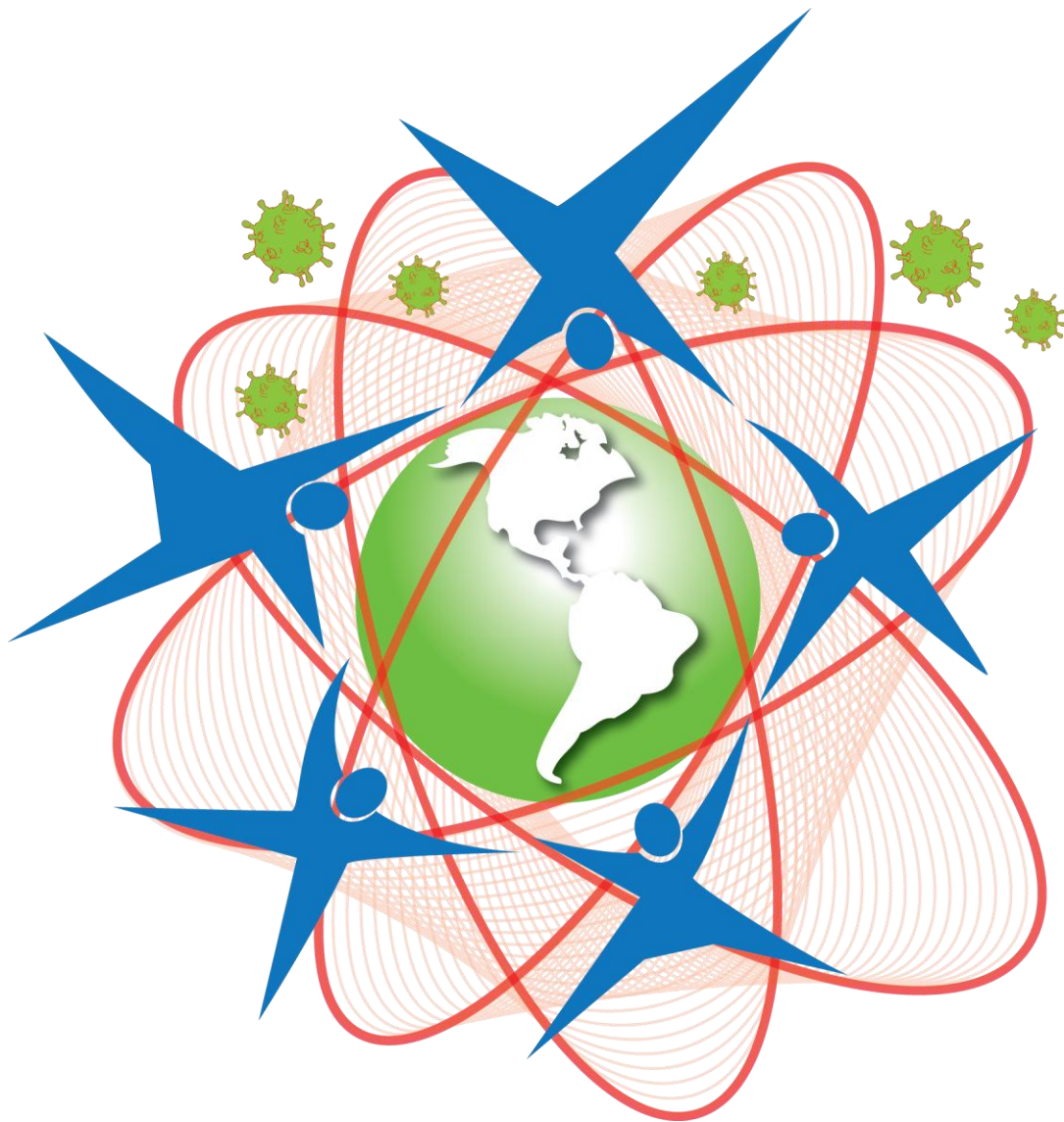# SARInet Inaugural Meeting

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# Introduction to SARInet



For more than a decade, countries in Latin America and the Caribbean have been conducting surveillance for influenza and other respiratory viruses. Since 2006, sentinel SARI surveillance has been being implemented in many hospitals and laboratories through The Americas, in an effort to standardize influenza global surveillance and to integrate epidemiology and laboratory systems. To highlight the important work being done in the Americas and facilitate collaboration of the individuals, countries and organizations involved with these activities, the Severe Acute Respiratory Infections Network (SARInet) was created. Through participation in the network, professionals from hospitals, laboratories, ministries of health, and other associated organizations can share their ideas, access resources and strategically address SARI surveillance. To facilitate information sharing, the SARInet platform ([www.sarinet.org](www.sarinet.org)) was created. Persons involved with SARI surveillance in the Americas are encouraged to visit the website, and invited to join the network. Access to SARInet is divided into three groups based on type of involvement in the network:

- Members: Member States of the Americas that conduct or are interested in conducting SARI surveillance
- Participants: Individuals in hospitals, laboratories or other organizations that contribute to SARI surveillance (e.g., infection control nurses, physicians, laboratory specialists, public health inspectors)
- Collaborators: Organizations and institutions that support SARI surveillance activities (e.g., CARPHA, COMISCA, CDC, TEPHINET)

There are many benefits to participating in SARInet, including:

- Access to technical resources for SARI surveillance
- Access to clinical, epidemiological and laboratory surveillance training materials
- Access to current epidemiological information about regional patterns of influenza circulation
- Opportunities to interface and collaborate with other SARInet members in regional analyses to answer questions of public health importance

- Opportunities to share lessons learned in the implementation of SARI surveillance

# SARInet Inaugural Meeting

The SARInet Inaugural Meeting was held May 29-30, 2014 at the Gamboa Rainforest Resort in Panama and was a success!  There were more than 80 attendees from 23 countries and included collaborators from PAHO regional offices, WHO, CARPHA, CDC and COMISCA.  The two-day meeting included many informative presentations, discussions and focus groups, and provided a forum for participants to share their experiences and learn more about SARI surveillance in the Americas.  Additionally, the SARInet platform was unveiled and participants were introduced to the interactive website, a centralized source for regional SARI-related information.

# Meeting Proceedings

## Block 1: Network collaborations

### SARInet

### Rakhee Palekar

*Rakhee Palekar is a medical epidemiologist on the influenza team of the Pan American Health Organization*

- An informal surveillance network already exists in the Americas. In the region, there are approximately 30 countries currently carrying out SARI surveillance; more than 900 SARI hospitals; 28 National Influenza Centers (NICs) and 6 national laboratories.
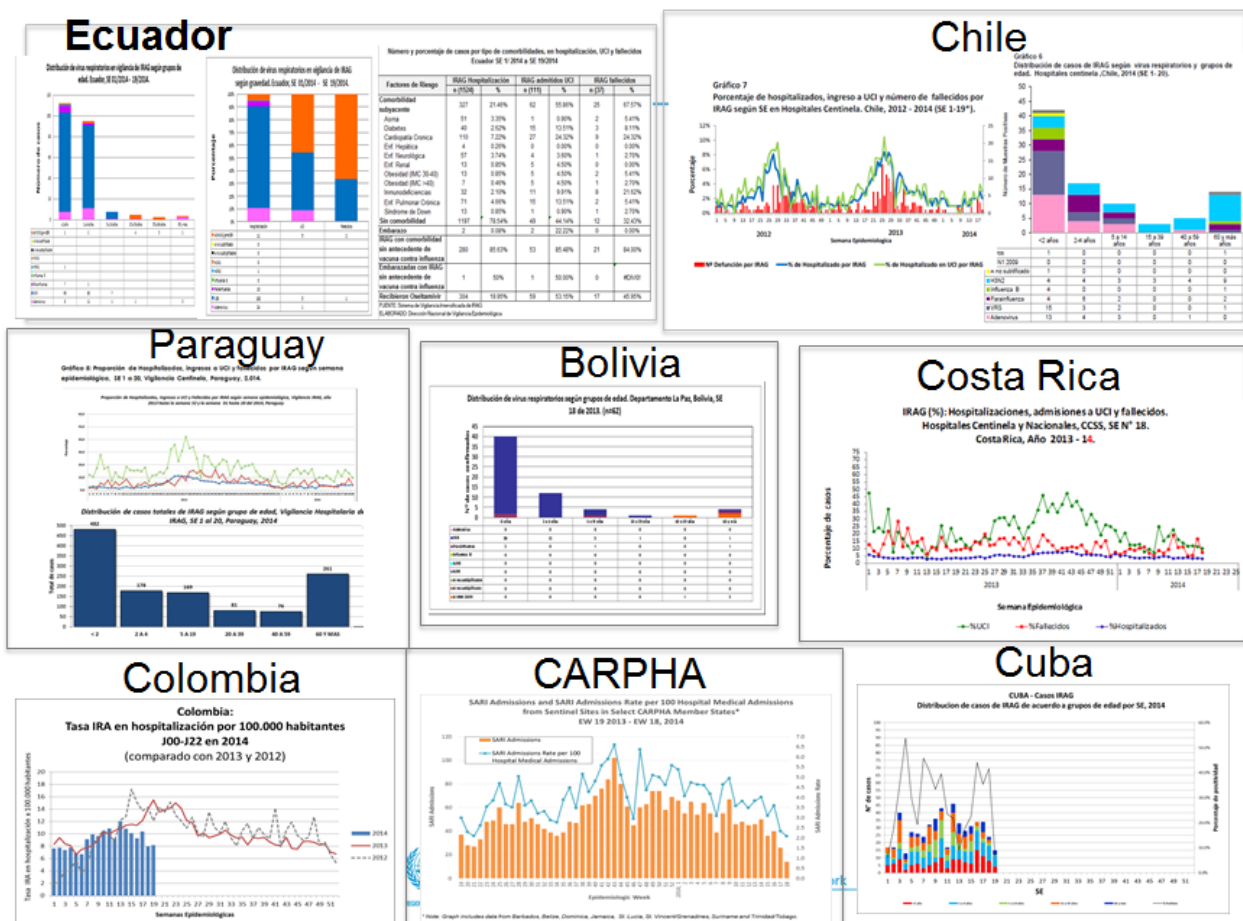


- Currently, no mechanism exists for sharing information about best practices or lessons learned among countries. For this purpose, we created SARInet.

- SARInet will build on an already existing informal network and take advantage of existing resources to strengthen sustainability and epidemiological-laboratory integration, generate better practices in surveillance, share experiences and resources and increment the visibility of the excellent surveillance in the Americas. It will provide opportunities to share experiences implementing SARI surveillance, to discuss surveillance strategies and challenges with experts, collaborate in global and regional analyses to answer questions of public health importance, and access and share tools, such as guidelines.

- We have established a platform, accessible at http://www.sarinet.org, for sharing ideas, discussing strategies, and developing projects.

## SARInet platform
### O Bilbao (PAHO)

*Öona Bilbao is a project support specialist on the influenza team at the Pan American Health Organization.*
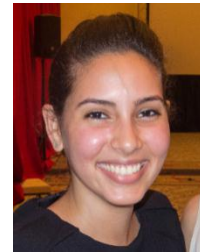


- SARInet is an interactive platform for professionals working in SARI surveillance in the region of the Americas.

- This platform is a space for sharing experiences, best practices and information about SARI surveillance implementation.

- The platform is conveniently organized to serve as a tool to access SARI surveillance information quickly.

- Once logged in, members of SARInet have special access to a wide variety of resources such as trainings, guidelines, publications, interactive maps, as well as a forum for ideas exchange and the ability to send direct messages to other members or the Secretariat through the Member Directory.

## Keynote address: MERS CoV epidemiology & unanswered questions
## Teresa Peret (CDC-ATL)

- Coronaviruses adapt easily to new hosts. Though they were not previously considered a public health threat, this changed in 2002 with the emergence of SARS.

- Until 2012, there had only been "side communications" about MERS CoV, including retrospective evidence of a hospital outbreak in Jordan. However, a September 2012 ProMED report described a new virus that had been isolated from a 60-yr-old with pneumonia.

- Unlike SARS, MERSCoV is not known to have super-spreaders, but it does have a higher case fatality ratio. All patients have presented with fever. All cases of MERSCoV outside of the Middle East have been exported cases. The most severe cases have been among the elderly and those with co-morbidities. The first full genome sequence showed similarities to bats' virus subgroup C. Researchers looked for the virus in different animals. Although the virus was not initially found in camels, specific antibodies were found in them.

- There has been a big gap in communication with the MERS experience, although the quality of epidemiological data and information sharing has improved over time.

- **Take home message: Surveillance and reporting are key to monitor this virus**.

## Regional and Global Projects

### Estimating influenza-associated mortality globally
### J Fitzner (WHO)

*Julia Fitzner is a medical epidemiologist from the influenza program at the World Health Organization*

- There are many questions regarding how to measure the burden of influenza. Many of the data available are not comparable, and often only a fraction of outcomes observed are actually due to influenza.

- Soon to be published: guidelines for disease burden estimation to promote the use of same methods and ensure results comparability

- Many analyses estimate that 250-500K deaths per year occur due to influenza. However, these are crude estimates based on the extrapolation of U.S. data to the global level. There have been various models used to estimate influenza burden (e.g., GLaMOR: projection method, Nair: literature review) and although they were similar, they differed with respect to where the highest burden occurred. GLaMOR found evidence that the highest burden occurred in South America, while the CDC found that it occurred in Africa.

- It might be more important to compare influenza to other viruses or find other ways to put influenza into context, than to focus on the numbers.

