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REGIONAL OFFICE FOR THE **Americas**

Influenza and Other Respiratory Virus Surveillance Systems in the Americas

2014



Influenza and Other Respiratory Virus Surveillance Systems in the Americas

2014



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Acronyms

ARI	Acute respiratory infection
CARPHA	Caribbean Public Health Agency
CENETROP	Centro de Enfermedades Tropicales (Santa Cruz, Bolivia)
EW	Epidemiological Week
ILI	Influenza-like illness
INLASA	Instituto Nacional de Laboratorios de Salud (La Paz, Bolivia)
INS	Instituto Nacional de Salud
ORV	Other respiratory viruses
SARI	Severe acute respiratory infection
SEDES	Servicio Departamental de Salud (Bolivia)
ICU	Intensive Care Unit
RSV	Respiratory Syncytial Virus

Background

Countries of the Americas have been developing surveillance systems to detect novel influenza subtypes and monitor seasonal influenza epidemics for more than ten years. These systems, when functioning optimally, allow public health decision makers to understand when, where, and who is being affected by influenza during seasonal epidemics and should detect the emergence of a novel influenza subtype in a timely manner.

The first surveillance systems to be developed in most countries in the Region were laboratory-based surveillance systems, which would allow the detection of a novel influenza subtype if a clinical sample was collected and tested in the laboratory. Since this time, many other systems have been developed to complement and integrate with the laboratory surveillance platforms, which allow for monitoring of influenza, pneumonia, and clinical influenza proxy syndromes in the ambulatory and hospitalized settings (e.g. influenza-like illness [ILI] and severe acute respiratory infection [SARI]). There are systems which are both indicator-based as well as systems which rely upon event-based information (e.g., tracking of media reports), and these systems are often based upon similar surveillance protocols, such as the PAHO-CDC Generic Protocol for Influenza Surveillance (December 2006). The results of these efforts are a variety of systems, each of which contributes to the regional and global picture of influenza.

This publication represents a compilation of the respiratory virus surveillance systems which exist in countries throughout the Region. These data were obtained directly from the countries and represent an overview of the capacities which currently exist.

Each profile includes information about both epidemiological and laboratory surveillance, focusing on the following areas:

- Influenza/other respiratory virus surveillance systems (sentinel and national)
- Geographical distribution of sentinel surveillance sites (for ILI and SARI) and influenza laboratories
- Characteristics of the sentinel ILI and SARI surveillance systems
- Characteristics of national influenza laboratory capacity
- Information systems and reporting capacity
- Influenza viruses detected by epidemiological week (2010-2014)
- Influenza vaccine use
- Pandemic preparedness plans

Data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology and/or national laboratory coordinators (see Annexes 1 and 2), influenza bulletins published online/distributed by the countries, country presentations in regional influenza meetings, and/or consultation with country influenza surveillance coordinators. Each document was submitted to the corresponding national counterpart for revision. Supplementary demographic data (indicated on the individual sheets) were collected from PAHO's *Health Situation in the Americas: Basic Indicators*, and/or from country ministry of health data.

Profiles are organized first by sub-region (North to South), then alphabetically, and include all countries who responded in a timely manner to requests for data and approval.



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North America



Canada – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **35,525,000**

Life expectancy (years)

- Men: **79.5**
- Women: **83.7**
- Total: **81.6**

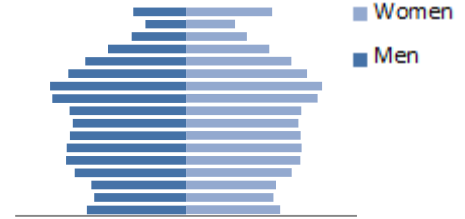
General mortality rate per 1,000 inhabitants

- All causes: **4.0²**
- Communicable diseases: **0.18²**

Hospital beds per 1,000 inhabitants: **2.7**

Public health expenditure (% of GDP): **7.7**

Population by age group



Surveillance Systems

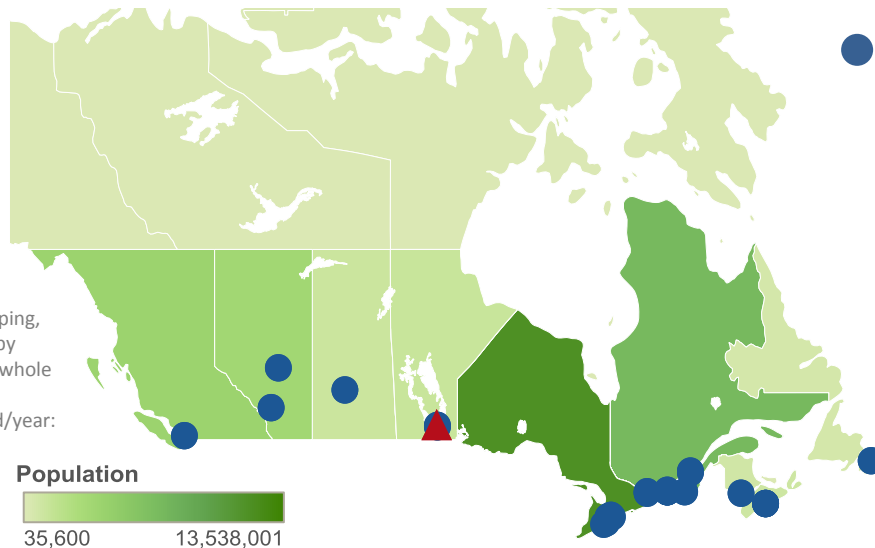
Surveillance System	Scope	Sample Collection	Data Collection
Sentinel Hospital Influenza Surveillance	Sentinel	Yes	Nominal
Influenza-like Illness (ILI) Consultation Rate	Sentinel	No	Aggregate
Influenza Strain Characterizations/Antiviral Resistance	National	Yes	Aggregate
Influenza and Other Respiratory Virus Detections	Sentinel	Yes	Aggregate
Pharmacy Surveillance	National	No	Aggregate
Influenza Outbreak Surveillance	National	Yes	Aggregate
Provincial/Territorial Influenza Hospitalizations and Deaths	National	Yes	Aggregate

Sentinel Sites

National Influenza Center (N=1)

National Microbiology Laboratory (Winnipeg)

- Technical capacity: real-time RT-PCR, viral isolation, phenotypic antiviral sensitivity, genotyping, antigenic characterization by HAI, micro-neutralization, whole genome sequencing
- Average samples processed/year: 2,839



Hospital Surveillance (N=29)
 Alberta (2), British Columbia (2), Manitoba (2), New Brunswick, Newfoundland and Labrador, Nova Scotia (3), Ontario (10), Quebec (7), Saskatchewan

ILI Centers (N=300-400)
 (Not shown)

Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

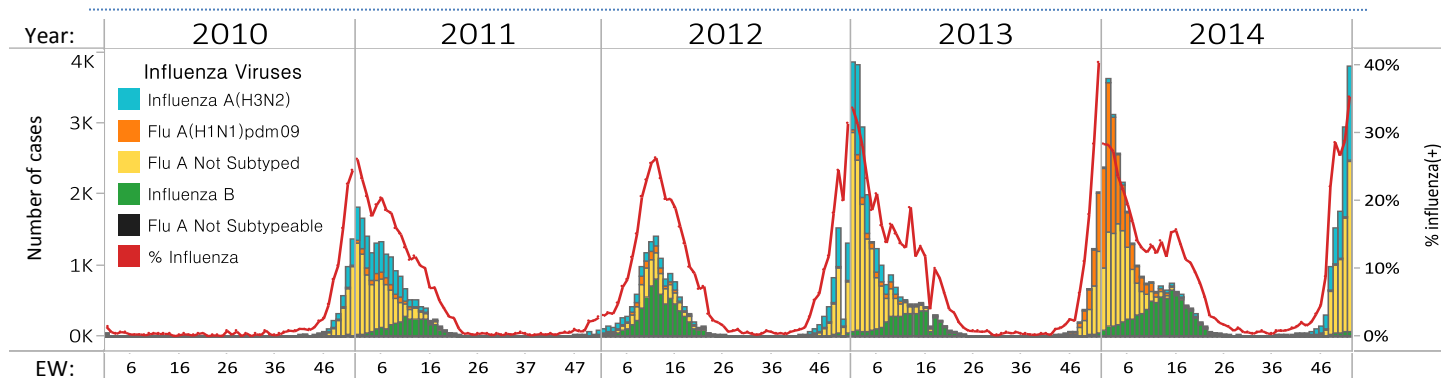
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Canada – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	No	No	National Influenza Center (NIC)	Yes	
	Trainings per year	0	0	Year established as NIC	NA	
Case selection/sampling	Selection for sampling	100%	Varies	Samples received from all surveillance systems	No	
	Systematic randomized sampling	NA	No	National weekly average samples processed (2011-2013)	3,034	
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information	Yes	
	Frequency of shipment to the laboratory	Immediate	Varies	Samples sent to WHO Collaborating Center	Yes	
Data management, analysis, reporting	Frequency of national updates	Immediate	Weekly	Detection of other respiratory viruses by PCR	Yes	
	Denominator of number of cases	NA	Outpatient visits	Plan for quality control	Yes	
	Use of baselines or endemic channels	No	Yes			
Evaluation/monitoring	Sentinel sites evaluated	No	No			
	Evaluations per year	NA	NA			

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere (since 1970)
Vaccination period	Sep-Oct
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	65
Percentage of children (6-59 months) that received the vaccine against influenza, 2012	30

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2011
Year first developed	2006

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ **SARI case definition:** A person admitted to hospital with fever >38 °C and new onset of cough or difficulty breathing, and evidence of severe illness progression, and either admission to the ICU or mechanical ventilation, and no alternate diagnosis within the first 72 hours of hospitalization, and has had exposure to respiratory illness via travel, personal contact, occupation, animal contact, health care, or laboratory.

ILI case definition: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza.

⁴ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



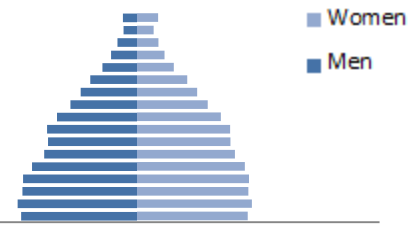
Mexico – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

- Total population: **123,799,000**
- Life expectancy (years)
- Men: **75.3**
 - Women: **80.0**
 - Total: **77.7**
- General mortality rate per 1,000 inhabitants
- All causes: **6.0**
 - Communicable diseases: **0.34**
- Hospital beds per 1,000 inhabitants: **1.5**
- Public health expenditure (% of GDP): **3.2**