- **Take home message: There is a need to form an expert committee to review evidence and make recommendations for best practices to estimate/measure influenza disease burden.**

## Estimates of influenza-associated mortality in the Americas
## PY Cheng (CDC-ATL)

*Po-Yung Cheng is a statistician from the Influenza Division at the US Centers for Disease Control and Prevention*

- There is a need to estimate influenza-associated deaths in the Americas in terms of the assessment of influenza burden and the policy-making.

- In this study, influenza-associated deaths were estimated for 35 PAHO countries from 2002-2008 using ICD-10 codes of registered deaths. The modeling approach was applied to seven countries (Argentina, South Brazil, Chile, Mexico, Paraguay, Uruguay, and United States) which have mortality data with clear seasonal patterns. Two multiplier approaches (etiologic fraction approach and WHO mortality strata approach) were used to extrapolate estimates for the rest of PAHO countries.

- Reporting countries were classified into: good mortality data and well-defined influenza seasonality (N=7), good mortality data but poorly defined seasonality (N=13) and, lacking good mortality data (N=15).

- There were seasonal and country variations observed in the both the average total annual number and the rate of influenza deaths. However, rates of death increased with increasing age.

- Overall, an annual median influenza-associated mortality rate of 1.9/100,000 (95% CI: 0.7–4.3/100,000) among <65 year olds was estimated, as well as median rates of 29.4/100,000 (95% CI: 13.0–65.7/100,000) among those 65–74 years and 151.4/100,000 (95% CI: 87.2–288.2/100,000) among those 75 and older. The total influenza-associated deaths were 79,057 (95% CI, 40,880 – 160,270) for PAHO countries. Eighty-one percent of all deaths occurred among the elderly.

- **Take home message: The estimates from this analysis are very comparable to other analyses. They are limited, however by the fact that the data were not robust enough to apply more advanced methods.**

# Burden of respiratory disease in Central America

## Jorge Jara

*Jorge Jara is a medical epidemiologist with the Universidad de Guatemala de Valle*

- To address the lack of information regarding the burden of hospitalizations and mortality associated with influenza in the region, the Estimation of the Medical Burden of Influenza in select countries in Latin America (ECAMIRAL – estimación de la Carga Medica por influenza países seleccionados de la América Latina) project was begun. This study uses the same methodology for comparability as previous studies, which is relatively simple, and allows for the attainment of national and regional burden estimates by age group.

- Studies already implemented by the group: seasonality, surveys about health care use, direct costs associated with influenza. The following map shows sites of studies reporting incidence of influenza.
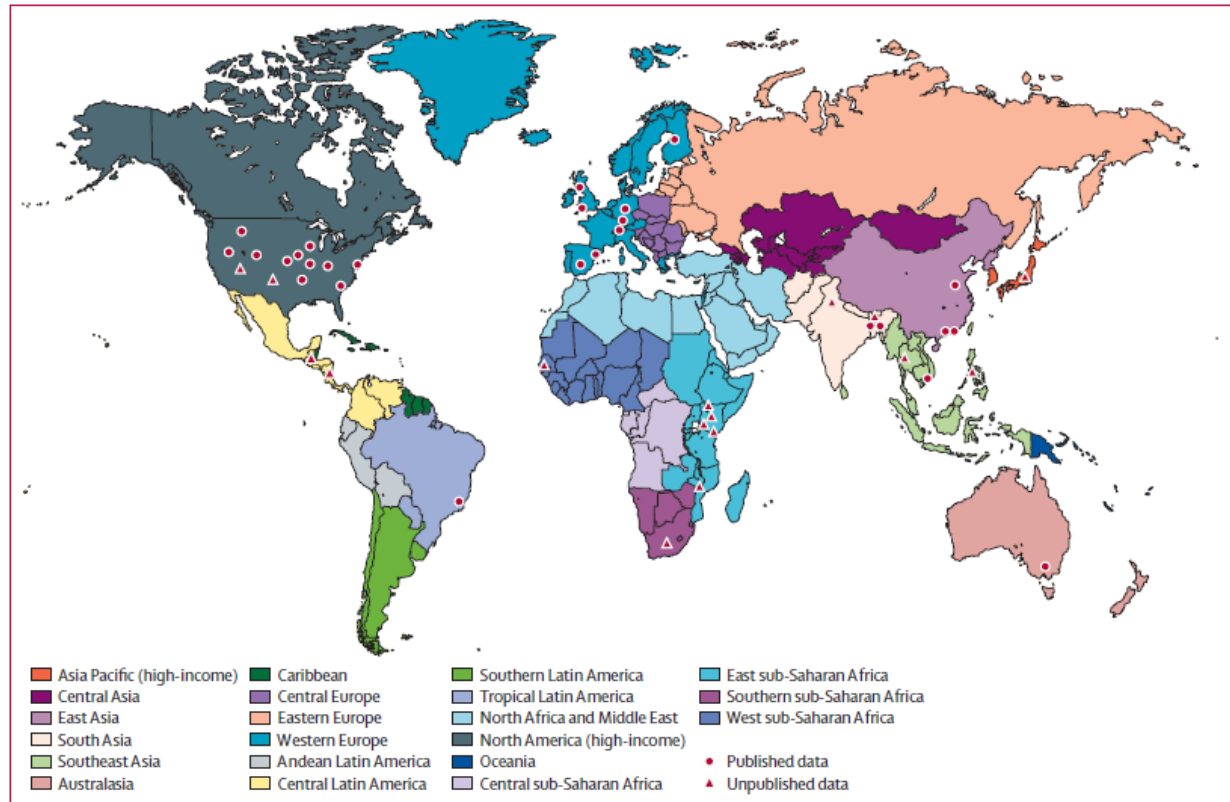


- The results from the estimation of the burden of influenza-associated SARI in Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica are similar to the findings of the meta-analysis published by H. Nair in children aged less than 5 years.

- Influenza-associated SARI hospitalization and mortality rates are consistent among countries and years analyzed, although there are some specific changes in certain age groups. Influenza-

associated SARI hospitalization and mortality rates are higher for those aged less than 5 years and more than 64 years

- **Take home message: These findings provide evidence to better public health policies decision making. Other countries in the Region are invited to follow the same protocol and estimate the burden of disease associated with influenza to attain their own national and regional estimates.**

## Seasonality of influenza in the American tropics
### E Azziz-Baumgartner (CDC-ATL)

*Eduardo Azziz Baumgartner is a medical epidemiologist in the Influenza Division at the US Centers for Disease Control and Prevention*

- During the last decade, countries located in tropical areas, especially in the Central American sub-region, have worked to improve their influenza surveillance systems. This effort has significantly increased the quantity of respiratory samples sent to the World Health Organization (WHO) and has allowed countries to estimate the burden of disease associated with influenza (ex. Approximately 79,000 deaths in the southern hemisphere each year).

- To mitigate the impact of the disease, countries have developed vaccination policies and have invested in the use of the influenza vaccine. Nonetheless, there are still uncertainties about the best ways to vaccinate in the sub-region.

- In the American tropics, influenza epidemics typically occur in September (give or take a month), and last approximately five months.

- Strains identified during these epidemics are similar between countries and are often represented in the WHO recommendation for the Southern hemisphere vaccine.

- **Take home message: The Southern hemisphere vaccine is the most updated just before the beginning of the majority of epidemics in the American tropics, and should be considered for use during Vaccination Week in the Americas in countries in this sub-region.**
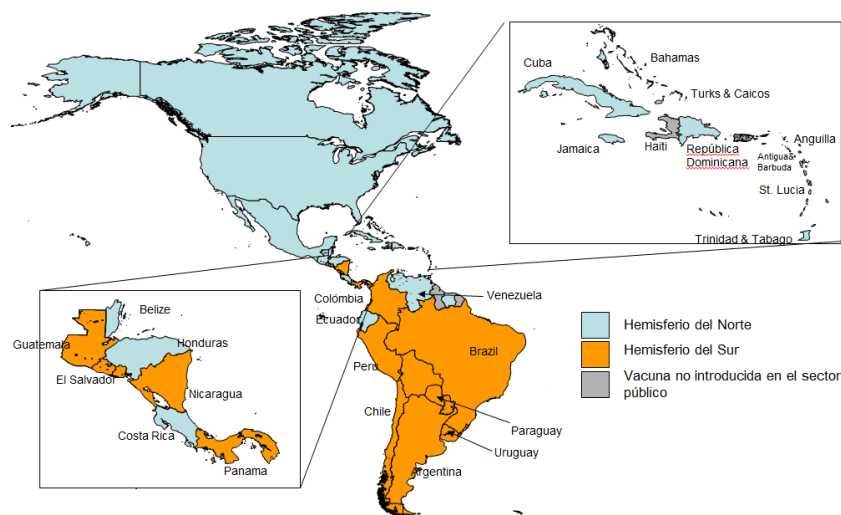
# REVELAC-i

## Alba Maria Ropero (PAHO)

*Alba Maria Ropero is an advisor on Immunizations at the Pan American Health Organization*

- Important advances have been made in the introduction of the influenza vaccine in the majority of Latin American and Caribbean countries in the last decade. Nonetheless, few evaluations of their effectiveness have been published. Given that the effectiveness of the influenza vaccine depends, along with age and state of health, on the concordance between vaccine strains and circulating strains, it is necessary to know the performance of the vaccine each year and to have evidence to guide the decision-making in public health.

- In 2012, the Ministries of Health in collaboration with the Pan-American Health Organization, CDC's influenza division, and TEPHINET carried out a pilot assessment in four Central American countries (Costa Rica, El Salvador, Honduras and Panama) to assess the feasibility of measuring the effectiveness of influenza vaccine using the existing platform of Severe Acute Respiratory Infections (SARI) sentinel surveillance. During 2013, the implementation of this project was advanced in Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Honduras, Panama and Paraguay. In March 2013, the Network for the Evaluation of Vaccines in Latin America and the Caribbean - influenza (REVELAC-I, for its Spanish acronym), which currently has 14 Member States, was officially created. The primary objective of the network is to create mechanisms to share experiences and standardized methods and to promote the integration of epidemiological and virological data and immunizations to generate evidence for influenza vaccination programs.



(source: PAHO country reports, Ministry of Health web pages, PAHO/WHO surveys)

- The multi-center evaluation of the effectiveness of the influenza vaccine, in the framework of REVELAC-i, is intended to measure the effectiveness of the influenza vaccine in preventing RT-PCR-confirmed influenza positive SARI in the target groups for vaccination in the participating countries. This is done in the existing network of SARI sentinel surveillance hospitals. Countries use a common protocol with case and negative test controls.

- The lessons learned from the pilot allowed for the improvement of the completion and quality of the data in 2013. By 18 March 2014, 8 countries had reported 2,395 SARI cases (627 cases of influenza and 1,768 controls). Preliminary results suggest an effectiveness of 52% [36% to 72%] in children, and 59% [45% to 79%] in older adults, suggesting a prevention of half of the hospitalizations in the studied population.
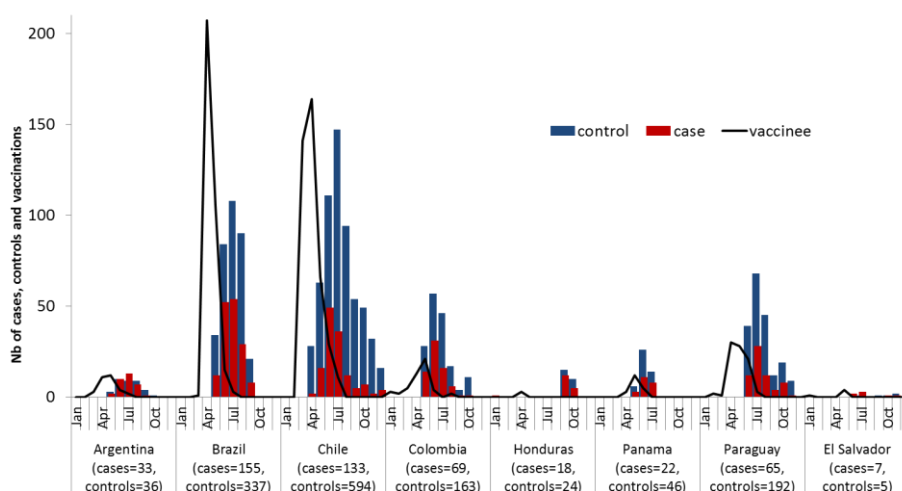


- **Take home message:  It is feasible to use the SARI surveillance platform to measure vaccine effectiveness annually with few adjustments to the surveillance forms (some that have already been updated in the last PAHO surveillance guide) and a primary strategy of strengthening surveillance and capturing vaccination history. Accurate estimates can be achieved if you add data from several countries in the region. The interdisciplinary effort between epidemiology, laboratory, immunization and statistics is key to a successful implementation.**

## RSV global surveillance and influenza vaccine strain selection

### T Besselaar

*Terry Besselaar is a virologist from the influenza program at the World Health Organization*

- The 3rd WHO Informal Consultation for Improving Influenza Vaccine Virus Selection, which took place in Geneva, 1 – 3 April 2014, included six sessions on the following topics:
  1) Improving surveillance to support vaccine virus selection and the provision of vaccine viruses
  2) Complexities of vaccine composition recommendations for tropical areas
  3) Improving assays to improve vaccine virus selection
  4) New technology and tools for improving influenza vaccine virus selection
  5) Regulatory and vaccine production challenges to vaccine virus selection

- The WHO Collaborating Centers are looking into the need for improvement in vaccine selection, but no short term solution has been reached. There is a focus on using existing influenza surveillance platforms to improve surveillance for RSV, which is the leading viral cause of acute lower respiratory tract infections in infants and young children.

- The development of new RSV vaccines has been progressing well, and a new global project is proposed: WHO activities will facilitate RSV surveillance, vaccine development, licensure, prequalification and use with a focus on Low and Middle Income Countries. The expected outcomes include a strategy for RSV surveillance development and implementation, RSV surveillance seamlessly built upon the GISRS surveillance platform, RSV surveillance established in representative countries in all 6 WHO regions, with data reported in a timely manner, and the establishment of a global RSV expert group, functioning as a global resource under WHO coordination. These outcomes are expected by a three-year deadline.

- **Take home message: WHO Collaborating Centers are working to improve influenza vaccine selection in all regions of the Americas. RSV vaccines are in development.**

## RSV in the Americas

### M Iwane (CDC-ATL)

*Marika Iwane is a medical epidemiologist in the Division of Viral Diseases at the US Centers for Disease Control and Prevention*

- RSV differs from influenza in ways that should be considered in order for surveillance/studies to contribute to a meaningful RSV evidence base pre- and post-RSV vaccine. Risk groups for severe RSV illness include young age (e.g., neonates, young infants,

other infants), premature birth (risk inversely proportional to gestational age), elderly, and persons with underlying medical conditions.

- Assess whether case definitions are sufficiently broad to capture RSV cases, e.g., absence of fever is more common for RSV illness than influenza illness. Case definitions include those used to identify cases in surveillance, death records, HUS surveys, etc.

- Population-based rates of RSV morbidity and mortality and other evaluations need to account for younger age distribution with high rates in infancy (for numerators, denominators, adjustment factors). This will be important for determining vaccine impact post-vaccine and determining risk factors, which will be age dependent.

- Consider opportunities to determine RSV seasonality and determinants of circulation (other pathogens, climate/weather, latitude, environmental, and social factors), and the possibility of combining data from different countries into one analysis to enable statistical modeling.

- **Take home message: RSV mortality data are lacking and as there is no vaccine available and no specific treatment, testing for diagnostic purposes is not routine.**

# Block 2: Influenza surveillance part 1

## PAHO Regional surveillance updates
### M Cerpa/ R Palekar (PAHO)

*Mauricio Cerpa is an influenza surveillance specialist on the influenza team of the Pan American Health Organization*

- During 2006-2009 emphasis was placed on sentinel ILI and SARI surveillance

- The 2009 H1N1 pandemic demonstrated the difficulty of monitoring a large-scale event without standard surveillance data and reporting systems. Surveillance data should be simple and clear, and integrated between epidemiology and laboratory. Available data for severe cases was lacking.

- Intensified SARI surveillance was promoted from 2010-2012 and emphasis was placed upon the surveillance of severe (i.e. SARI) cases in hospitals and ICUs. Emphasis was also given to the integration of epidemiological and laboratory data and the standardization of results, indicators, and data collection tools. Additionally, the strengthening of other respiratory virus (ORV) diagnostics using influenza platforms was encouraged.

- During 2012-2014, surveillance in the Region has been focused on the creation of regional/global standards for epidemiological influenza surveillance. The PAHO surveillance guide was aligned with the WHO document "Global Epidemiological Influenza Surveillance Standards". Monitoring, evaluation and training (1-2 times per year) were facilitated in countries with an eye toward sustainability strategies. FluNet and FluID, information systems and information bridges were developed for the purpose of routine, global sharing of standardized data.
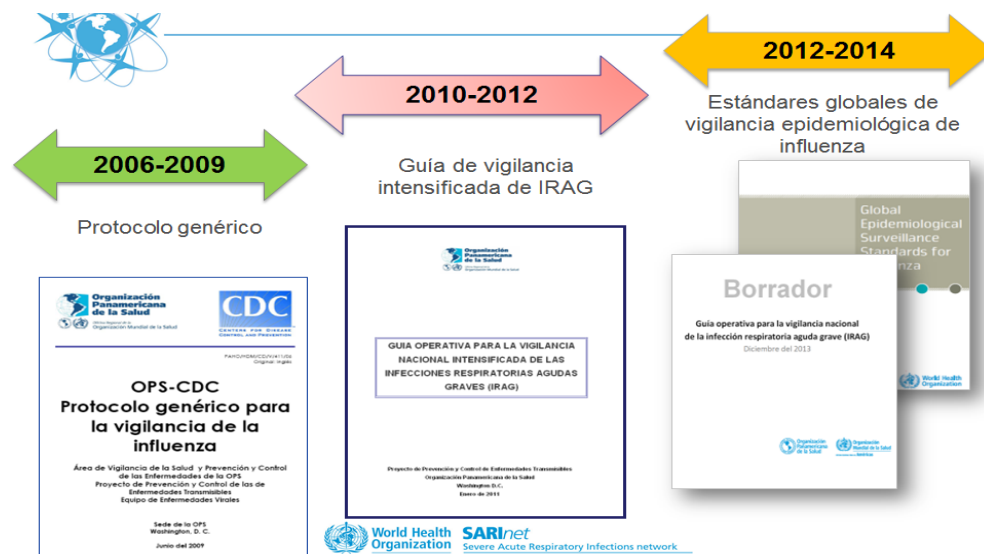
- **Take home message: Significant progress has been made in the Region related to influenza and ORV surveillance during the last two years, including implementation of standard surveillance using global/regional guidelines, use of standard monitoring and evaluation tools, integration of laboratory and clinical-epidemiologic data, and dissemination on a routine basis of surveillance data.**

## SARI/ILI surveillance Mexico

### Dr. Arturo Revuelto Herrera (Epi)
### Dr. Gisela Barrera Badillo (Lab)

*Arturo Revuelta Herrera is the director of epidemiological information in the General Direction of Epidemiology, Mexico. Gisela Barrera Badillo is head of the respiratory virus laboratory and influenza network coordinator in Mexico.*



- The surveillance system in Mexico is syndromic, which allows for the surveillance of influenza and other respiratory viruses. Mexico's surveillance is also sentinel, and encompasses 584 influenza monitoring units.

- The laboratory network performs RT-PCR testing and can identify influenza and other respiratory viruses like adenovirus, metapneumovirus, RSV, parainfluenza1-4, coronavirus, (NL63, 229E, SARS, MERS-CoV) and rhinovirus.

- **Take home message: Mexico's surveillance system uses an online platform where cases in medical units are registered and the laboratories can identify and capture the results in real time. It relies upon permanent system evaluation indicators, which guarantee its functionality year-round.**
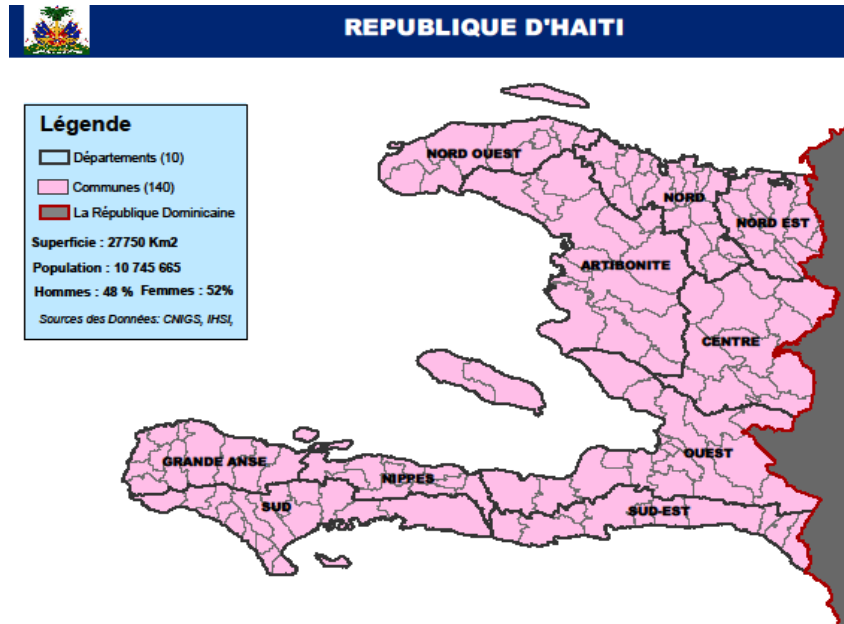
## SARI surveillance Haiti

### Dr. Gerard A. Joseph, Dr. Wilnique Pierre

*Gerard Joseph is an epidemiologist and coordinator of National Epidemiological and Laboratory Surveillance and of PRESEPI-Lab.*

*Wilnique Pierre is an epidemiologist in the Directorate of Epidemiology and Laboratory Research in Port-au-Prince.*



- Sentinel surveillance began in Haiti in 2009, but was interrupted by the 2010 earthquake. Sample-taking materials are frequently lacking. However, the system was re-launched in June 2013 and has been strengthened with support from the PRESEPI program.

- At the national laboratory, cultures and PCR are used for testing. Individual data forms are completed and weekly and monthly reports are produced.

- **Take home message: While the sentinel surveillance system in Haiti has faced setbacks, significant progress has been made. An extension of the surveillance to other hospital centers in the country could take place in the coming years.**

## FluSurv-NET USA

### Sandra Chaves

*Sandra Chaves is the medical director at the Influenza Hospitalization Surveillance Network in Influenza Division of the Centers for Disease Control and Prevention*

- The Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since the 2005-2006 influenza season).

- The FluSurv-NET covers more than 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional influenza hospitalization surveillance sites in other states (currently MI, OH, UT), using the same approach/protocol.

**FluSurv-NET, 2012-13**
**Population-based Hospitalization Surveillance**

- EIP Sites
- IHSP Sites
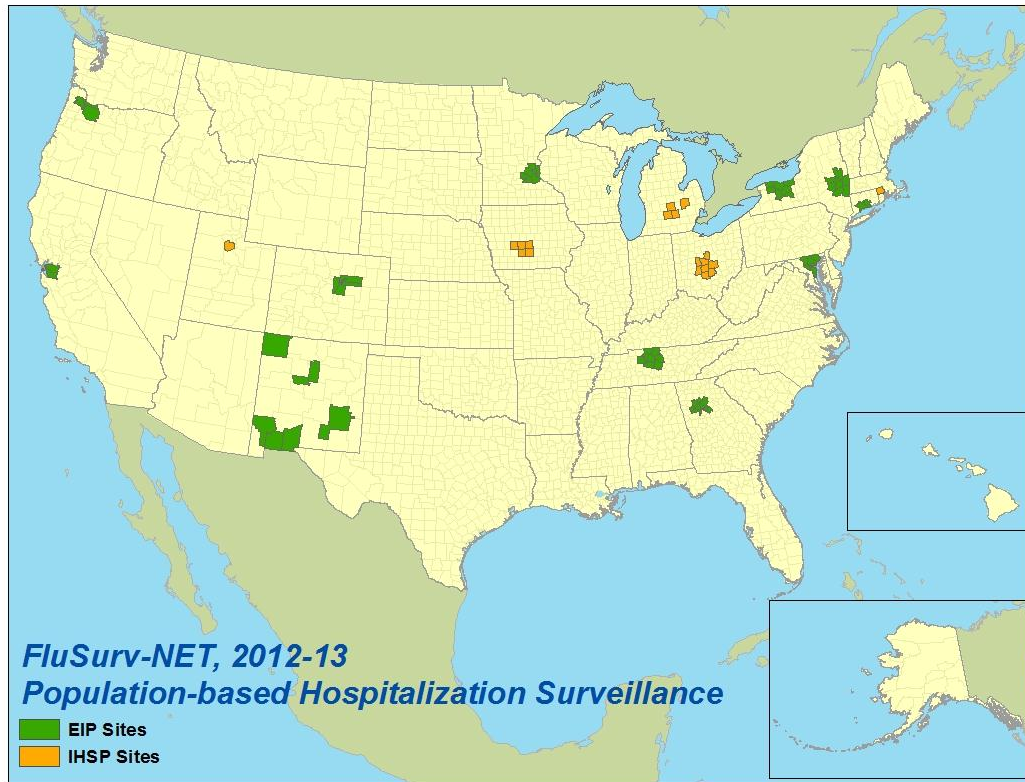
- Data gathered are used to estimate age-specific hospitalization rates on a weekly basis, and describe characteristics of persons hospitalized with severe influenza illness which are made available weekly on the FluView website. Estimated rates are likely to be an underestimate as influenza-related hospitalizations can be missed, because testing is not performed, and/or disease may be attributed to other causes of pneumonia or other common influenza-related complications.

- There have been more than 60 abstracts and manuscripts published in peer-reviewed journals using FluSurv-NET data. Analytical projects cover a variety of aspects of influenza disease and vaccination program, including assessment of risk factors for severe influenza, identification of 'at risk' groups in the population, assessment of uptake of CDC recommendations related to antiviral treatment, assessment of vaccine effectiveness, estimation of influenza disease burden in the US, and the impact of the influenza vaccination program in averted hospitalizations.

- **Take home message: The data collected through the FluSurvNET are publicly available through FluView, and the data have supported various analytical projects and many articles answering questions of public health importance.**

# ICU SARI surveillance in Cuba

## Dr. María Elena Pérez, Dr. María Elena Mesa, Dr. Antonio Marrero, Dr. Belsy Acosta

*Maria Elena Perez is the surveillance coordinator for the SARI control program. Maria Elena Mesa is responsible for SARI surveillance at Cuba's Juan Manuel Marquez sentinel hospital. Antonio Marrero is a member of the Ministry of Public Health's national group of respiratory viruses. Belsy Acosta is responsible for influenza and other respiratory virus diagnostics at Cuba's National Influenza Center.*

- The PAHO/CDC generic protocol, the PAHO Operational Guidelines for Intensified National SARI Surveillance, and experience acquired in the management of the 2009 influenza pandemic all contributed to the advancement of surveillance in the country.