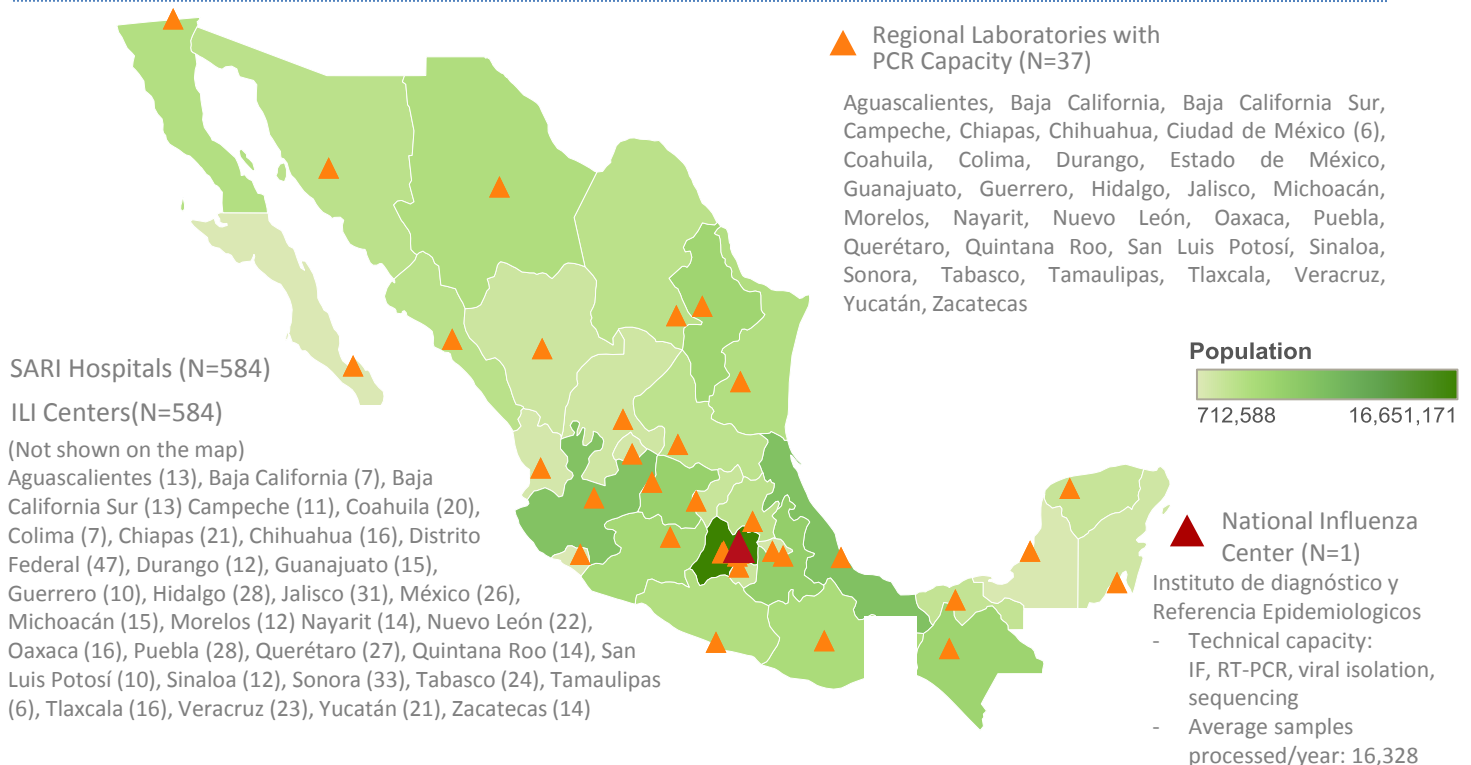
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
VISVEFLU – SARI Surveillance	Sentinel	Yes	Nominal
VISVEFLU – ILI Surveillance	Sentinel	Yes	Nominal
Pneumonia Surveillance	National	No	Aggregate
ARI Surveillance	National	No	Aggregate
Mortality Surveillance	National	Yes	Nominal

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	Yes (internal use only)

Reporting

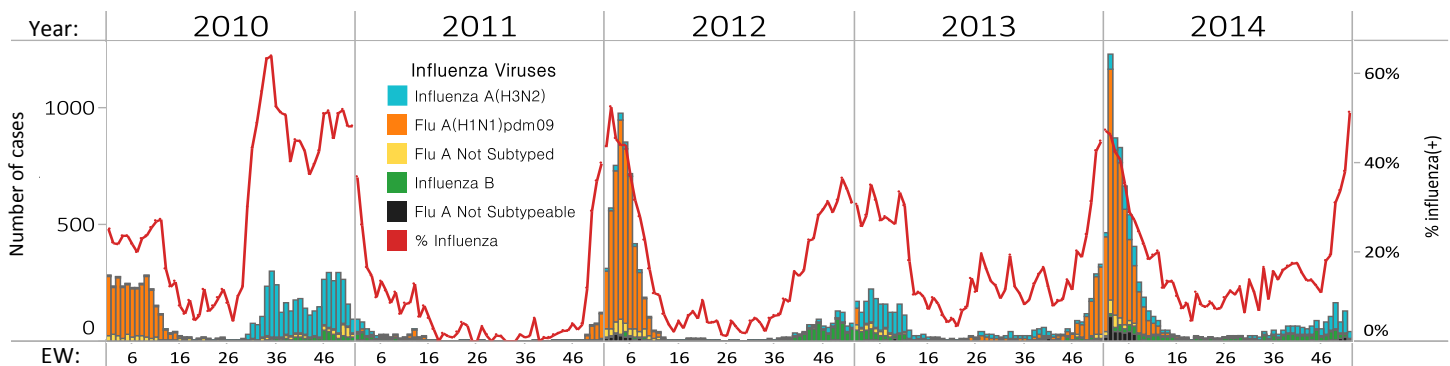
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Mexico – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	Yes
	Trainings per year		1	1	Year established as NIC	1957
Case selection/sampling	Selection for sampling		100%	10%	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		NA	Yes	National weekly average samples processed (2011-2013)	314
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		1-2/week	1-2/week	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Daily	Daily	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		Hospital admissions	Outpatient visits	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		Pneumonia	ARI		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1	1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Northern Hemisphere (since 2004)
Vaccination period	Oct-Dec, Jan-Feb
Percentage of older adults (>50 years) that received the vaccine against influenza, 2012	93
Percentage of children (6-35 months) that received the vaccine against influenza, 2012	95

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2007

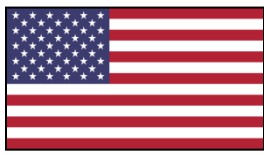
Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Person of any age that presents difficulty breathing, with background of fever ≥ 38 °C and cough, with one or more of the following symptoms: general malaise, thoracic pain, polypnea

ILI case definition: Person of any age that presents or refers to having had fever ≥ 38 °C, cough and headache, accompanied by one or more of the following signs or symptoms: rhinorrhea, coryza, arthralgia, myalgia, prostration, odynophagia, thoracic pain, abdominal pain, nasal congestion or diarrhea

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



United States of America – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **322,583,000**

Life expectancy (years)

- Men: **76.7**
- Women: **81.4**
- Total: **79.1**

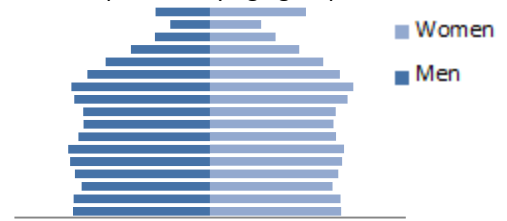
General mortality rate per 1,000 inhabitants

- All causes: **4.8²**
- Communicable diseases: **0.23²**

Hospital beds per 1,000 inhabitants: **2.9**

Public health expenditure (% of GDP): **8.3**

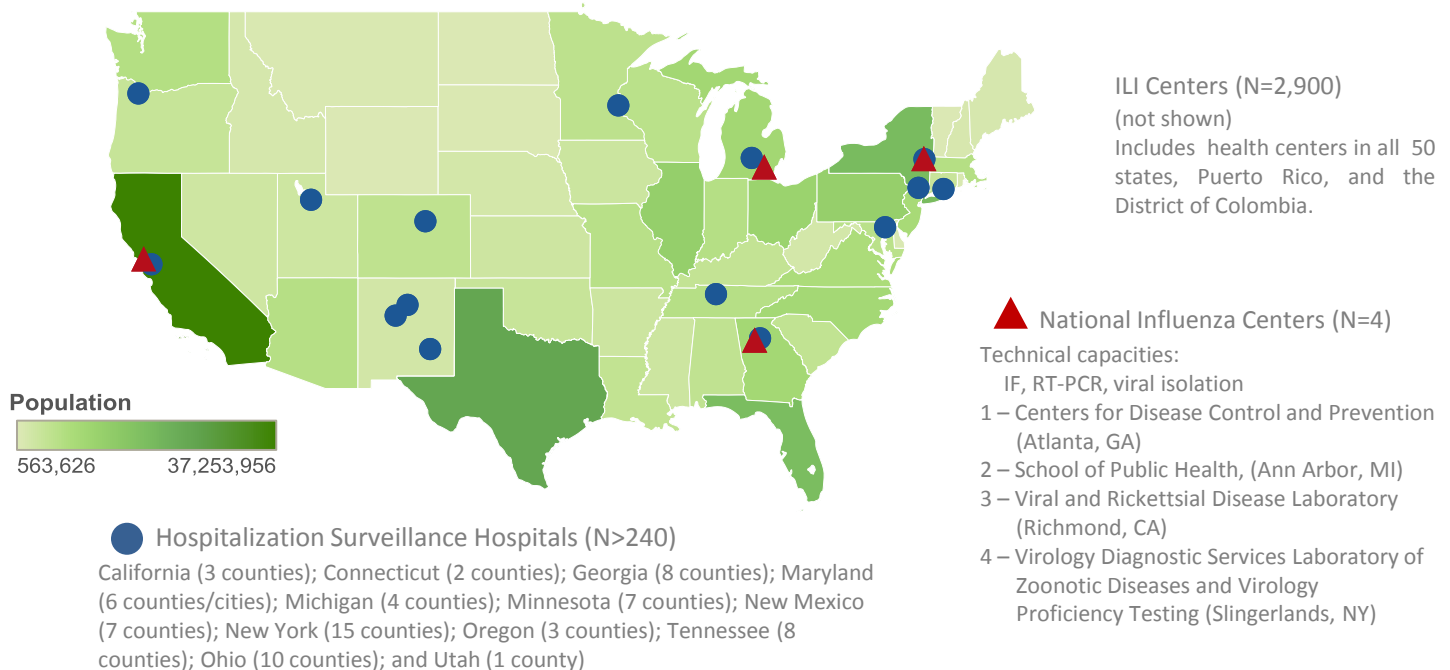
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
Virologic Surveillance	Sentinel	Yes	Nominal
Outpatient Illness Surveillance (ILI Surveillance)	Sentinel	Yes	Nominal
Mortality Surveillance	Sentinel	No	Aggregate
Hospitalization Surveillance	Sentinel	Yes	Nominal
Summary of the Geographic Spread of Influenza	National	No	Aggregate

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Partial
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	Yes

Reporting

Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

United States of America – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics		SARI	ILI
General	PAHO/WHO case definition	No	No
	Trainings per year	2	Varies by state
Case selection/sampling	Selection for sampling	~30%	Varies by state
	Systematic randomized sampling	No	No
	Collection of clinical-epidemiological variables	Yes	Yes
	Frequency of shipment to the laboratory	Weekly	Varies by state
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly
	Denominator of number of cases	Catchment population	Outpatient visits
	Use of baselines or endemic channels	No	Yes
Evaluation/monitoring	Sentinel sites evaluated	Yes	Yes
	Evaluations per year	1	Varies by state

Laboratory Surveillance

National Influenza Center (year established as a NIC)

Atlanta (1956)
Ann Arbor
Richmond
Slingerlands

Samples received from all surveillance systems No

National weekly average samples processed (2011-2013) 5736

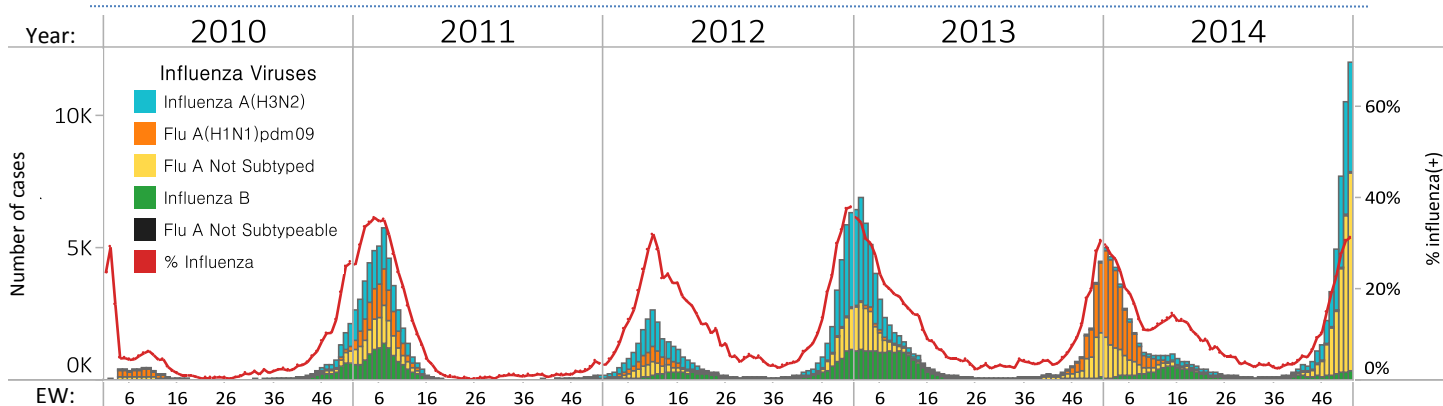
Access to epidemiological case information Yes