- The initial implementation of the surveillance of ICU SARI admissions and deaths took place during the 2009-2010 influenza pandemic. These systems were useful in monitoring impact in high-risk populations, such as pregnant women. Data from these systems allowed for the development of timely prevention and control actions.



Casos de IRAG hospitalizados en UTI. Cuba, 2012-2014.
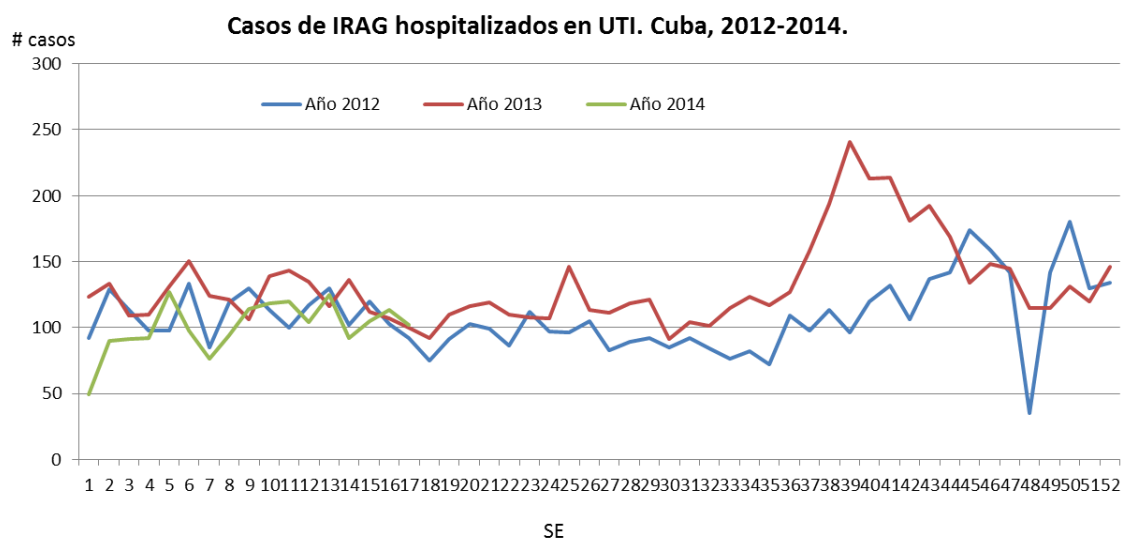
- Examining SARI ICU case-data during 2012-2014 shows an increase in activity from epidemiological weeks 35 to 45 of 2013 as compared to the same period in 2012. This activity was mostly among children less than 1 year of age and was not associated with an increase in mortality.

- **Take home message: Cuba has committed to continue integrated SARI surveillance and to contribute to national research on burden of disease, vaccine effectiveness, and seasonality, among others.**

# Respiratory disease surveillance in Argentina

## Dr. Elsa Baumeister, Dr. Paula Couto

*Elsa Baumeister is from the National Institute of Infectious Diseases –
ANLIS "Carlos. G. Malbrán". Paula Couto is responsible for health surveillance at
Argentina's Ministry of Health.*

- Acute respiratory infection surveillance through the National Health Surveillance System is carried out through the universal clinical surveillance of ILI, SARI, bronchiolitis and pneumonia, in addition to respiratory viruses and Influenza laboratory surveillance through SIVILA. Additionally, since 2011, ILI and SARI events are also monitored in sentinel surveillance sites.

- Over 7000 establishments make up the network of universal clinical surveillance; as well as more than 100 laboratories distributed in 24 jurisdictions in the country, in the public and private sector, which provide surveillance information on a weekly basis.

- This network is used as a system of communication between different sectors, and is used for the planning of resources, distribution of supplies for surveillance and control, management of health services, and for annual influenza vaccination guidelines.

- The dissemination of the information generated and analyzed every week is what constitutes the Integrated Health Surveillance Bulletin, where different strategies of ARI data estimation and projection are presented. http://www.msal.gov.ar/index.php/home/boletin-integrado-de-vigilancia

SARI Endemic Channel, Argentina, 2013. Based on historical data from 2010-2012 (3 years).
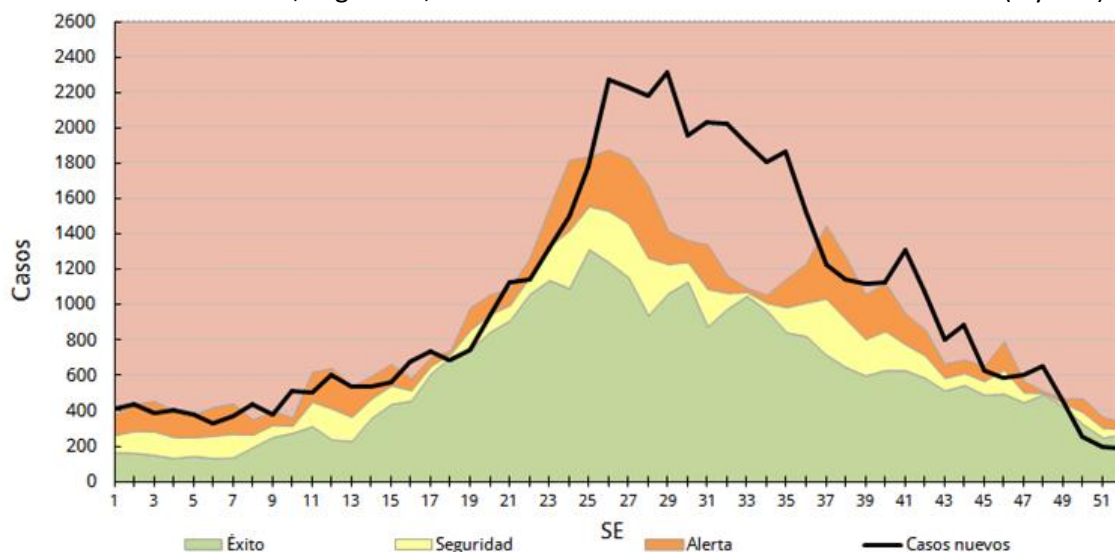


- Technical reports on seasonal pathology, community reports, and epidemiological alerts are available at www.msal.gov.ar.

- **Take home message: Both national and sentinel surveillance systems work to monitor and report on respiratory infections in Argentina.**

## Integrating influenza surveillance systems in the USA
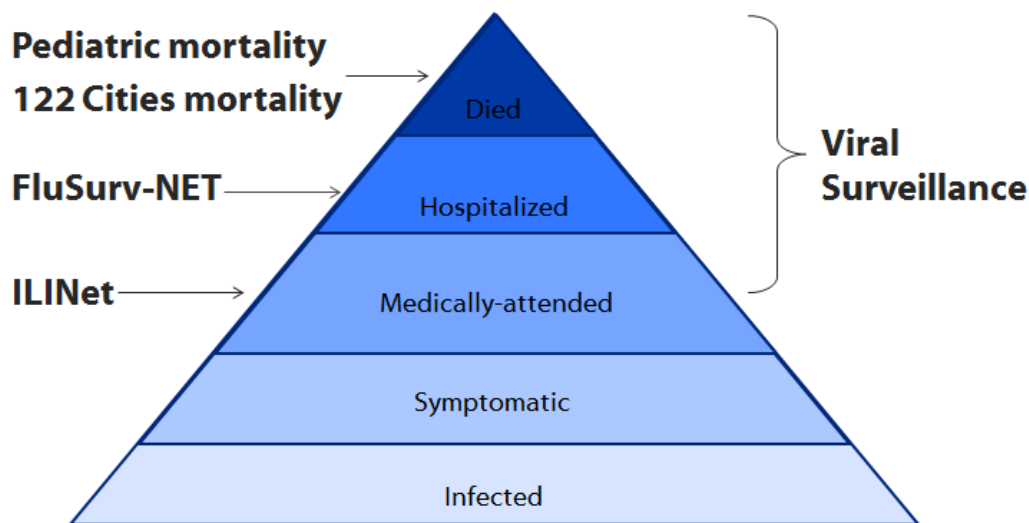### S Epperson

*Scott Epperson is an epidemiologist in the Influenza Division at the U.S. Centers for Disease Control and Prevention.*

- Influenza surveillance in the United States consists of various components that monitor influenza activity among medically attended patients, hospitalizations and deaths.

## U.S. Surveillance Systems for Influenza

**Pediatric mortality**
**122 Cities mortality** → Died

**FluSurv-NET** → Hospitalized

**ILINet** → Medically-attended

Symptomatic

Infected

**Viral Surveillance**

- Persons infected with influenza that are asymptomatic or those that become ill but do not seek medical care at a clinic or hospital are not captured in current routine influenza surveillance activities.

- **Take home message: Transition to electronic health records and electronic death reporting, currently underway in the United States, will allow for more timely assessments of the impact of influenza each season.**

# National influenza season committee and SARI surveillance Chile

## Viviana Sotomayor Proschle

*Viviana Sotomayor works in the Surveillance Unit of the Ministry of Health's DIPLAS Department of Epidemiology, Chile*

- Intensified SARI surveillance was implemented starting in 2011 in 6 high-complexity hospital centers and surveillance includes laboratory testing among all SARI cases.

- This surveillance allows for the monitoring of the trends and severity of respiratory viruses, the identification of influenza subtypes, and the characterization of cases.

- Respiratory samples are collected from all patients who meet the SARI case definition (based on the Surveillance Guide 2011). Immunofluorescence (IF) testing is used for respiratory viruses. PCR is for subtyping influenza positive samples and confirmatory testing of negative samples.
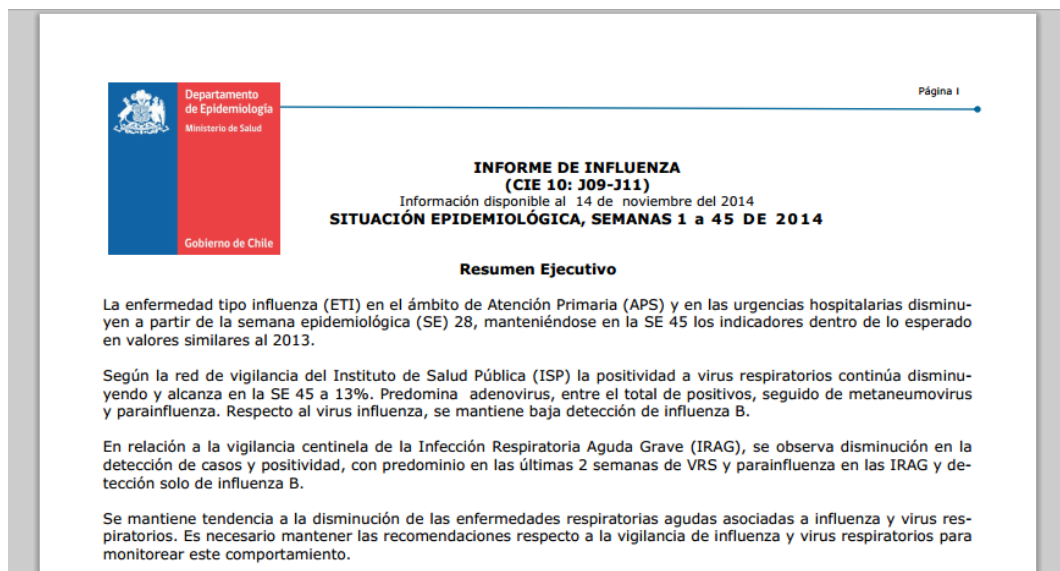


- In terms of the Winter Campaign Committee, SARI surveillance contributes information to planning, adaptation of aid response, decision-making, and the evaluation of strategies.

- The SARI surveillance system is evaluated through result and performance indicators. Resource support is provided through PAHO and at the Central Level for supplies, reagents, and administrative support in hospitals.

- The Winter Campaign prioritizes the permanent training of clinical and surveillance teams, maintenance of assigned resources, and the integration of the Campaign at national, regional and local levels is required.

- **Take home message: The objective of the Ministry of Health of Chile's Winter Campaign is to maintain adequate information and education for the general population, and to provide assistance in responding to increases in adult and pediatric respiratory illness during the winter season.**

# Block 3: SARInet



## SARINet Focus Group Discussion: Questions and Responses

*Prior to the SARInet inaugural meeting, a group of influenza surveillance experts devised several questions as a starting point for feedback on SARInet. These questions were then discussed at the meeting in small focus groups, to generate an idea of the benefits of the network, as well as ways in which the network can be more helpful to its members.*

**Question: What do you think are the benefits of having a network such as SARInet?**

**Response**: The benefits of the SARInet network are national, regional and global, and include technical benefits, such as opportunities for laboratory evaluations and external monitoring. SARInet also allows for dissemination of information about countries' current surveillance capacities, seasonal influenza and vaccine effectiveness data, and training opportunities. The network will allow for increased standardization of technical standards and will create opportunities for interdisciplinary work. This regional collaboration can help improve early notifications of important issues, and supplement each country's capacities, and expand understanding of what is happening in neighboring countries.

**Question: If you have hesitations about joining SARInet, what are they?**

**Response**: Concerns were raised about what level of technology (e.g. information systems) would be needed to participate in the network and whether participation in SARInet might be an additional load on systems. Representatives from countries without information systems platforms expressed concern for their potential participation in SARInet. Meeting participants asked about what type of information will be loaded and the frequency of loading to the network platform. Additionally, confidentiality of the network was raised as to whether the network would be open to anyone.

*Response from the SARI secretariat: SARInet is a confidential network, with three levels of participation: members, collaborators, and participants. Members have full access and each country will determine who in their country will participate in the network as a member. Additionally, data sharing is not a requirement for network participation and data will not be uploaded to the network platform. Routine reporting tools such as FluNet and FluID will be maintained for this purpose.*

**Question: How can the National Influenza Centers contribute to SARInet?**
**Response**: The National Influenza Centers' role in SARInet is to share experiences and new laboratory methods, collaborate in developing reference materials and trainings, improve understanding of the burden of ORV, and share standardized techniques. They will also provide a clinical sample bank, assure the good quality and representativeness of clinical samples, and integrate information with FluNet and FluID.

**Question: How can SARInet be expanded in your country?**
**Response**: Countries will diffuse information to heath and veterinary sectors, involve scientific, academic and investigation groups (if desired), and coordinate with the national SARI focal point(s).

**Question: What would encourage your active participation in SARInet?**
**Response**: Countries expressed that their participation could be encouraged by the following: support for surveillance activities, access to real-time information, availability of data analysis tools, and regular structured interactions between countries.

**Question: What kinds of benefits should the SARInet platform have to make it useful to you?**
**Response**: If SARInet increases the understanding of the respiratory virus surveillance situation of the Region, focuses on advocacy and system sustainability, and strengthens inter-country information sharing about surveillance, the network will be very useful.

**Concluding remarks for focus group session:** Rakhee Palekar (PAHO/WHO, WDC), on behalf of the SARInet secretariat responded to some questions above, saying that this will be a closed network (interested parties must sign-up for access and be approved by the secretariat), each country SARI focal point will designate who should have access within their country to the network, and countries will be Members and have full access to all materials/tools, training guides, and peer-reviewed publications.

# Block 4: Influenza surveillance Part 2

## Regional surveillance of unusual respiratory events (VERI/SURE)
**Mauricio Cerpa (PAHO)**

- Routine surveillance (i.e. ILI and SARI sentinel surveillance) is a surveillance based in indicators and serves one out of the two main objectives: it measures disease burden, including monitoring morbidity/mortality trends, in order to effectively guide control programs and the corresponding allocation of resources.
- However, the routine surveillance requires the complement of an Early Warning Surveillance that covers the second main objective: to detect early public health events requiring rapid investigation and response, in order to ensure that any unusual respiratory events are rapidly detected and controlled.
- Accurate, timely information is one of the most valuable commodities during an influenza pandemic. This information serves as the evidence base for critical decisions at all levels of administration and defines the messaging for public communication and education. An effective system should be developed in preparation for a response.
- The systems required for early warning and surveillance should be robust and enable the capture of data required for assessment of severity, the implementation of public health measures and assessments of national impact.
- The IHR (2005) provide the regulatory framework for the timely and effective management of the international public health risks.

**Routine Influenza Surveillance**
Based on indicators

**Early Warning Surveillance**
Based on events
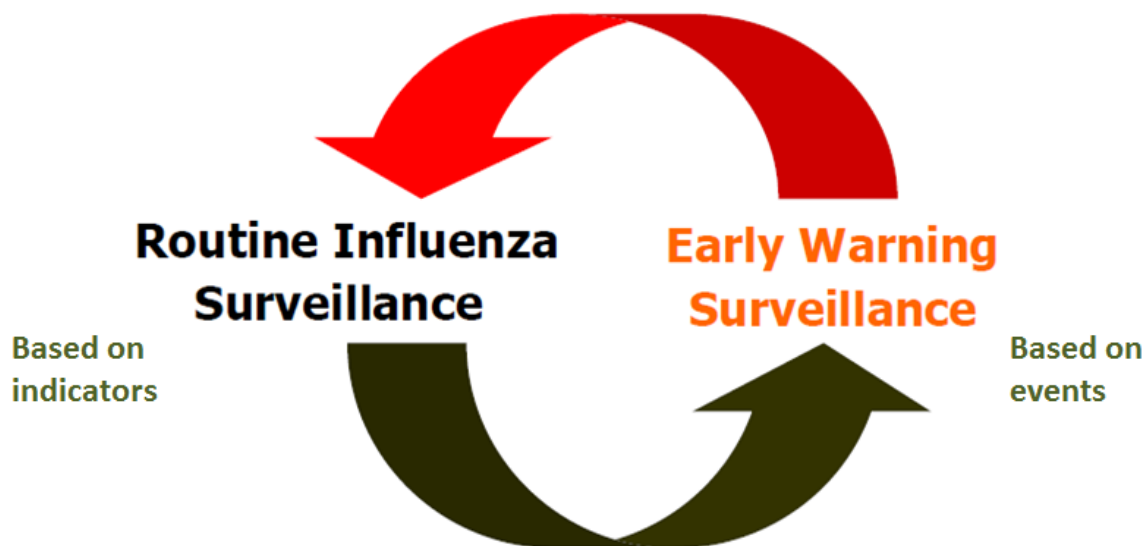
- **Take home message: The primary purpose of event-based surveillance is to detect the emergence of novel pathogens early. Event-based surveillance systems should contain three basic components:**
  1) **A pre-defined list of alert events that should be reported immediately to public health authorities;**
  2) **A clear mechanism for reporting these alert events; and**
  3) **A mechanism for the investigation, evaluation and response to alert events.**


## Country roundtable VERI/SURE & panel discussion

### Canada
**Teresa Mersereau**

*Teresa Mersereau is the chief of surveillance, assessment and response within the surveillance section of the Public Health Agency of Canada.*

- In 2010, Canada implemented SARI surveillance (population = 35 million), which is conducted within its 10 provinces and 3 territories (PTs).

- SARI surveillance utilizes and builds upon existing influenza surveillance infrastructure including outcome surveillance networks (pediatric and hospital-based networks).
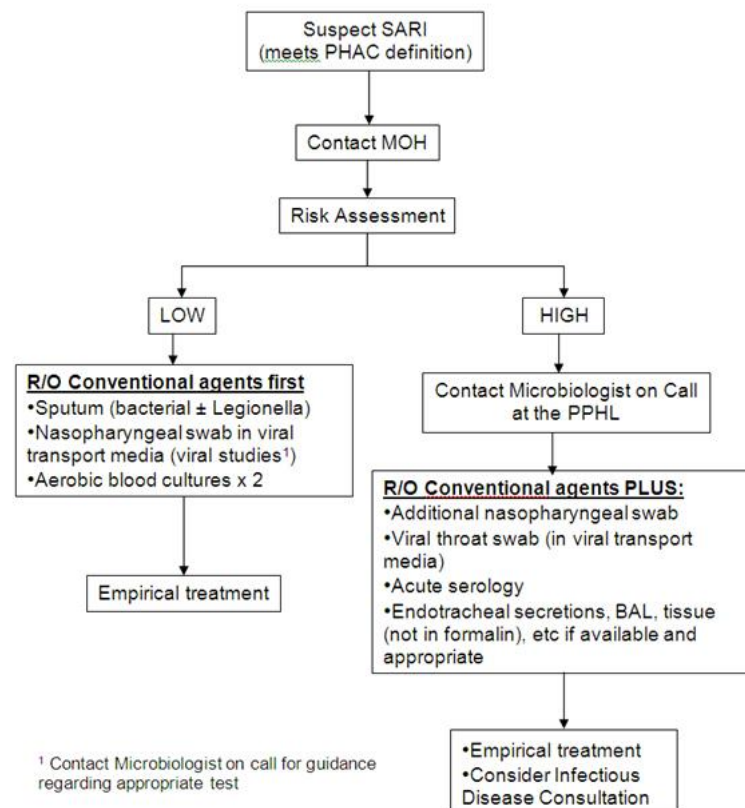
- Five criteria must be met for the SARI case definition:
  1) Respiratory symptoms (Fever ≥ 38°C AND new or worsening cough or difficulty breathing
  2) Progression to severe disease (pneumonia, ARDS, or severe ILI with life-threatening complications)
  3) Admission to ICU or critical care facility OR require mechanical ventilation
  4) No alternate dx in first 72 hours of hospitalization
  5) Presence of one or more of following exposures/conditions:
     - Travel history within ≤ 10 days of illness onset to a country reporting novel/emerging/re-emerging pathogen
     - Close contact with ill person who has travelled to an area/site affected by an outbreak within 10 days prior to symptom onset
     - Exposure to setting with mass die-offs or illness in domestic poultry or swine in previous 6 weeks.
     - Occupational exposure involving direct health care, laboratory or exposure to potentially infected animals

- Canada also has an established a post-mortem case definition based on clinical history and autopsy findings when no alternate diagnosis explains illness AND presence one or more exposure/conditions listed #5 above.

- In compliance with the 2005 International Health Regulations (IHR) the PTs report SARI cases [with laboratory confirmation of viruses performed by the National Microbiology Laboratory (NML)] nationally through established communications protocols and CRFs.

- **Take home message: The primary objective of this SARI surveillance system is early detection and containment of cases of emerging/re-emerging respiratory infectious diseases.**

## El Salvador
### Héctor Manuel Ramos Hernández

*Héctor Manuel Ramos Hernández is a doctor of internal medicine and epidemiologist, and technical medical collaborator of Health Surveillance Management at the El Salvador Ministry of Health.*

- Respiratory virus surveillance in El Salvador consists of three main networks:

  o Integrated Sentinel Surveillance, encompassing SARI and ILI is carried out in 5 sentinel units in the country's 5 regions and includes 9 hospitals (5 samples/week are collected), 8 health centers (3 samples/week….), and 3 laboratories with indirect immunofluorescence capacity.

  o Intensified National Surveillance, which is used to monitor unusual SARI and includes the entire network of public and private health establishments. These establishments investigate unusual SARI cases and SARI clusters (100% of cases). Real-time PCR is beginning to be used in the country as a diagnostic modality. ILI outbreak investigations are also carried out (3 samples/week).

  o Rapid Monitoring of Respiratory Viruses, which also includes all hospitals in the National Health System, each of which collects five samples from SARI patients every two weeks.

- **Take home message: Together the Integrated Sentinel Surveillance, Intensified National Surveillance, and Rapid Monitoring of Respiratory Viruses networks feed the VIGI CENTINELA 01 and VIGEPES CENTINELA national systems.**

Total unusual SARI cases and samples sent by month, El Salvador, 2013.
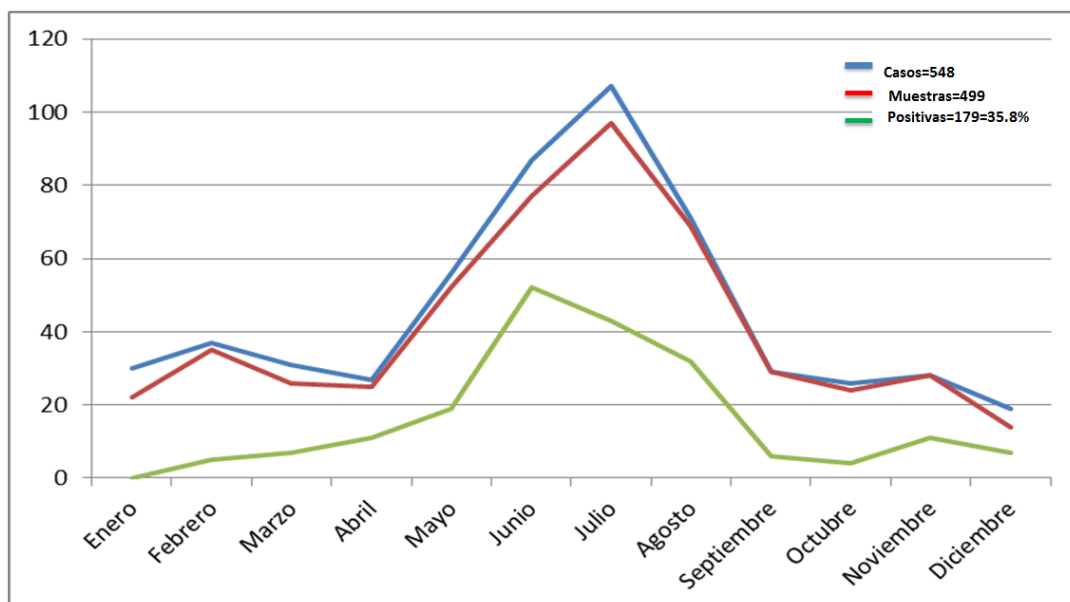
**Colombia**

**Juliana Barbosa Ramírez**

*Juliana Barbosa Ramírez is the coordinator of the Colombian NIC and National Laboratory Reference for influenza and other respiratory viruses*

- Unusual SARI surveillance is carried out in all primary data generation units (UPGDs) (healthcare institutions) in the country. Notification of cases is done individually and immediately via the SIVIGILA system. Epidemiological investigation of cases and contacts is conducted, and individual and collective methods of control are implemented.