Samples sent to WHO Collaborating Center Yes

Detection of other respiratory viruses by PCR Yes

Plan for quality control Yes

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere (since 1940)
Vaccination period	Jul-Apr
Percentage of older adults (≥50 years) that received the vaccine against influenza, 2012	65
Percentage of children (>6 months) that received the vaccine against influenza, 2012	52

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2006
Year first developed	2005

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ **Hospitalized Influenza case definition:** Laboratory confirmed influenza-associated hospitalizations in children and adults

ILI case definition: fever (temperature of 100 °F [37.8 °C] or greater) and a cough and/or a sore throat without a KNOWN cause other than influenza

⁴ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



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Central America



Belize – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **340,000**

Life expectancy (years)

- Men: **71.1**
- Women: **77.3**
- Total: **74.1**

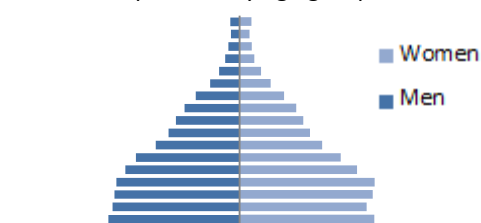
General mortality rate per 1,000 inhabitants

- All causes: **7.5**
- Communicable diseases: **.97**

Hospital beds per 1,000 inhabitants: **0.9**

Public health expenditure (% of GDP): **5.7²**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites³

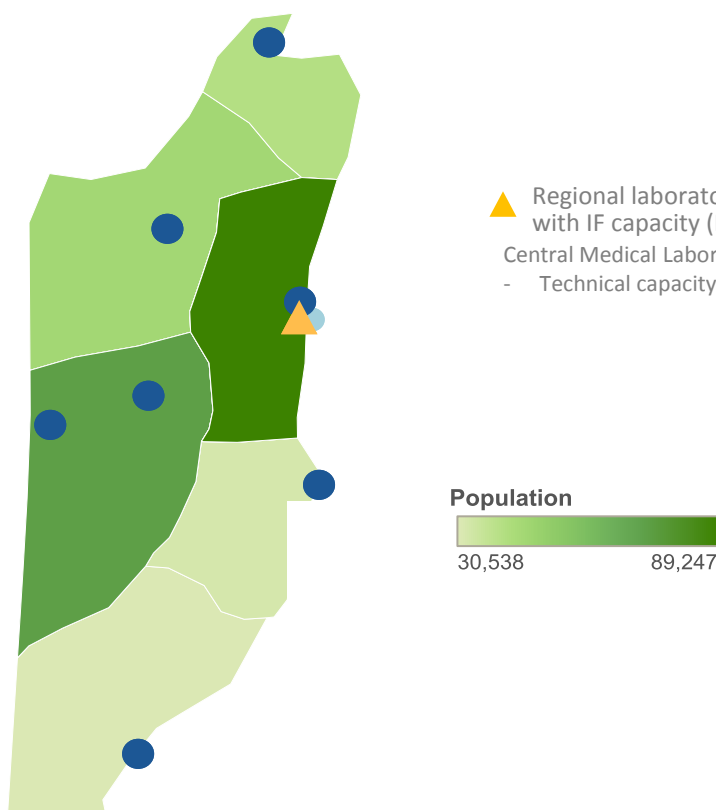
SARI Hospitals (N=7)

Corozal (Corozal Community Hospital), Orange Walk (Northern Regional Hospital), Belize City (Karl Heusner Memorial Hospital), Cayo (San Ignacio Hospital, Western Regional Hospital), Stann Creek (Southern Regional Hospital), Punta Gorda (Punta Gorda Hospital)

ILI Centers (N=1)

Cleopatra White Polyclinic (Belize City)

Regional laboratory with IF capacity (N=1)
Central Medical Laboratory
- Technical capacity: IF



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

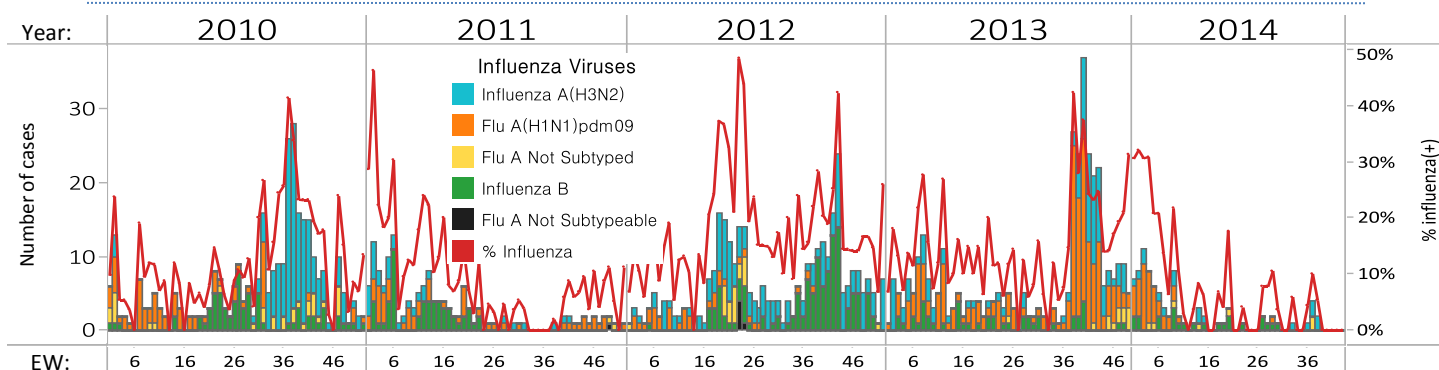
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ³

Belize – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance⁴

Sentinel Surveillance Characteristics		SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	No	No	National Influenza Center (NIC)	No ³
	Trainings per year	1	1	Year established as NIC	NA
Case selection/sampling	Selection for sampling	Based on # of cases	Based on # of cases	Samples received from all surveillance systems	Yes
	Systematic randomized sampling	Yes	Yes	National weekly average samples processed (2011-2013)	NA
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory	As available (daily)	As available (daily)	Samples sent to WHO Collaborating Center	Yes ³
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes ³
	Denominator of number of cases	(under revision)	(under revision)	Plan for quality control	Yes
	Use of baselines or endemic channels	No	No		
Evaluation/monitoring	Sentinel sites evaluated	Yes	Yes		
	Evaluations per year	Monthly	Monthly		

Circulation of Influenza Viruses 2010-2014⁵



Vaccines

Vaccine composition	Northern Hemisphere (since 2008)
Vaccination period	Oct-Nov
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	20
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	98

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	Ongoing
Year first developed	2006

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ Sentinel hospitals in Belize send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

⁴ **SARI case definition for persons over 5 years old:** Sudden onset of fever over 38 °C, AND Cough or sore throat, AND Shortness of breath or difficulty breathing, with onset within the last seven days AND Requiring hospital admission.

SARI case definition for children under 5 years old: Meets the case definition as above OR any child under 5 years old clinically suspected of having pneumonia or severe/very severe Pneumonia and requiring hospital admission.

ILI case definition: sudden onset of a fever over 38 °C, or a self reported history of fever, AND cough or sore throat, in the absence of other diagnoses with onset within the last seven days

⁵ Aggregate results from CARPHA laboratory. Source: Pan American Health Organization.

Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



Costa Rica – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **4,938,000**

Life expectancy (years)

- Men: **78.0**
- Women: **82.4**
- Total: **80.1**

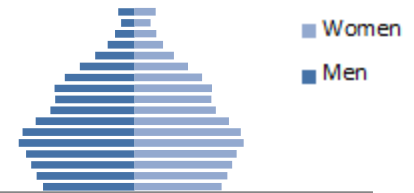
General mortality rate per 1,000 inhabitants

- All causes: **4.4**
- Communicable diseases: **0.20**

Hospital beds per 1,000 inhabitants: **1.1**

Public health expenditure (% of GDP): **7.6**

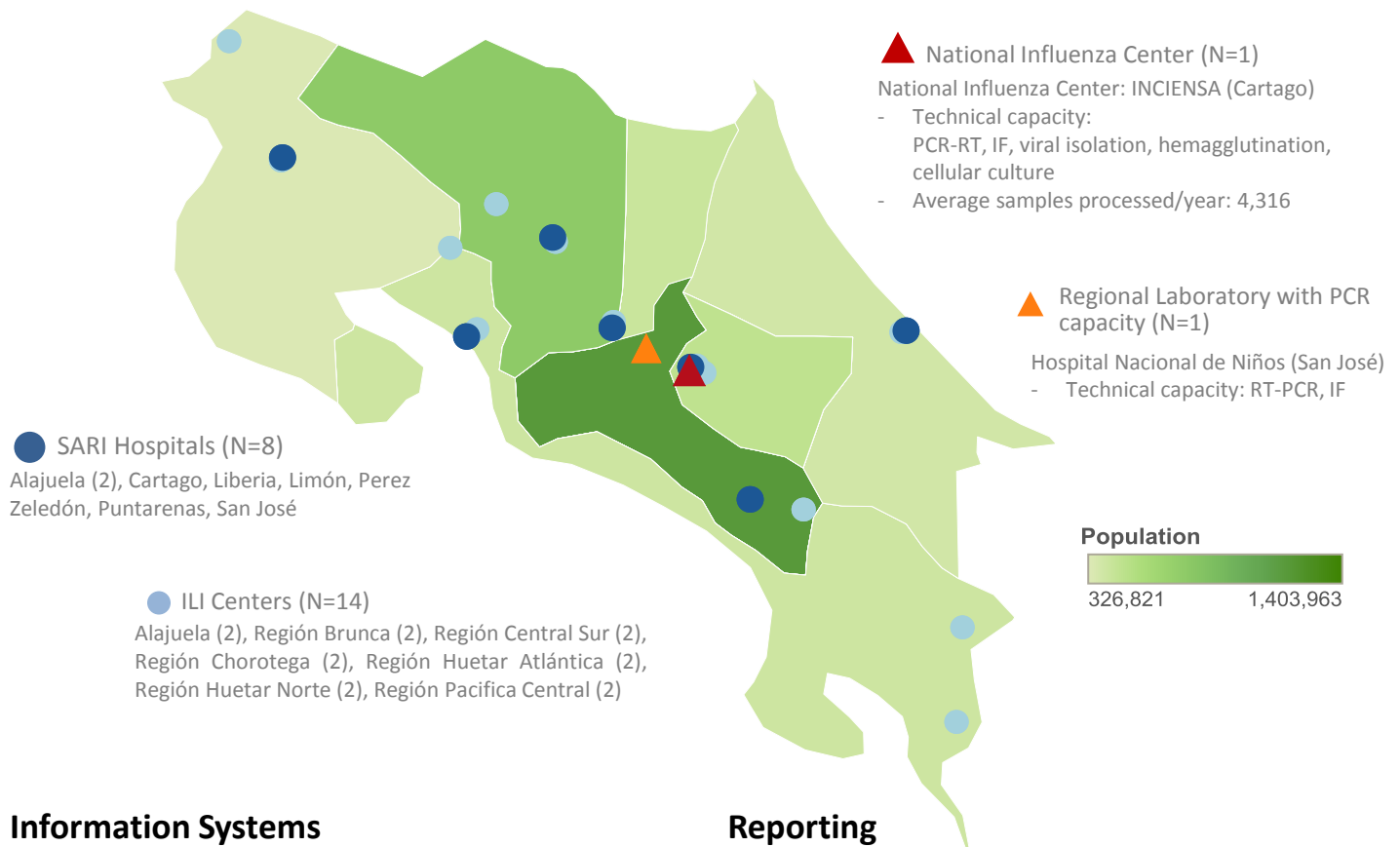
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
Sentinel ILI Surveillance	Sentinel	Yes	Nominal
Sentinel and Intensified SARI Surveillance	Sentinel	Yes	Nominal
Routine Surveillances: SARI; ILI; SARI (mandatory notification)	National	In some cases	Nominal, aggregate
Unusual SARI case surveillance	National	Yes	Nominal

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	No
Generates influenza activity indicators	No
Generates interactive online dashboard	No

Reporting

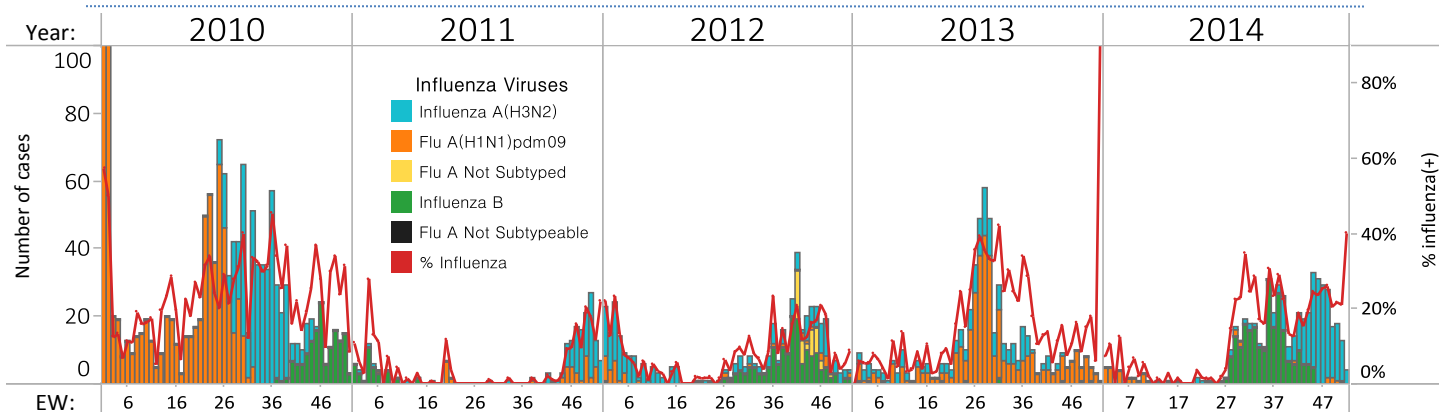
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	No
Bulletins/reports include sentinel surveillance data	NA
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Costa Rica – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	No	No	National Influenza Center (NIC)	Yes	
	Trainings per year	2-3	2-3	Year established as NIC	2006	
Case selection/sampling	Selection for sampling	Quota 5/site	Quota 5/site	Samples received from all surveillance systems	Yes	
	Systematic randomized sampling	No	No	National weekly average samples processed (2011-2013)	83	
	Collection of clinical-epidemiological variables	Weekly	Weekly	Access to epidemiological case information	Yes	
Data management, analysis, reporting	Frequency of shipment to the laboratory	Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes	
	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR	No	
	Denominator of number of cases	Hospital admissions	NA	Plan for quality control	No	
Evaluation/monitoring	Use of baselines or endemic channels	No	No			
	Sentinel sites evaluated	Yes	Yes			
	Evaluations per year	3	3			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Northern Hemisphere (since 2004)
Vaccination period	Feb
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	98
Percentage of children (<10 years) that received the vaccine against influenza, 2012	NA

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	Under review
Year first developed	NA

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** An acute respiratory infection (ARI) that presents fever or history of fever $\geq 38^{\circ}\text{C}$ and cough and with onset of symptoms in the last 10 days, that fulfills hospitalization requirements

ILI case definition: An acute respiratory infection (ARI) that presents fever or history of fever $\geq 38^{\circ}\text{C}$ and cough and with onset of symptoms in the last 10 days

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



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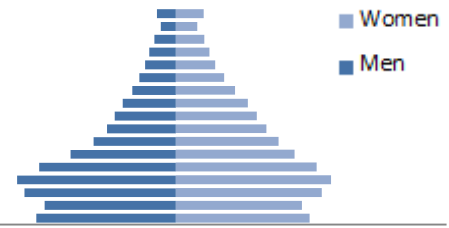
El Salvador – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

- Total population: **6,384,000**
- Life expectancy (years)
- Men: **68.0**
 - Women: **77.3**
 - Total: **72.8**
- General mortality rate per 1,000 inhabitants
- All causes: **7.3**
 - Communicable diseases: **0.70**
- Hospital beds per 1,000 inhabitants: **1.1**
- Public health expenditure (% of GDP): **4.2**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance	Sentinel	Yes	Nominal
Pneumonia Mortality Surveillance	National	Yes	Nominal
Pneumonia and Acute Respiratory Infection Surveillance	National	No	Aggregate
Hospitalized Pneumonia Surveillance	National	No	Nominal
Hospitalized Unusual SARI Surveillance	National	Yes	Nominal

Sentinel Sites

● SARI Hospitals (N=5)

Santa Ana (Hospital San Juan de Dios Santa Ana), San Salvador (Hospital San Salvador SS Benjamin Bloom), Cuscatlán (Hospital Cojutepeque "Nuestra Señora de Fátima"), La Paz (Hospital Zacatecoluca "Santa Teresa"), San Miguel (Hospital San Miguel "San Juan de Dios")

▲ National Influenza Center (N=1)

Laboratorio Nacional de Referencia Doctor Max Bloch

- Technical capacity: IF, RT-PCR, viral isolation
- Average samples processed/year: 2,392

● ILI Centers (N=8)

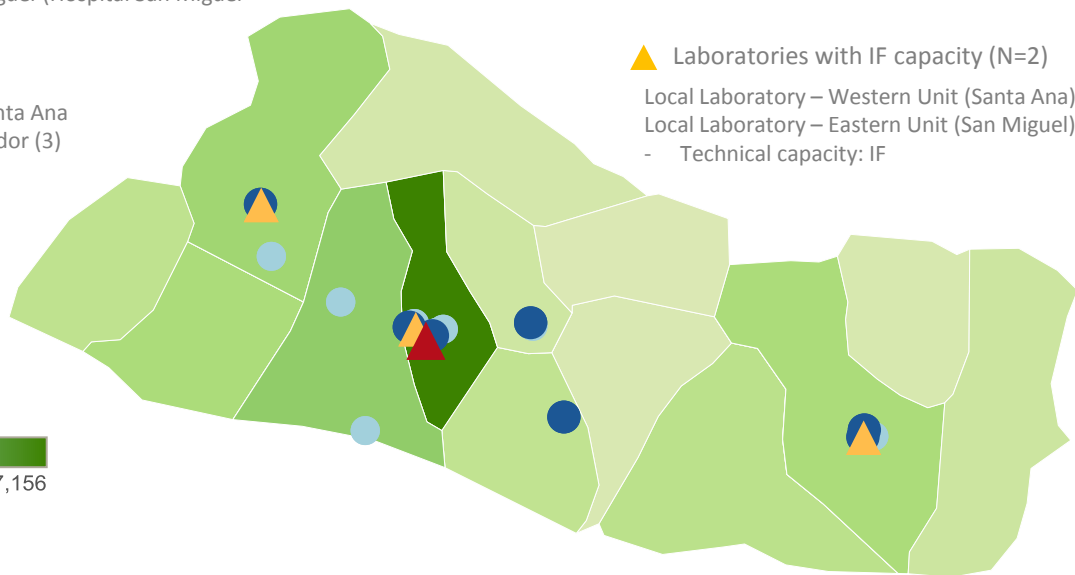
Cuscatlán, La Libertad, Santa Ana (2), San Miguel, San Salvador (3)

▲ Laboratories with IF capacity (N=2)

Local Laboratory – Western Unit (Santa Ana)
Local Laboratory – Eastern Unit (San Miguel)

- Technical capacity: IF

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	Yes (internal use only)

Reporting

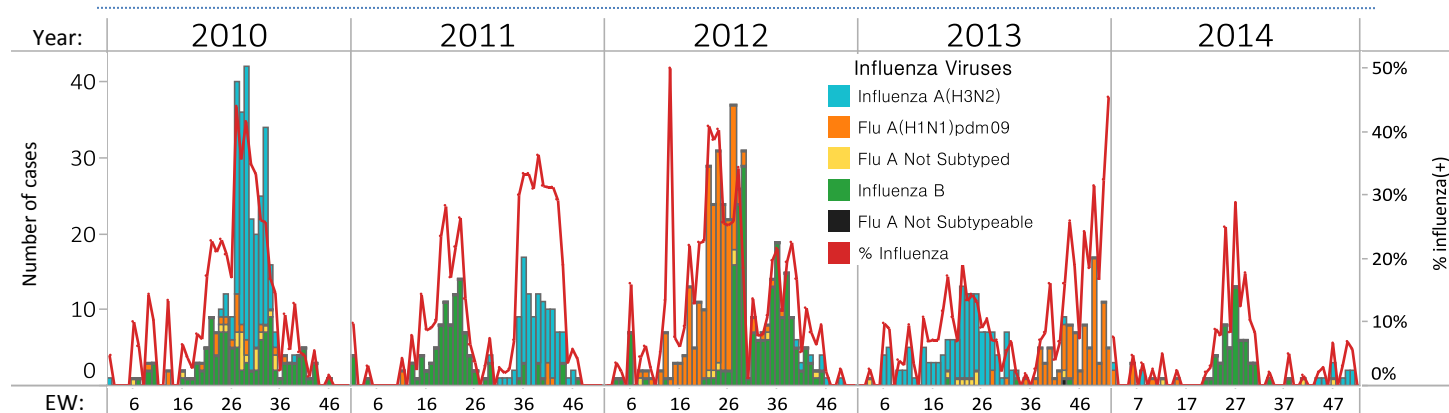
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	Yes
Data reported to FluNet (PAHO/WHO)	Yes

El Salvador – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	Yes
	Trainings per year		2	2	Year established as NIC	2005
Case selection/sampling	Selection for sampling		Quota 5/site	Quota 3/site	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		No	No	National weekly average samples processed (2011-2013)	46
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Weekly	Weekly	Detection of other respiratory viruses by PCR	No
	Denominator of number of cases		Hospital admissions	Outpatient visits	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		Yes	No		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1	1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 2004)
Vaccination period	May-Sep
Percentage of older adults (≥60 years) that received the vaccine against influenza, 2010	89
Percentage of children (6-59 months) that received the vaccine against influenza, 2010	87

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2013
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Any patient of any age with history of sudden fever greater than 38 °C, cough or sore throat, dyspnea (difficulty breathing), and need for hospitalization
ILI case definition: Any patient of any age with history of sudden fever greater than 38 °C, cough or sore throat and the absence of another diagnosis

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



Honduras – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **8,261,000**

Life expectancy (years)

- Men: **71.9**
- Women: **76.5**
- Total: **74.1**

General mortality rate per 1,000 inhabitants

- All causes: **6.9**
- Communicable diseases: **0.9**

Hospital beds per 1,000 inhabitants: **0.7**

Public health expenditure (% of GDP): **4.3**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance	Sentinel	Yes	Nominal
SARI Mortality Surveillance	Sentinel	Yes	Nominal
Pneumonia Surveillance	National	No	Nominal

Sentinel Sites

▲ National Influenza Center (N=1)

Laboratorio Nacional de Virología (Tegucigalpa)

- Technical capacity:
IF, RT-PCR, viral isolation
- Average samples processed/year: 1,716

● SARI Hospitals (N=5)

San Pedro Sula (Hospital Mario C. Rivas, Hospital San Pedro Sula Instituto Hondureño de Seguridad Social (IHSS)), Tegucigalpa (Hospital Militar, Hospital Seguro Social, Instituto Nacional Cardiopulmonar)

● ILI Centers (N=3)

Tegucigalpa (CESAMO Alonzo Suazo), San Pedro Sula (CESAMO Paz Barahona, External IHSS appointments)

▲ Regional Laboratories with IF Capacity (N=2)

Regional Laboratory of Tegucigalpa
Regional Laboratory of San Pedro Sula
- Technical capacity: IF