- Unusual SARI surveillance is integrated into the routine influenza and other respiratory virus surveillance systems.
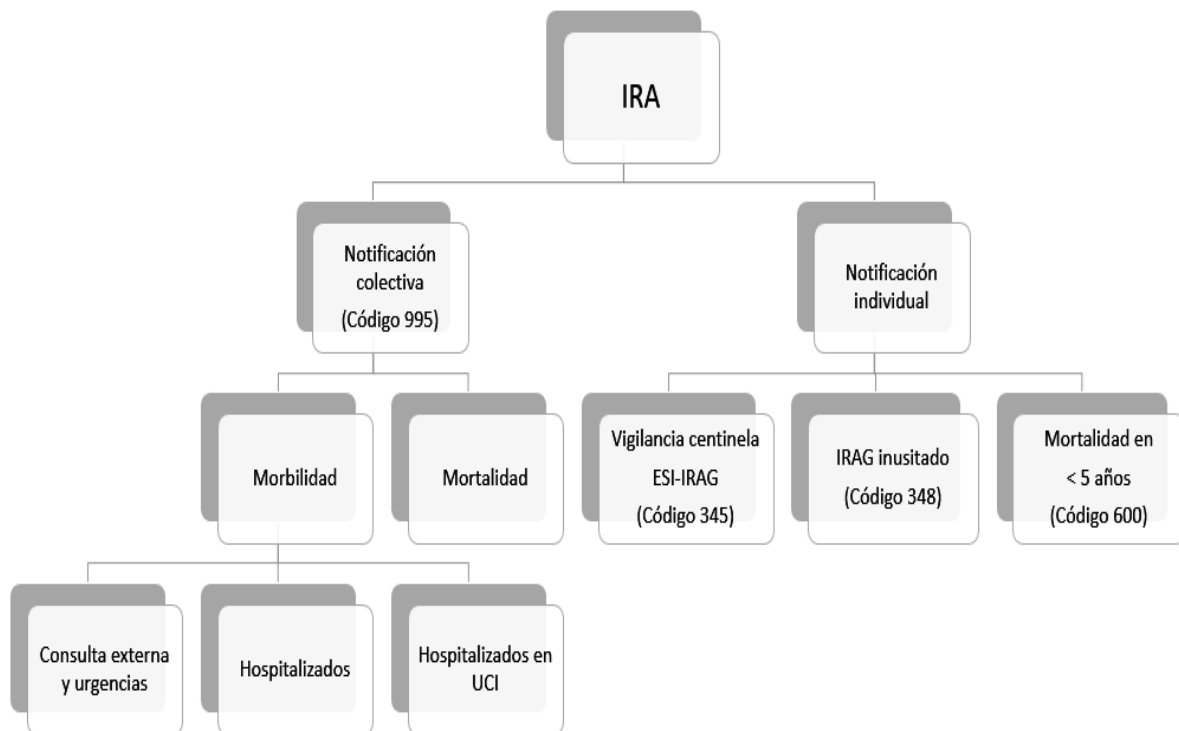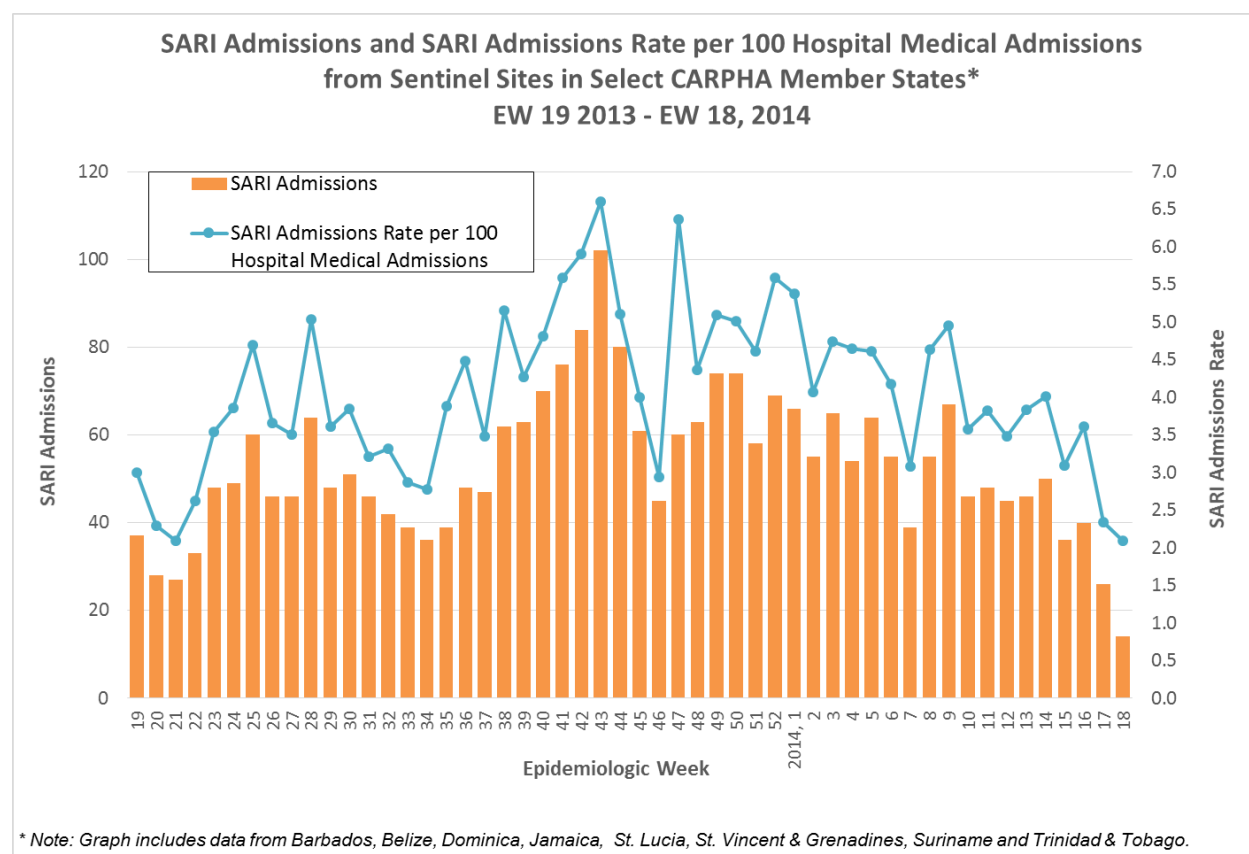


- The pathogens identified from unusual SARI cases are included in the NIC's weekly report.

- **Take home message: The objective of unusual SARI surveillance is to detect and investigate all unusual SARI cases in a timely manner, allowing for the early identification of the causal agent, and the timely orientation and intervention, to control and even prevent such events.**

# CARPHA

## Dr Cristina Gutierrez

*Dr Cristina Gutierrez is the head of the Laboratory Services and Networks Department at the Caribbean Public Health Agency (CARPHA)*

- CARPHA performs routine regional syndromic surveillance of SARI/ARI in CARICOM[1] member states (excluding Haiti).

- In-country sentinel sites detect suspected cases and send samples to CARPHA for laboratory confirmation of influenza type and subtype, and of non-Influenza respiratory viruses (RSV, Parainfluenza 1, 2, 3, HMPV, Adenovirus, Rhinovirus).



SARI Admissions and SARI Admissions Rate per 100 Hospital Medical Admissions from Sentinel Sites in Select CARPHA Member States*
EW 19 2013 - EW 18, 2014

*Note: Graph includes data from Barbados, Belize, Dominica, Jamaica, St. Lucia, St. Vincent & Grenadines, Suriname and Trinidad & Tobago.*

- A weekly report is sent to CARICOM member states and other external stakeholders informing, by region and by country, the number of SARI admissions and the number of laboratory

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[1] CARICOM is the Caribbean Community, an economic integration and foreign policy organization comprising various states and territories in the Caribbean.
Members: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago
Associate members: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Turks and Caicos Islands
Observers: Aruba, Colombia, Curaçao, Dominican Republic, Mexico, Puerto Rico, Sint Maarten, Venezuela

confirmed cases and their etiological distribution. The report includes a complete 12-month period of data to highlight trends.

- Along with the samples received from CARICOM member countries, CARPHA collects both individual case data and aggregate data, and monitors and analyses the data.

- **Take home message: the CARPHA laboratory serves as an important resource for CARICOM countries, processing samples sent from the countries' sentinel surveillance sites. The laboratory also serves as a central point for data collection and reporting for these countries.**
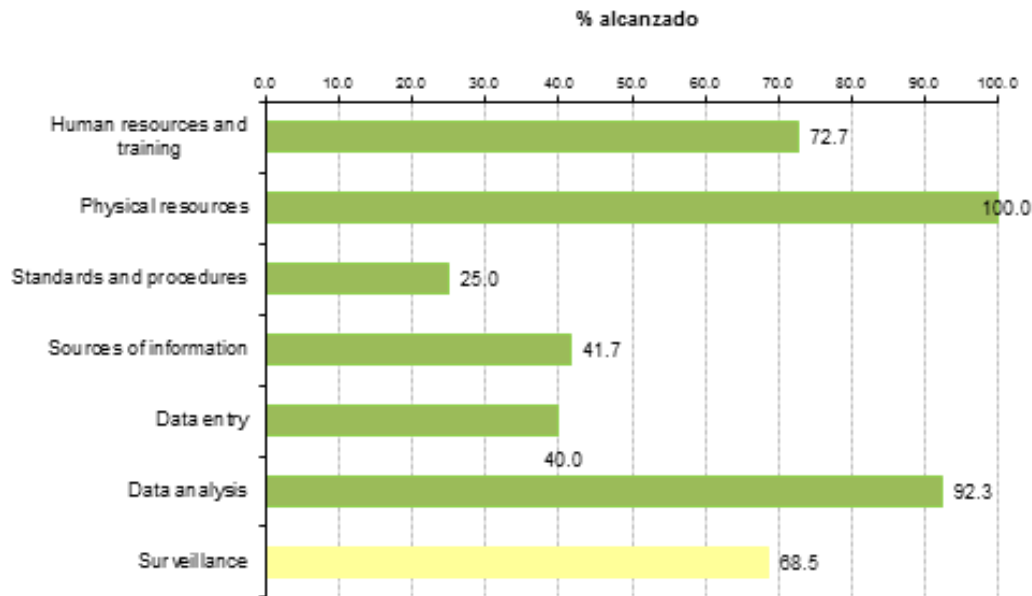
## Monitoring and evaluation

### PAHO region update
### Tiffany D'Mello (PAHO)

*Tiffany D'Mello is an influenza surveillance specialist on the Influenza Team of the Pan American Health Organization.*



- Monitoring is assessing data quality to ensure that data are timely, complete and consistent and evaluation is assessing the overall system and its components to ensure that they are functioning with the highest possible performance and efficiency**.**

- The tools available for monitoring and evaluation include the PAHO surveillance guidelines, PAHO Hospital Evaluation Tool (draft), CDC International Influenza Surveillance Assessment Tool, and the CDC-APHL International Influenza Laboratory Capacity Tool.

- **Take home message: Routine monitoring and evaluation are key components of influenza and other respiratory virus surveillance in the Americas.**

**EPIDEMIOLOGY**

% alcanzado



Human resources and training: 72.7
Physical resources: 100.0
Standards and procedures: 25.0
Sources of information: 41.7
Data entry: 40.0
Data analysis: 92.3
Surveillance: 68.5

**Country perspective: Uruguay**

**Silvia Martinez**

*Silvia Martinez works at the "Raùl Amorin Cal" Hospital in Florida, Uruguay.*

- Surveillance in Uruguay is composed of three parts working together:

  o Sentinel Hospitals carry out year-round surveillance of all cases that meet the epidemiological criteria for SARI, including sample and data collection and input into the online system.

  o The Public Health Laboratory serves as a national-level reference laboratory for the analysis of SARI samples sent by the sentinel hospitals.

  o The Hospital Infection Control Unit, part of the epidemiological division, monitors the mandatory daily input of data to the National Surveillance System online registry and checks case data, risk factors, laboratory shipment, supplies, and data inconsistencies.
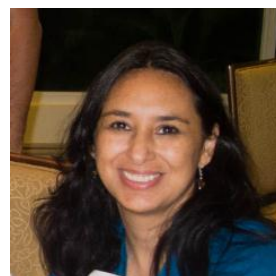
- **Take home message: Sentinel Hospitals, The Public Health Laboratory, and the Hospital Infection Control Unit work together to monitor and report on respiratory infection data.**

## Monitoring data from SARI sentinel hospitals
### Arletta Añez (PAHO-BOL)
*Arletta Añez is a SARI surveillance epidemiologist at PAHO, Bolivia.*

- Performance indicators within the surveillance system should include: timeliness of notification, percentage of SARI cases sampled, percentage of ICU SARI cases sampled, timeliness of shipment of samples to laboratories, sample processing, timeliness of result notification from the laboratory to surveillance officers, and quality control in these processes.



Porcentaje de muestras enviadas antes de las 24 horas por sitio centinela año 2013
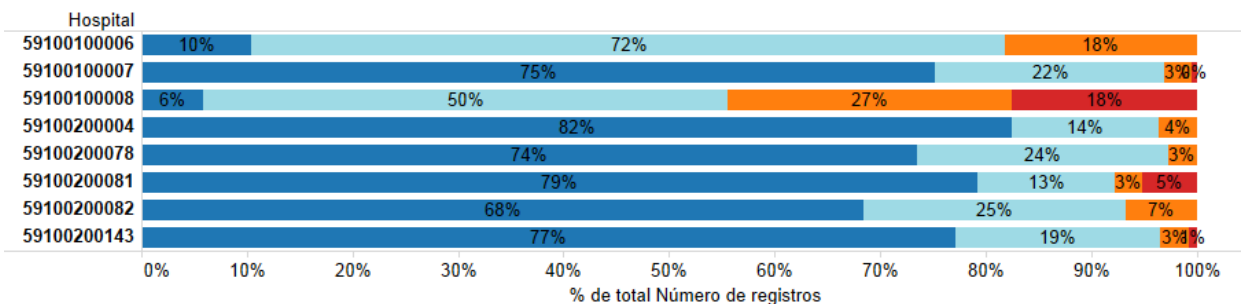
- **Take home message: Only through surveillance system monitoring can issues be identified and corrective action taken.**

# Data analysis and dissemination:

## FluID
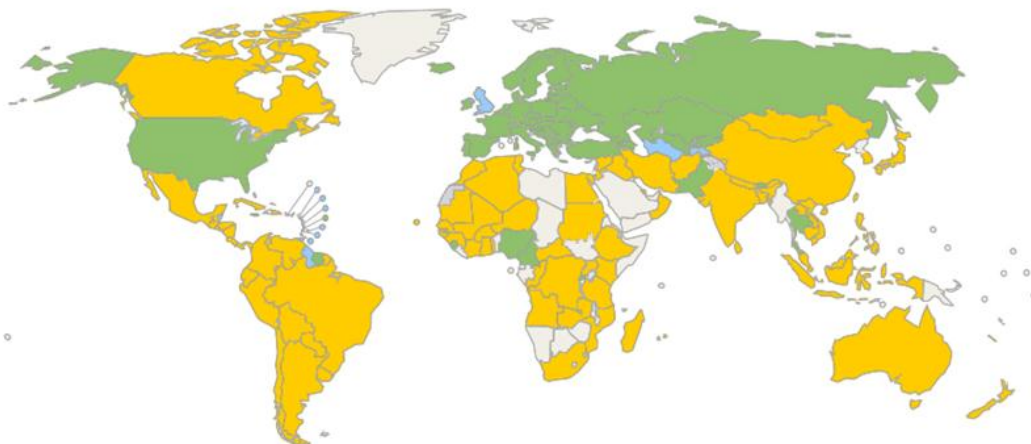## Julia Fitzner (WHO)

- FluID is a platform for epidemiological data that will complement the virologic information already available through FluNet, allow for the improved interpretation of virologic information, and make epidemiologic information available in one place and comparable from country to country.



- FluID will allow flexible data input for SARI, ARI, ILI, pneumonia and mortality data, as well as qualitative information like geographical spread, trends, intensity, and impact.

- **Take home message: WHO created FluID to collate data for real-time monitoring of influenza activity, to make informed decisions at the national, regional and global level, and to allow each country to understand their data in a global context.**
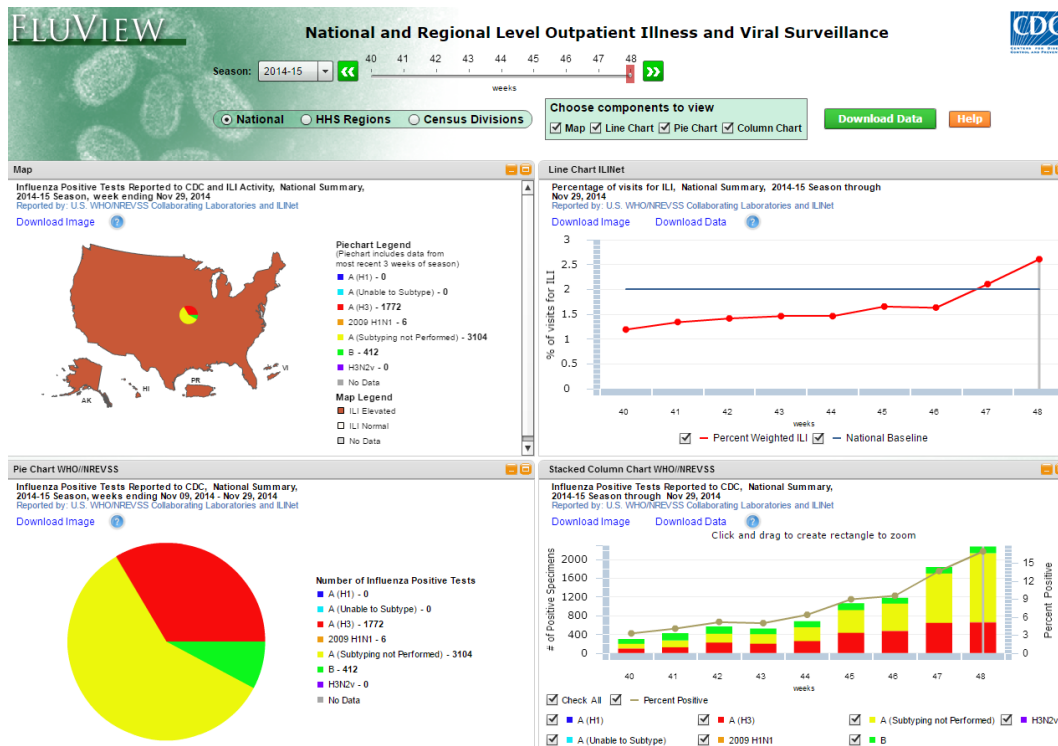
## Country perspective FluView dashboards USA
## S Epperson

- Interactive displays of all influenza surveillance data are publicly available at http://www.cdc.gov/flu/weekly/fluviewinteractive.htm.

- Data display allows for transparency of information and sharing with the public, the media, decision makers, and public health partners.



- **Take home message: Clear and consistent communication of data is critical to create trust with the public and the media. Furthermore, the visibility created by consistently displaying your data publicly can allow you to justify the usefulness of your activities to secure continued funding or expand activities.**

**Components of a SARI information system and data sharing**
**M Cerpa (PAHO)**



- Two critical components of a SARI information system are epidemiological-laboratory integration and accessibility of the integrated information.

- An information system should allow for easy data monitoring and detection of errors, and improve the ease of data analysis.

- SARI information systems should allow for the increasing automatization of: epidemiological analysis, reporting the follow-up of influenza activity indicators, and the monitoring of sentinel hospital performance.

- Considering that countries have generated evidence from and have first-hand knowledge about SARI surveillance systems, WHO/PAHO should collect and disseminate this information through FluNET and FluID.

- **Take home message: A SARI information system should include timely epidemiological-laboratory integrated data as well as mechanisms for routine monitoring and reporting.**

# Laboratory Updates Track

## rRT-PCR updates & validated kits
### S Lindstrom (CDC-ATL)

*Stephen Lindstrom is the team lead for the Diagnostics Development Team, in the Virus Surveillance and Diagnosis Branch within the Influenza Division at CDC-Atlanta.*

- All public health labs have the responsibility to detect influenza outbreaks in a timely way and rapidly inform stakeholders about emerging pathogens.

- Because of the viral evolution, the surveillance process as well as virology techniques and methods based on rRT-PCR have to be regularly updated.

- CDC rRT-PCR assays for detection and characterization have been updated to efficiently detect avian influenza A/H7N9, A/H5N1, A/H3N2v
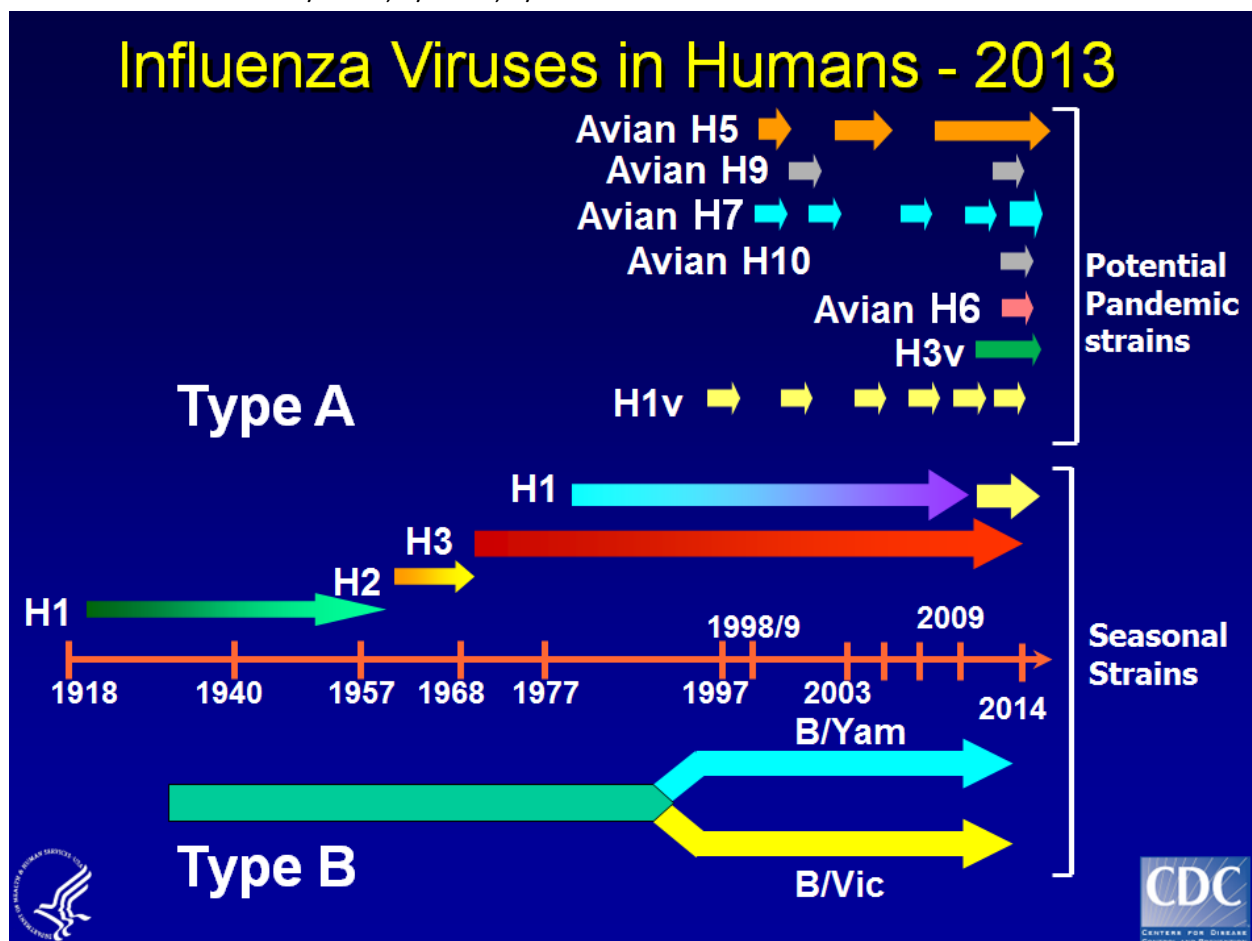


- Currently, CDC is testing and validating new enzyme chemistry options, whose performance could be less expensive to maintain.

- All CDC influenza detection kits are available through the Influenza Reagents Resource tool for National Influenza Centers (NICs) and beneficiary labs in the PAHO region.

- **Take home message: CDC has regularly updated and adapted standard procedures to reflect viral evolution and advances in techniques. CDC is a resource for NICs and other labs in the region.**

## IRR, CLISIS, PT panels, PCR kits

### LaShondra Berman

*LaShondra Berman is a microbiologist on the Diagnostics Development Team in the Virus Surveillance and Diagnostics Branch of the Influenza Division, NCIRD, at CDC-Atlanta.*

- CLSIS is available for protocols and technical support to registered laboratories. www.cdc.gov/flu/clsis

- Questions regarding use of the CDC assays can be directed to CLSIS@cdc.gov

- Quality Assessment panel will be available in 2014 for laboratories wishing to participate through CDC/PAHO

- **Take home message: The CDC Quality Assessment Panel will allow a better understanding of the diagnostic challenges faced in the regional laboratories and hence allow PAHO to better support the regional laboratories with training.**

## Influenza diagnostic challenges

### J Mendez (PAHO)

*Jairo Mendez Rico is an influenza laboratory specialist with the Influenza Team of the Pan American Health Organization.*

- Every year, influenza infects up to one in five people around the world, and causes up to half a million deaths.

- The human immune system can detect and destroy the influenza virus, but people can be infected with influenza many times throughout their lives.

- Viruses change through the evolutionary processes, generating "new" viruses, and thus new infections results. This means that a new immune response has to be established. Evolution is a natural process that can occur spontaneously, but viruses are pressured to change, thanks to immune response, vaccines, new cell receptors, etc.

Viral evolution: Influenza
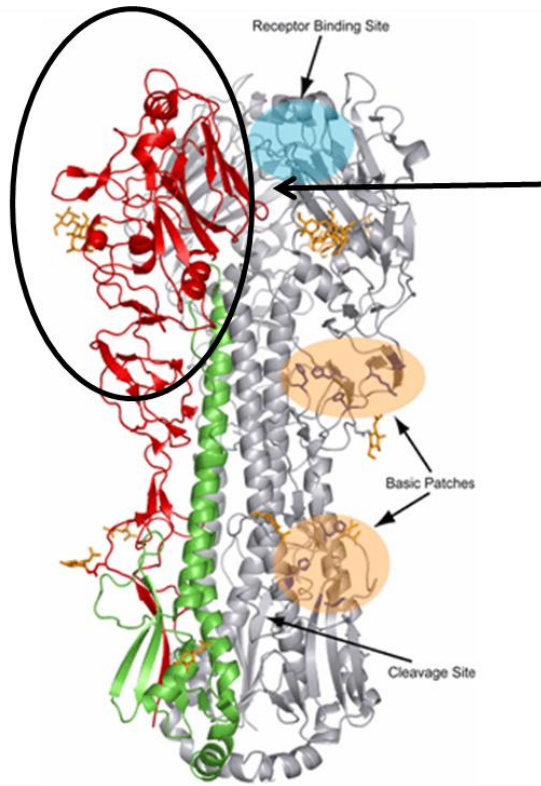


Mutations to the HA1 region of the hemagglutinin protein are thought to drive the majority of **antigenic drift** in the influenza virus

**How does it affect lab diagnosis?**

James Stevens and Ian A. Wilson. *SSRL Science Highlight - August 2004*

- Lab characterization of antigenic phenotype is possible through hemagglutination assays.