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

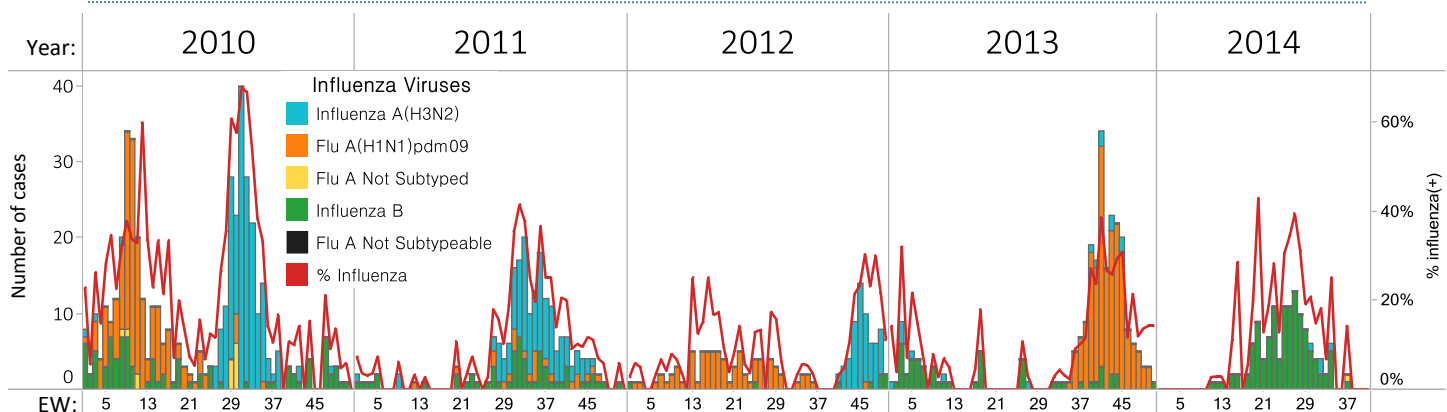
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Honduras – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics		SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes (2009)	No	National Influenza Center (NIC)	Yes
	Trainings per year	3	2-3	Year established as NIC	2005
Case selection/sampling	Selection for sampling	100%	Quota 3/site	Samples received from all surveillance systems	No
	Systematic randomized sampling	NA	No	National weekly average samples processed (2011-2013)	33
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory	Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR	No
	Denominator of number of cases	Hospital admissions	Outpatient visits	Plan for quality control	Yes
	Use of baselines or endemic channels	No	No		
Evaluation/monitoring	Sentinel sites evaluated	Yes	Yes		
	Evaluations per year	2	2		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Northern Hemisphere (since 2003)
Vaccination period	Dec
Percentage of older adults (>60 years) that received the vaccine against influenza, 2012	73
Percentage of children (6 months – 9 years) that received the vaccine against influenza, 2010	45

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2013
Year first developed	2013

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² SARI case definition: Fever measured $\geq 38^\circ\text{C}$ or history of fever, cough and difficulty breathing (dyspnea)

ILI case definition: Fever measured $\geq 38^\circ\text{C}$ or history of fever, cough or sore throat and absence of other causes

³ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Nicaragua – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **6,169,000**

Life expectancy (years)

- Men: **75.0**
- Women: **78.2**
- Total: **75.2**

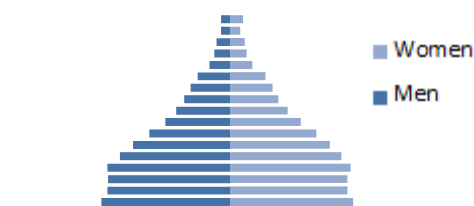
General mortality rate per 1,000 inhabitants

- All causes: **6.5**
- Communicable diseases: **0.41**

Hospital beds per 1,000 inhabitants: **0.9**

Public health expenditure (% of GDP): **4.5**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance	Sentinel	Yes	Nominal
Pneumonia Surveillance	Sentinel <5 years	Yes	Aggregate
ARI Surveillance	National	No	Aggregate
Unusual Respiratory Event Surveillance	National	Yes	Nominal
Mortality Surveillance	National	Yes	Nominal

Sentinel Sites

● SARI Hospitals (N=4)

Managua (Hospital Alemán Nicaragüense, Hospital Manuel de Jesús Rivera “La Mascota”, Hospital Roberto Calderón), Masaya (Hospital Humberto Alvarado)

● ILI Centers (N=5)

Managua (Centro de Salud Sócrates Flores, Centro de Salud Villa Libertad), Masaya (Centro de Salud Dávila Bolaños, Centro de Salud Monimbó, Centro de Salud Tisma)

▲ National Influenza Center (N=1)

Centro Nacional de Diagnóstico y Referencia (Managua)

- Technical capacity: IF, RT-PCR, viral isolation
- Average samples processed/year: 5,323

▲ Regional Laboratory with IF Capacity (N=2)

Laboratorio Manuel de Jesús Rivera “La Mascota”
Laboratorio Hospital Humberto Alvarado

- Technical capacity: IF

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	No
Generates influenza activity indicators	No
Generates interactive online dashboard	No

Reporting

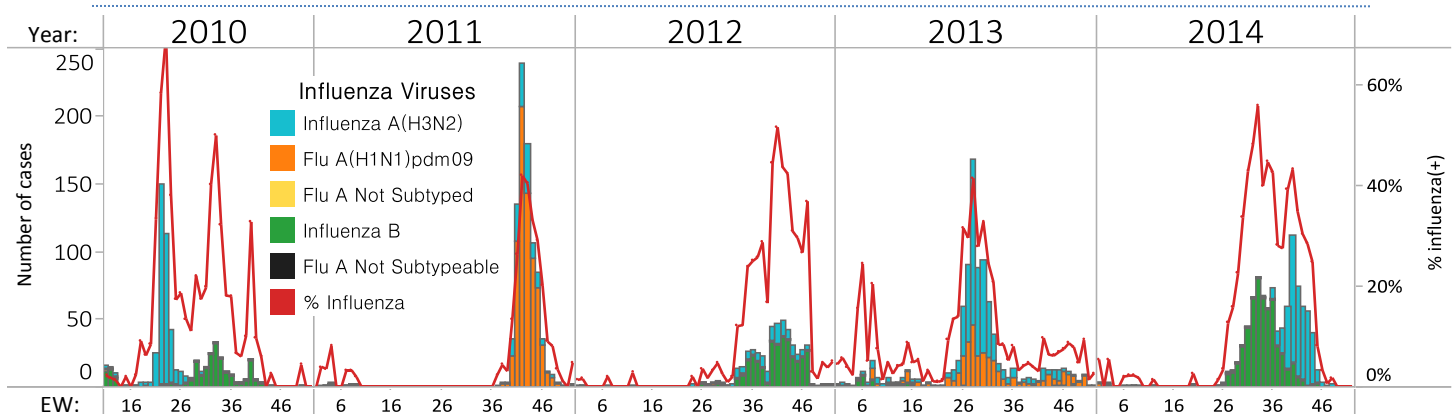
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	No
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Nicaragua – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	Yes
	Trainings per year		1	1	Year established as NIC	2009
Case selection/sampling	Selection for sampling		Quota, 100%	Quota 3/site	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		No	No	National weekly average samples processed (2011-2013)	102
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		Weekly	Daily	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		NA	NA	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		No	No		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1	1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 2007)
Vaccination period	Apr – May
Percentage of older adults (>50 years) that received the vaccine against influenza, 2007	78
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	100

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2012
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Any patient of any age with history of sudden fever >38 °C or history of fever, cough, or sore throat, dyspnea, and need for hospitalization

ILI case definition: Any patient of any age with history of sudden fever or background of fever, cough or sore throat, and absence of other diagnosis

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phil/viz/ed_flu.asp



Panama – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **3,926,000**

Life expectancy (years)

- Men: **75.0**
- Women: **80.7**
- Total: **77.8**

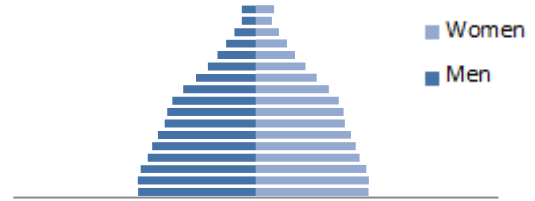
General mortality rate per 1,000 inhabitants

- All causes: **5.8**
- Communicable diseases: **0.64**

Hospital beds per 1,000 inhabitants: **2.3**

Public health expenditure (% of GDP): **5.2**

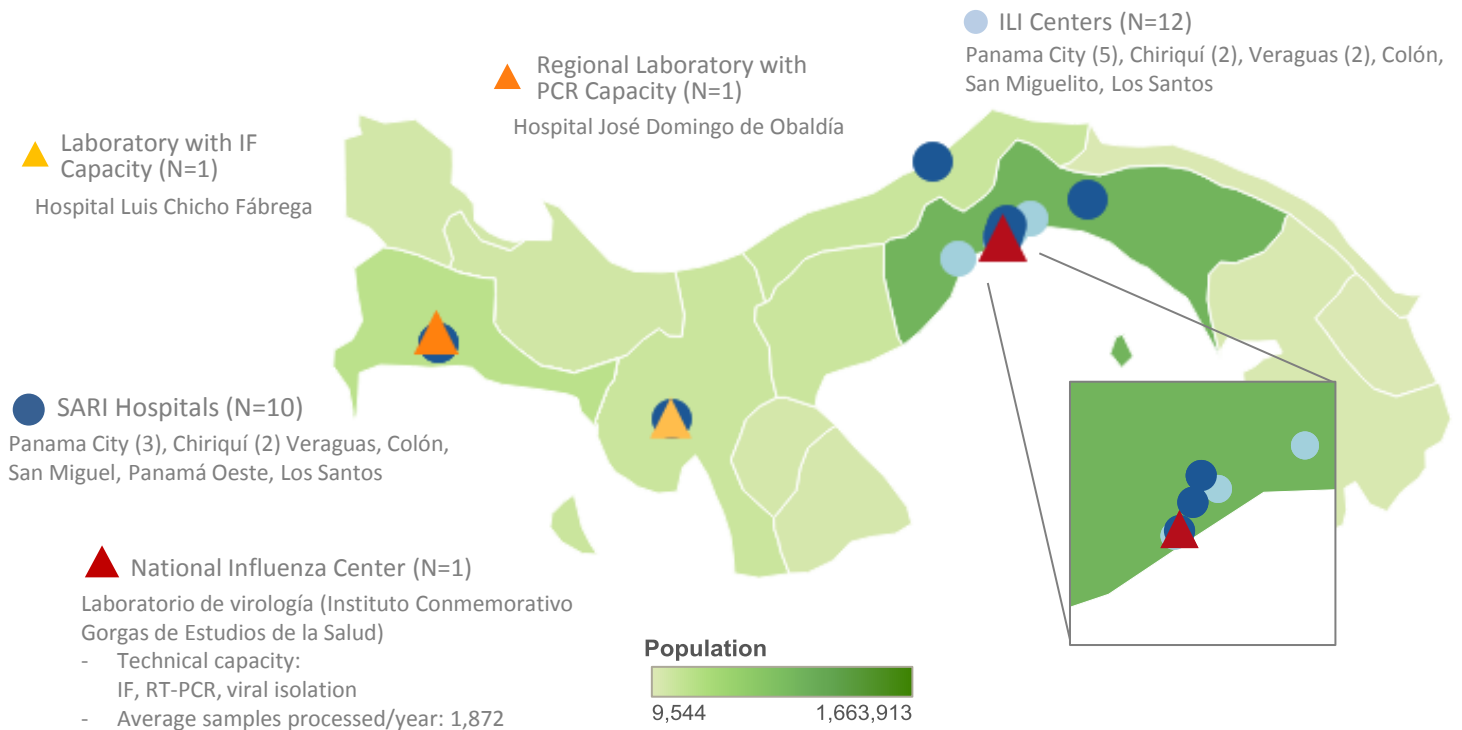
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
National Intensified SARI Surveillance	National	Yes	Nominal
Sentinel SARI Surveillance	Sentinel	Yes	Nominal
Sentinel ILI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