- **Take home message: The challenge of viral evolution is reducing its impact on vaccine selection. To address this challenge, the age at which embryonated eggs (frequently used in virus studies) are inoculated has been changed from 9-10 days to 13-15 days, the inoculation route has been changed to allantoic cavity, and the egg incubation has been changed from 33°C to 35°C.**

# PT panels in Chile

## Rodrigo Fasce

*Rodrigo Fasce is the chief of Respiratory and Exanthematic Viruses at the Biomedical Laboratory Department of the Institute of Public Health in Santiago, Chile.*
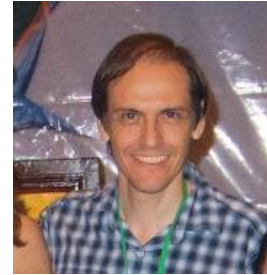


- A CDC quality control panel for influenza was used in 6 regional laboratories in 2013.

- The panel involved 10 samples, including samples that were positive for A(H1N1pdm09), A(H3), A(H3v), Influenza B and negative samples. Of the positive samples, the range contained low, high and very high titers.

- It is hoped that CDC panels and logistical support from PAHO will continue in the future, so that the same activities can continue to be useful to countries in the coming years.

- **Take home message: This was a very useful exercise that, apart from observing consistency in laboratory results (80-100%), allowed for the detection of areas that could be improved.**

# MERS CoV laboratory update
## Teresa Peret (CDC-ATL)

- The highest index and sporadic cases of MERS-CoV ratio (average ratio by month=7) occurred from May to August 2013.

- The recent increase in sporadic cases in 2014 is concerning, as human-to-human transmission appears to have occurred in many clusters, with close contacts. Improved infection control in health care facilities and homes is urgently needed.

- Surveillance has been focused on severe, hospitalized cases and as such, 92 % of reported cases have been severe cases (136/147). The incubation period is 1-13 days with an average of 5 days, and the duration of viral shedding is at least 26 days. The source of the virus remains uncertain, yet studies suggest that camels and bats may be reservoir species.

- The patients to be tested for MERS-CoV will be determined according to the updated WHO case definition. Although routine testing for other respiratory pathogens is recommended, it should not delay MERS-CoV testing. The collection of multiple samples from multiple sites over the course of the illness is recommended, particularly both upper and lower respiratory tract specimens, as well as paired serum samples. Transport and storage of specimens, as well as laboratory procedures, should follow international WHO regulations.

- Routine confirmation of cases is based on viral RNA detection by rRT-PCR with the use of sequencing when necessary. The rRT-PCR assays targeting upstream of E protein gene (upE) is highly sensitive and recommended for screening.  All the positive detections resulting from this assay should be followed up with an ORF 1a rRT-PCR assay.

- As of May 2014, a case is considered confirmed when either both rRT-PCR upE and ORF 1a test positive; or when a sequencing assay indicates MERS-CoV in a sample with a positive PCR result.

- The U.S. CDC has developed a two-step approach for serological testing, based on ELISA screening test and IFA or microneutralization test. A neutralization assay should confirm any positive result by these tests. As of May 2014, persons with positive serological tests (in the absence of PCR testing or sequencing) are considered probable cases.

- **Take home message: A global laboratory networking is an essential part of the surveillance of this emerging pathogen. Should support for obtaining control material for the rRT-PCR assays be required, Member States can ask WHO for assistance. Laboratories should notify, through the formal channels, public health authorities and WHO immediately of MERS-CoV cases.**

# Data Management Track

## Automated influenza indicators
### Arletta Añez (PAHO-BOL)



- Data analysis is an activity fundamental to the process of influenza surveillance. This analysis must be continuous or on a regular basis; it must also be easy to understand and include periodic dissemination for decision-making. The computer tools available today allow this analysis to be performed in real- time.

- The PAHO/WHO Guidelines, and frequently in national guidelines, recommended that countries define indicators associated with SARI and influenza surveillance. These indicators fall mainly into two categories: those that define influenza activity and those that define hospital and laboratory performance.

- Some indicators should be assessed periodically: when, where and who influenza activity affects – these are called **influenza surveillance outcome indicators**.

- Some indicators deal with the performance of each of the sentinel hospitals and laboratories. These indicators allow us to detect processes and monitor activities that need to be improved in a timely manner to ensure the quality of the system. These are called **influenza surveillance performance indicators**.

- This presentation shows how a SARI surveillance epidemiology or laboratory professional can develop analysis routines, based on result and performance indicators, using an analysis program (in this case, Tableau). This is an easy and timely way to analyze data from the SARI case database, as well as to geo-reference case distribution and sentinel sites.

- **Take home message: Any epidemiologic (of the national or local level) or laboratory professional that participates in SARI surveillance should routinely analyze performance and outcome indicators using a computer analysis program (e.g. Tableau), from the database of SARI cases.**

**FluID and average epidemic curves and thresholds**
M Cerpa (PAHO)/ J Fitzner (WHO)



- The establishment of historical trends and baselines provides a range of usual, expected values against which to compare outbreaks related to new viruses or unexpected events related to previously circulating viruses. Such historical data will allow rapid assessment of future pandemic severity and provide the necessary infrastructure to follow the impact of an event, such as an outbreak of a novel influenza virus, as it unfolds over time. The data will provide valuable information on the usual seasonality of influenza and the groups at risk for severe disease.

- Within the objectives of influenza surveillance, baselines and thresholds help us to compare current activity with previous years' influenza activity, detect the peak periods of influenza activity, and determine the beginning and end of the influenza season.

- It is important to understand three concepts:
  - The Average Epidemic Curve is the usual level of influenza activity occurring during a typical year. This curve is the calculated average of several epidemic years. The average epidemic curve's level varies throughout the year.

  - The Seasonal Threshold is the level of influenza activity indicating the beginning and the end of the annual flu season. When a weekly rate exceeds the seasonal threshold, it is assumed that a sustained community transmission is occurring.

  - The Alert Threshold is the level above which, depending on the time of year, influenza activity is higher than in the majority of the previous years. A lower threshold, below the baseline, can also be used to indicate when a season is unusually mild.

  - To review or learn this methodology to establish the above three measures, review the following documents from WHO/PAHO:
    http://www.who.int/influenza/resources/documents/influenza_surveillance_manual/en/ OR
    http://www.paho.org/hq/index.php?option=com_content&view=article&id=3353&Itemid=2470&to=2256&lang=es

  - FluID accommodates both qualitative and quantitative data which facilitates the tracking of global trends, spread, intensity, and impact of influenza. These data are made freely available to health policy makers in order to assist them in making informed decisions regarding the management of influenza.

  - **Take home message: It is important to use historical data to establish the expected levels of seasonal activity, which are important for decision makers. Additionally, global platforms such as FluID, allow for better understanding of influenza activity worldwide.**

# The launch of SARInet



The Severe Acute Respiratory Infections network (SARInet) is a regional collaboration of professionals within hospitals, laboratories, and associated organizations who participate in SARI surveillance in the Americas.  SARInet consists of diverse individuals, countries, and organizations that are involved with SARI surveillance.  Each plays an important role in helping to improve the SARInet collaboration and enhance understanding of the epidemiology of influenza and other respiratory viruses (ORV).

SARInet's mission is to provide a forum for professionals involved in SARI surveillance from the Ministries of Health, sentinel hospitals, laboratories, and associated organizations to share, learn and collaborate to reduce the morbidity and mortality of acute respiratory infections associated with influenza and ORVs in the Americas.

SARInet's vision is to form a strong regional network for SARI surveillance, which is fully integrated with global health policies and practices and positions the Americas to be able to monitor, respond to, and diminish the burden of viral respiratory infections.

Network objectives:

- Establish a forum for exchange of knowledge and experiences between professionals participating in SARI surveillance including physicians, epidemiologists, laboratory workers, decision-makers, and national and international agencies
- Strengthen and standardize surveillance practices for influenza and ORV-associated SARI
- Promote continuous surveillance process improvement
- Support and encourage scientific analyses in accordance with the WHO public health research agenda for influenza

# Meeting reviews

All 84 meeting participants were asked to complete an anonymous survey (see annex 1) after participating in the two-day meeting.  Of the 59 surveys completed, 57 surveys were used for the final analysis.

On average, participants rated the meeting as 8.3 out of 10 for overall value (33% of participants responded 8/10, 33% of participants responded 9/10, and just over 5% responded 10/10). One respondent commented, "This event has been useful because countries were able to share their experiences with each other; because of this it is important to maintain this kind of reunion to continue enriching our understanding with the experience of others."

98% of respondents indicated that they had both learned from the course and that the information learned during the meeting would be useful for their daily work.

Respondents were asked to indicate (in open response) what aspect of the SARInet inaugural meeting they found most beneficial. One participant described enjoying "the Latin American and Caribbean integration, country presentations for best practice, group dynamics, and [the] venue." The answer most frequently provided was the opportunity to collaborate with and learn from their colleagues in other countries and/or other systems (see graph, below). Many participants also indicated that they enjoyed learning about new systems and techniques, such as the FluID system or laboratory techniques and working in smaller groups.
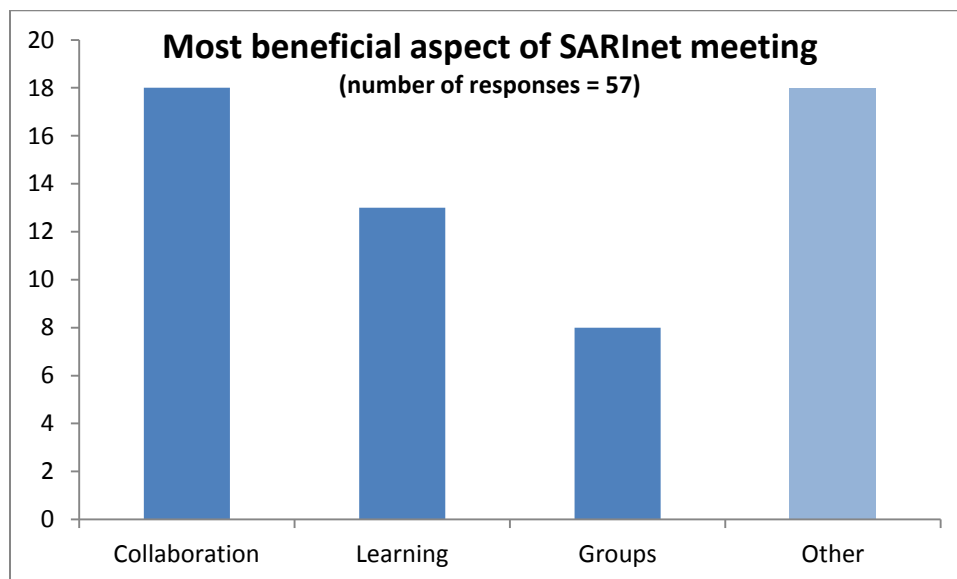


In response to another open-ended question, 49% of respondents indicated that the meeting did not provide enough time for all the presentations and discussions and many suggested adding another day to the meeting.

*Addressing these comments, the PAHO Secretariat responded with the following:* While ideally, another day would have allowed for more in-depth material to be presented and discussed, it would also have limited the number of attendees. Especially for an inaugural meeting, the organizers decided that it was more important to ensure that as many SARInet participants as possible could attend.

For future meetings, topics of importance, as proposed by the survey respondents, included the following: advances in the SARInet network, as well as calculating burden of disease or seasonality, FluID training, and sustainability strategies.

Overall, most participants found the meeting to be a highly satisfactory introduction to a network that they were eager to integrate into their work. "The [meeting] was excellent," said one participant. "SARInet will be a great help in keeping up to date with any changes that take place in respiratory virus surveillance."

# Thank you and Welcome



The PAHO Flu Team would like to thank all of the participants for their attendance at the SARInet inaugural meeting at the Gamboa Rainforest Resort in Panama! The team is looking forward to exciting opportunities for collaboration and improvement in influenza surveillance in the Region. Welcome to SARInet!

**Annex 1:** SARInet meeting exit survey

Pan American Health Organization · World Health Organization · SARInet Severe Acute Respiratory Infections network · Americas

| MEETING ASSESSMENT ANONYMOUS QUESTIONNAIRE |
|---|

MEETING NAME: **SARINET**
PLACE AND DATE OF MEETING: **Panama City (May 29 and 30, 2014)**

| Mark with an **X** the criteria that best reflects your opinion on each of the statements below | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|
| **Meeting content** | | | | | |
| The selection of topics was relevant | | | | | |
| The presentations contained current themes | | | | | |
| Country participation was adequate | | | | | |
| The methodology used was appropriate | | | | | |
| **Meeting relevance** | | | | | |
| The meeting will be useful in my usual work | | | | | |
| I have learned during the course | | | | | |
| The topics piqued my interest | | | | | |
| The meeting (at least) met my expectations | | | | | |
| **About SARInet** | | | | | |
| The objectives of SARInet are appropriate | | | | | |
| I think that SARInet will be useful for the Americas | | | | | |
| I see my participation in SARInet as important | | | | | |
| I see the participation of my country in SARInet as important | | | | | |
| **Meeting organization** | | | | | |
| Information received before the meeting was adequate | | | | | |
| The meeting schedule was adequate | | | | | |
| The length of the meeting was adequate | | | | | |

| On a scale of 0 to 10, mark an **X** on the value that best reflects your perceived overall value of this meeting (0 being the most negative perception and 10 being the most positive) | 0 1 2 3 4 5 6 7 8 9 10 |
|---|---|

| COMMENTS AND SUGGESTIONS |
|---|
| **COMMENTS ON ANY TOPIC:** |
| **INDICATE WHAT YOU LIKED MOST ABOUT THE MEETING:** |
| **INDICATE WHAT YOU LIKE LEAST ABOUT THE MEETING:** |
| **INDICATE THE TOPICS THAT YOU WOULD MOST LIKE TO ADDRESS IN THE NEXT MEETING:** |