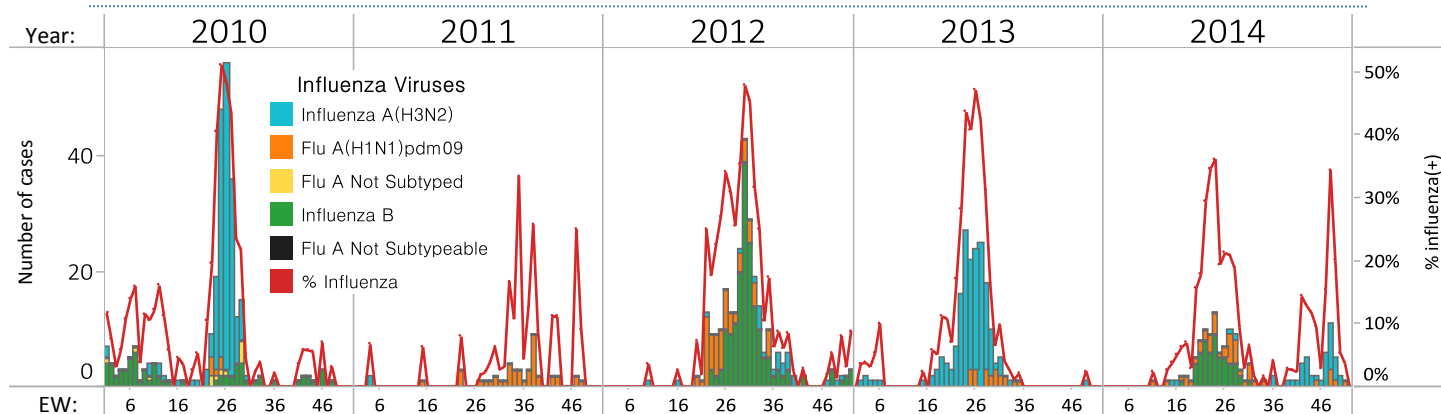
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Panama – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes (protocol)	Yes (protocol)	National Influenza Center (NIC)	Yes	
	Trainings per year	1	1	Year established as NIC	2007	
Case selection/sampling	Selection for sampling	No	No	Samples received from all surveillance systems	No	
	Systematic randomized sampling	No	No	National weekly average samples processed (2011-2013)	36	
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information	Yes	
	Frequency of shipment to the laboratory	Daily/weekly	Daily/weekly	Samples sent to WHO Collaborating Center	Yes	
Data management, analysis, reporting	Frequency of national updates	Daily	Daily	Detection of other respiratory viruses by PCR	Yes	
	Denominator of number of cases	Total samples	Total samples	Plan for quality control	Yes	
	Use of baselines or endemic channels	Yes	Yes			
Evaluation/monitoring	Sentinel sites evaluated	Yes	Yes			
	Evaluations per year	1	1			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 2005)
Vaccination period	NA
Percentage of older adults (>60 years) that received the vaccine against influenza, 2012	69
Percentage of children (6 months to <5 years) that received the vaccine against influenza, 2012	83

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Patient with sudden fever >38 °C and cough or sore throat and dyspnea (difficulty breathing) and need for hospitalization

ILI case definition: Patient with sudden fever >38 °C and cough or sore throat, and absence of other diagnosis

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phil/viz/ed_flu.asp

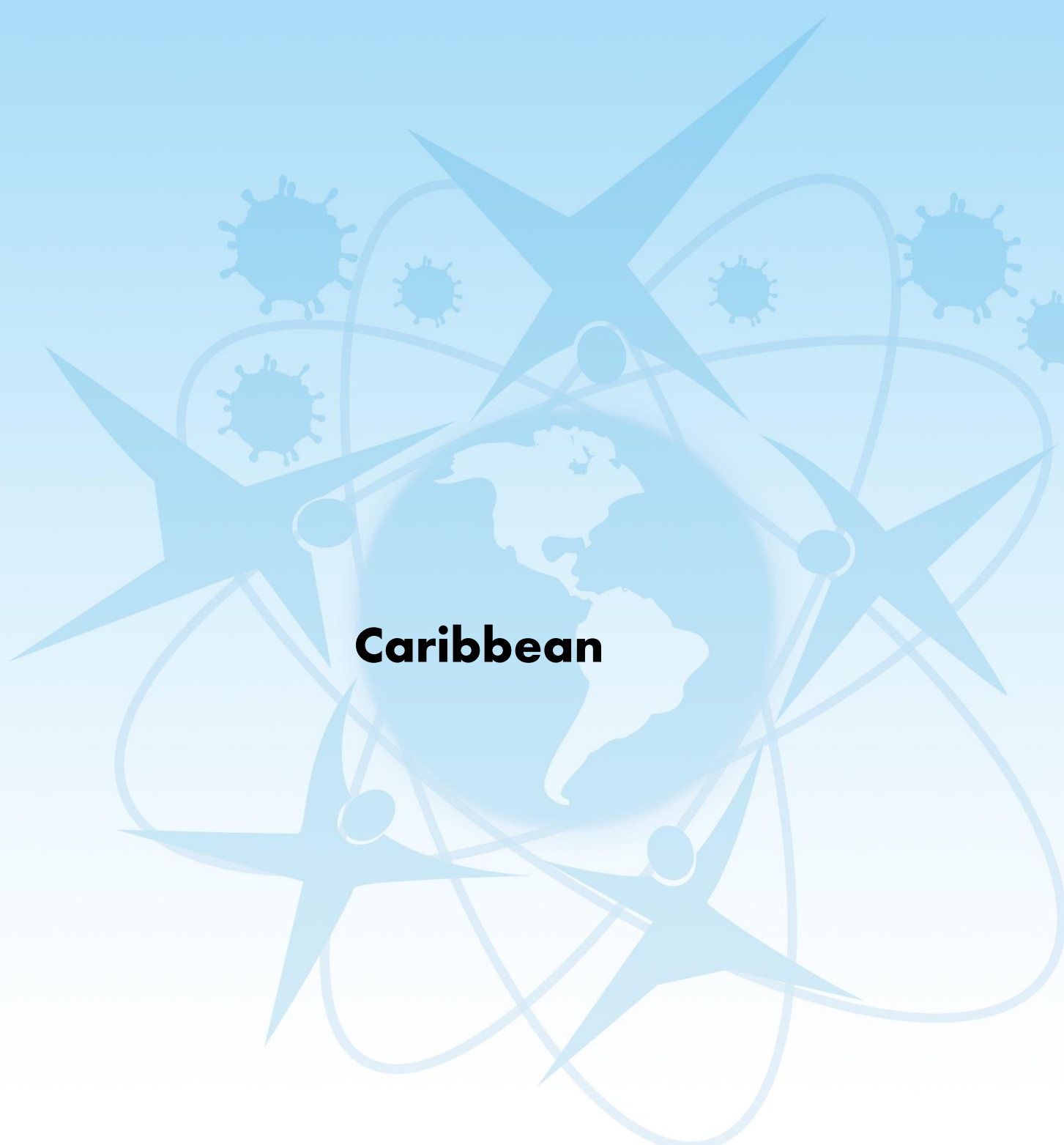


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Caribbean



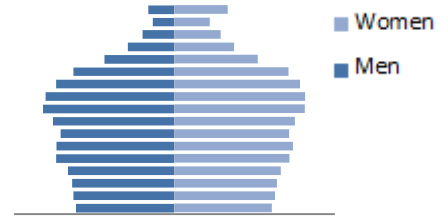
Barbados – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

- Total population: **290,000**
- Life expectancy (years)
- Men: **72.6**
 - Women: **77.4**
 - Total: **75.0**
- General mortality rate per 1,000 inhabitants
- All causes: **6.5²**
 - Communicable diseases: **0.70²**
- Hospital beds per 1,000 inhabitants: **6.2**
- Public health expenditure (% of GDP): **4.1**

Population by age group



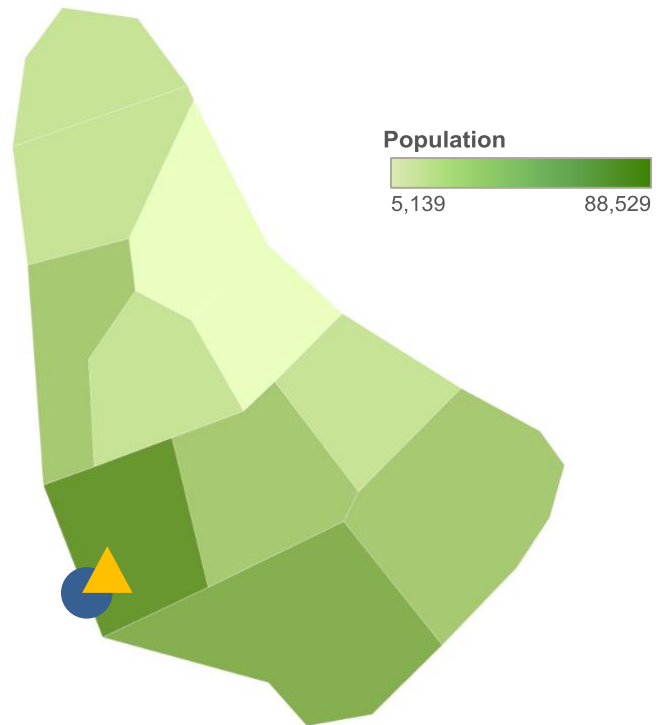
Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
Epidemiological Surveillance	National	No	Aggregate
Syndromic Surveillance	National	No	Aggregate

Sentinel Sites³

- Regional laboratory with IF capacity (N=1)
 National Public Health Laboratory
 - Technical capacity: IF
 - Average samples processed/year: 530

- SARI Hospital (N=1)
 Bridgetown: Queen Elizabeth Hospital (general hospital)



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	No
Allows for monitoring of the sentinel site system	Partial
Generates influenza activity indicators	Partial
Generates interactive online dashboard	No

Reporting

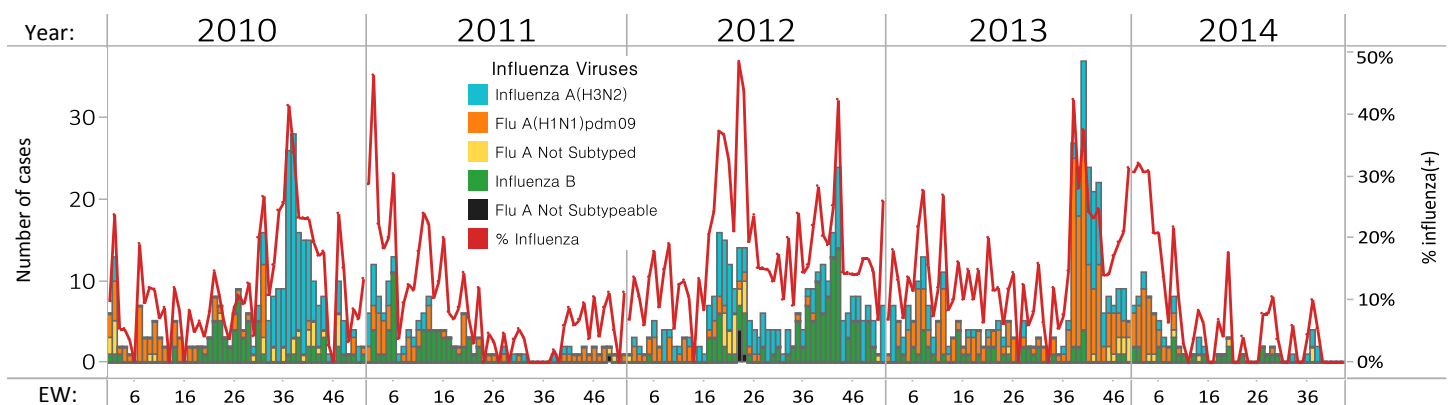
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ³

Barbados – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance⁴

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		Yes	NA	National Influenza Center (NIC)	No
	Trainings per year		1	NA		
Case selection/sampling	Selection for sampling		Varies	NA	Year established as NIC	NA
	Systematic randomized sampling		No	NA	Samples received from all surveillance systems	NA
	Collection of clinical-epidemiological variables		Algorithm	NA	National weekly average samples processed (2011-2013)	10.2
	Frequency of shipment to the laboratory		Daily	NA	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of national updates		Weekly	NA	Samples sent to WHO Collaborating Center	Yes ³
	Denominator of number of cases		Hospital admissions or visits	NA	Detection of other respiratory viruses by PCR	Yes ³
	Use of baselines or endemic channels		Yes	NA	Plan for quality control	Yes
Evaluation/monitoring	Sentinel sites evaluated		Yes	NA		
	Evaluations per year		<1	NA		

Circulation of Influenza Viruses 2010-2014⁵



Vaccines

Vaccine composition	Northern Hemisphere
Vaccination period	Sep-Dec
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	NA
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	NA

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2006

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ Sentinel hospitals in Barbados send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

⁴ SARI case definition: Acute respiratory infection with history of fever or measured fever of ≥38 °C and cough, with onset in the last 10 days, and that requires hospitalization

⁵ Aggregate results from CARPHA laboratory. Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Dominica – Influenza and Other Respiratory Virus (ORV) Surveillance

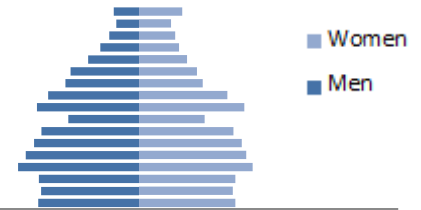
(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **73,000**
 Life expectancy (years)
 - Men: **73.6**
 - Women: **79.7**
 - Total: **76.6**

General mortality rate per 1,000 inhabitants
 - All causes: **6.7**
 - Communicable diseases: **0.45**
 Hospital beds per 1,000 inhabitants: **3.8**
 Public health expenditure (% of GDP): **4.2**

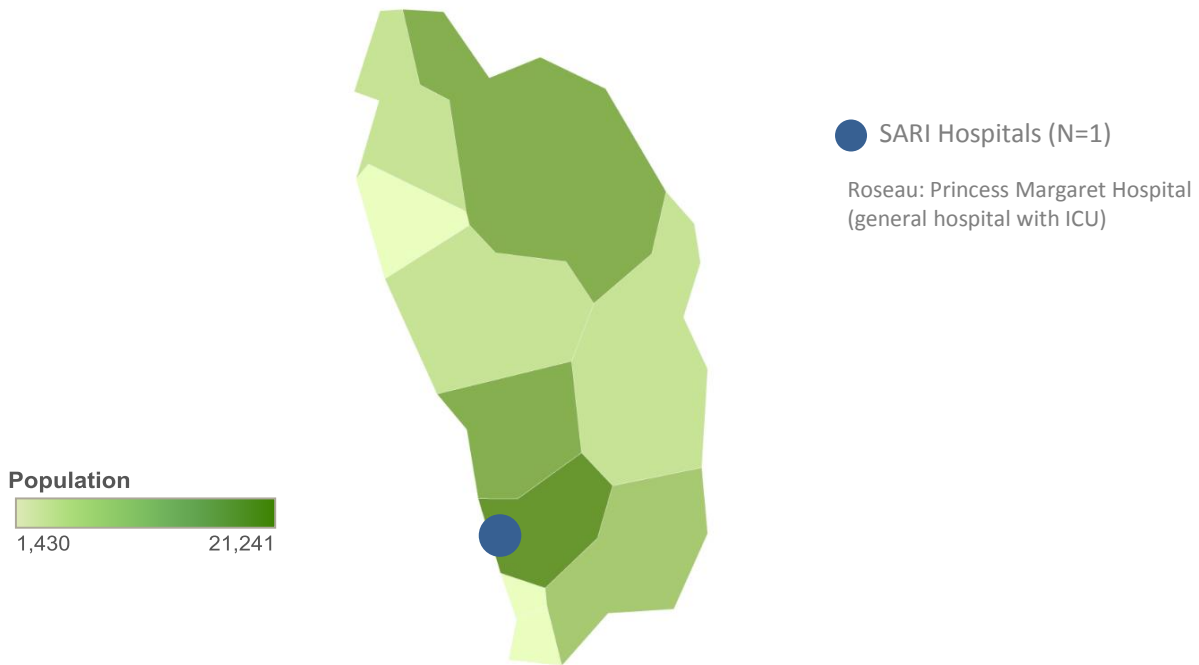
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
Communicable Disease Surveillance (includes ILI)	National	No	Aggregate

Sentinel Sites²



Information Systems

Integrates epidemiological and virologic information	No
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

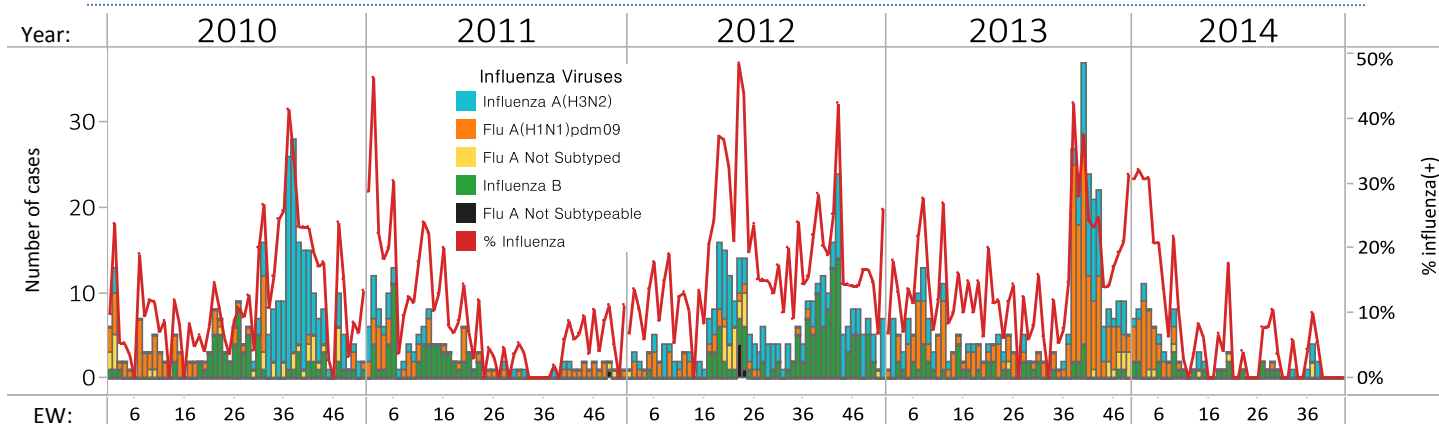
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ²

Dominica – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	Yes	National Influenza Center (NIC)	No	
	Trainings per year	<1	<1	Year established as NIC	NA	
Case selection/sampling	Selection for sampling	100%	<20%	Samples received from all surveillance systems	No	
	Systematic randomized sampling	NA	Yes	National weekly average samples processed (2011-2013)	NA	
	Collection of clinical-epidemiological variables	Yes	NA	Access to epidemiological case information	Yes	
Data management, analysis, reporting	Frequency of shipment to the laboratory	Twice weekly	Twice weekly	Samples sent to WHO Collaborating Center	Yes ²	
	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes ²	
	Denominator of number of cases	Hospital admissions	Outpatient visits	Plan for quality control	Yes	
Evaluation/monitoring	Use of baselines or endemic channels	Yes	Yes			
	Sentinel sites evaluated	NA	NA			
	Evaluations per year	NA	NA			

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere
Vaccination period	Nov-May
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2009	76
Percentage of children (5 months-5 years) that received the vaccine against influenza, 2009	51

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2014
Year first developed	2005

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² Sentinel hospitals in Dominica send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

³ **SARI case definition:** An acute respiratory infection with history of fever or measured fever of $\geq 38^\circ\text{C}$ and cough with onset within the last 10 days that requires hospitalization

ILI case definition: An acute respiratory infection with history of fever or measured fever of $\geq 38^\circ\text{C}$ and cough with onset within the last 10 days

⁴ Aggregate results from CARPHA laboratory. Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



Dominican Republic – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **10,529,000**

Life expectancy (years)

- Men: **70.6**
- Women: **76.9**
- Total: **73.6**

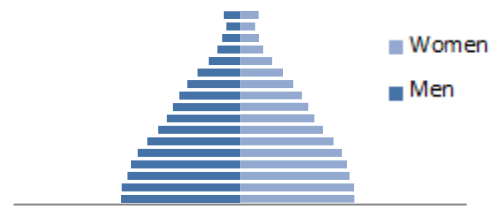
General mortality rate per 1,000 inhabitants

- All causes: **7.0²**
- Communicable diseases: **0.60²**

Hospital beds per 1,000 inhabitants: **1.6**

Public health expenditure (% of GDP): **2.8**

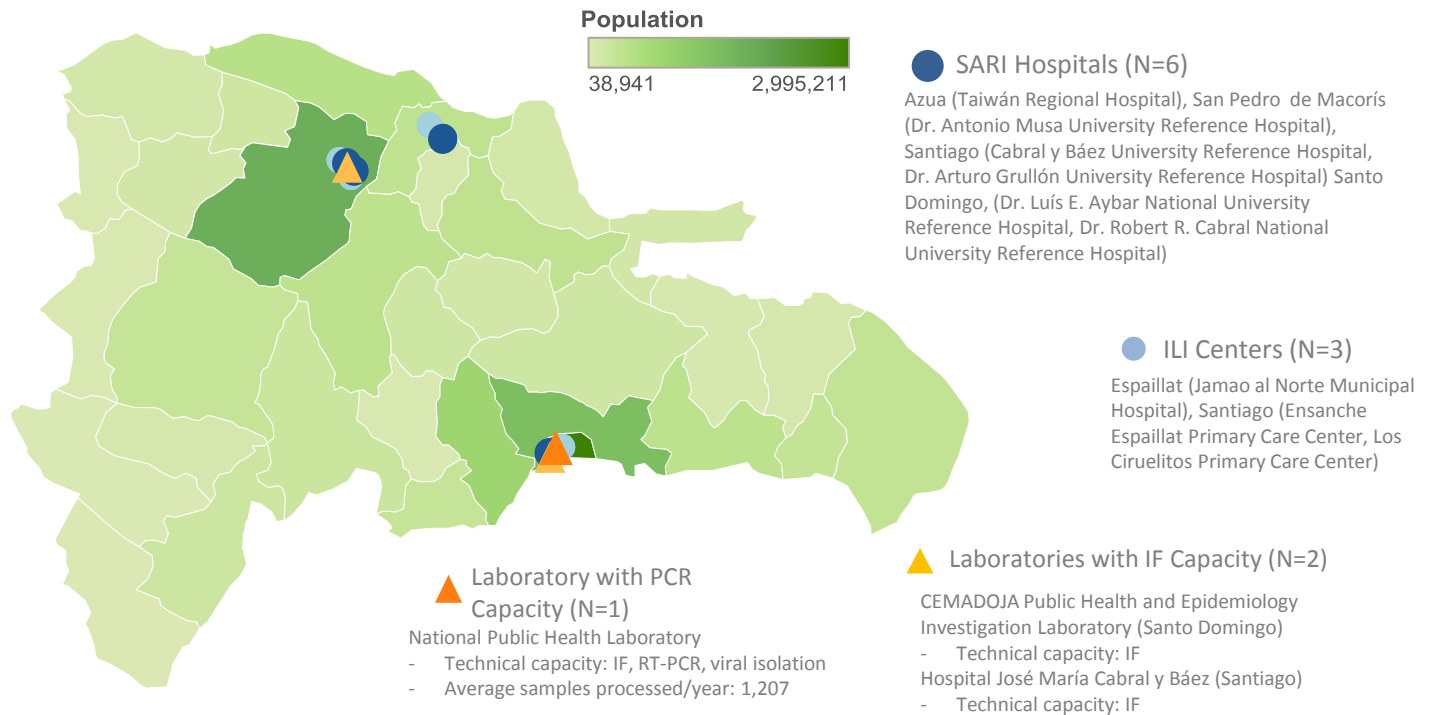
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance	Sentinel	Yes	Nominal
Upper ARI Surveillance	National	No	Aggregate
Lower ARI Surveillance	National	No	Aggregate

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	Yes (internal use only)

Reporting

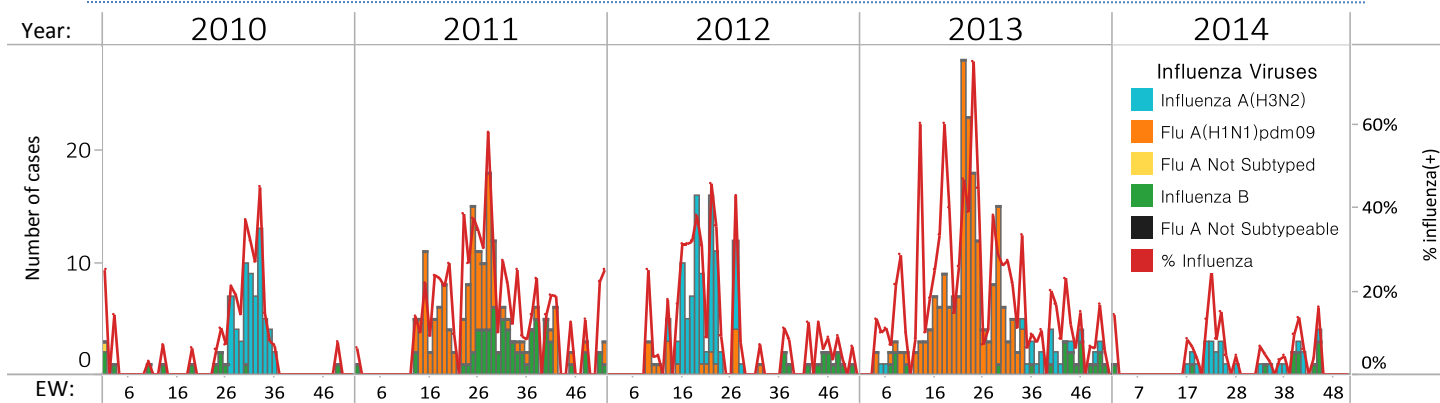
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Dominican Republic – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	No
	Trainings per year		2	1	Year established as NIC	NA
Case selection/sampling	Selection for sampling		100%	Quota 5/week	Samples received from all surveillance systems	No
	Systematic randomized sampling		NA	No	National weekly average samples processed (2011-2013)	21
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		1-2 times/week	Weekly	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Daily	Weekly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		NA	NA	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		No	No		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1	1		

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere (since 2006)
Vaccination period	Sep-Nov
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2008	83
Percentage of children (6 months – 3 years) that received the vaccine against influenza, 2012	...

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2011
Year first developed	2008

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ **SARI case definition:** If over 5 years: fever of 38°C or history of fever, cough or sore throat, difficulty breathing and need for hospitalization. If under 5 years: severe feverish acute respiratory illness that requires hospitalization, including clinical suspicion of pneumonia
ILI case definition: Patient of any age with history of sudden fever over 38°C and cough or sore throat and absence of other diagnosis

⁴ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



Haiti – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **10,461,000**

Life expectancy (years)

- Men: **61.5**
- Women: **65.3**
- Total: **63.4**

General mortality rate per 1,000 inhabitants

- All causes: **NA**
- Communicable diseases: **NA**

Hospital beds per 1,000 inhabitants: **0.7**

Public health expenditure (% of GDP): **0.7**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites

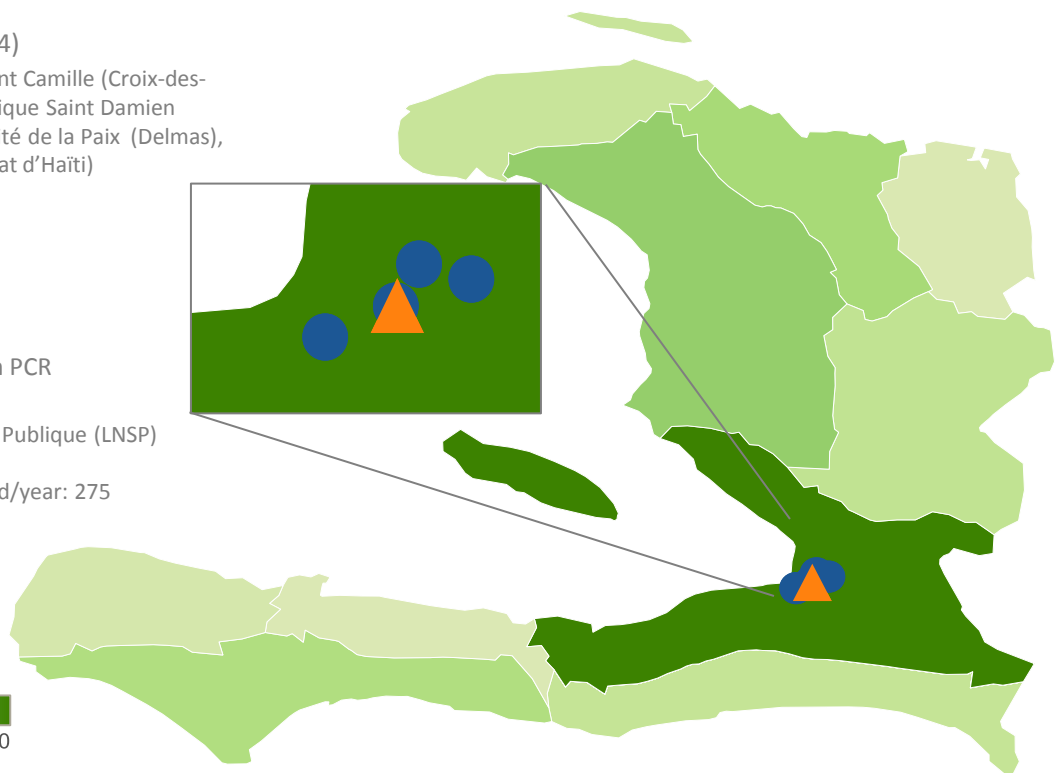
● SARI Hospitals (N=4)

Port-au-Prince (Hôpital Saint Camille (Croix-des-Bouquets), Hôpital pédiatrique Saint Damien (Tabarre), Hôpital Université de la Paix (Delmas), Hôpital de l'Université d'Etat d'Haïti)

▲ National Laboratory with PCR Capacity (N=1)

Laboratoire National de Santé Publique (LNSP)
 - Technical capacity: RT-PCR
 - Average samples processed/year: 275

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	No
Generates interactive online dashboard	No

Reporting

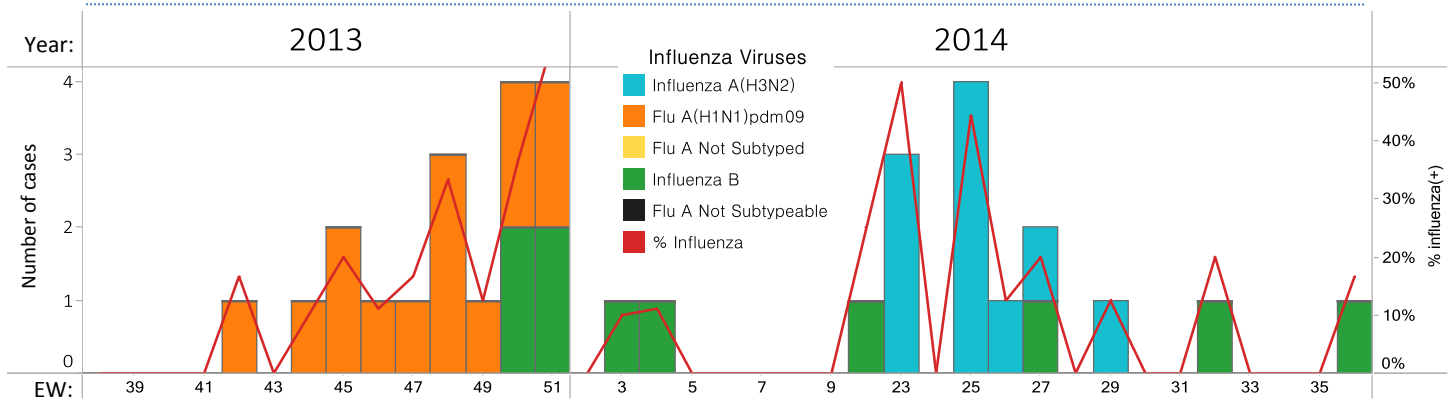
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Haiti – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		Yes	NA	National Influenza Center (NIC)	No
	Trainings per year		1	NA	Year established as NIC	NA
Case selection/sampling	Selection for sampling		Quota 12/site	NA	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		No	NA	National weekly average samples processed (2011-2013)	5
	Collection of clinical-epidemiological variables		Yes	NA	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory		Daily, 2-3 times/week	NA	Samples sent to WHO Collaborating Center	Yes
Data management, analysis, reporting	Frequency of national updates		Weekly	NA	Detection of other respiratory viruses by PCR	No
	Denominator of number of cases		NA	NA	Plan for quality control	Yes
	Use of baselines or endemic channels		No	NA		
Evaluation/monitoring	Sentinel sites evaluated		No	NA		
	Evaluations per year		NA	NA		

Circulation of Influenza Viruses 2013-2014³



Vaccines

Influenza vaccine not yet introduced in the public sphere

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2013
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² SARI case definition: An acute respiratory infection with history of fever or measured fever of $\geq 38^{\circ}\text{C}$ and cough with onset within the last 10 days that requires hospitalization

³ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Jamaica – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **2,799,000**

Life expectancy (years)

- Men: **71.2**
- Women: **76.2**
- Total: **73.7**

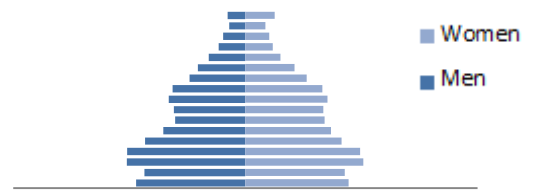
General mortality rate per 1,000 inhabitants

- All causes: **NA**
- Communicable diseases: **NA**

Hospital beds per 1,000 inhabitants: **1.7**

Public health expenditure (% of GDP): **3.3**

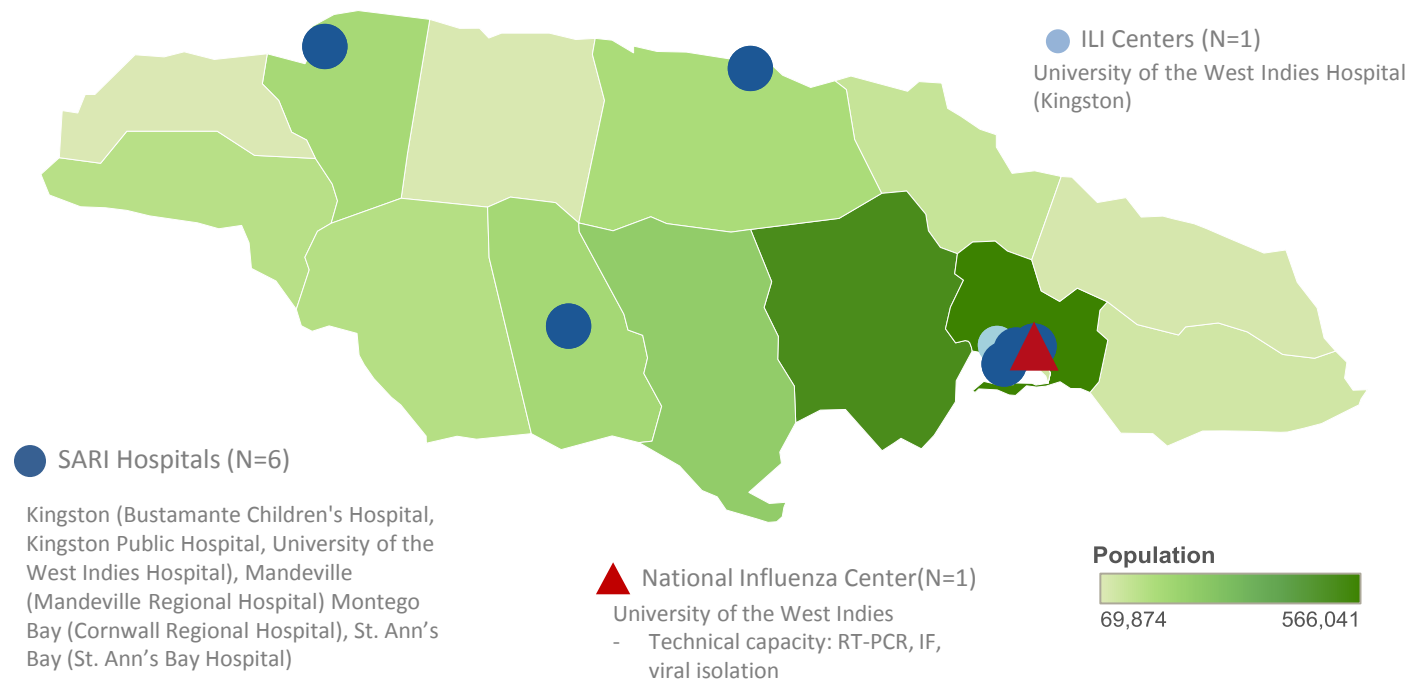
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ARI/ILI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	[system pending update underway]
Integrates different surveillance information systems	
Allows for monitoring of the sentinel site system	
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

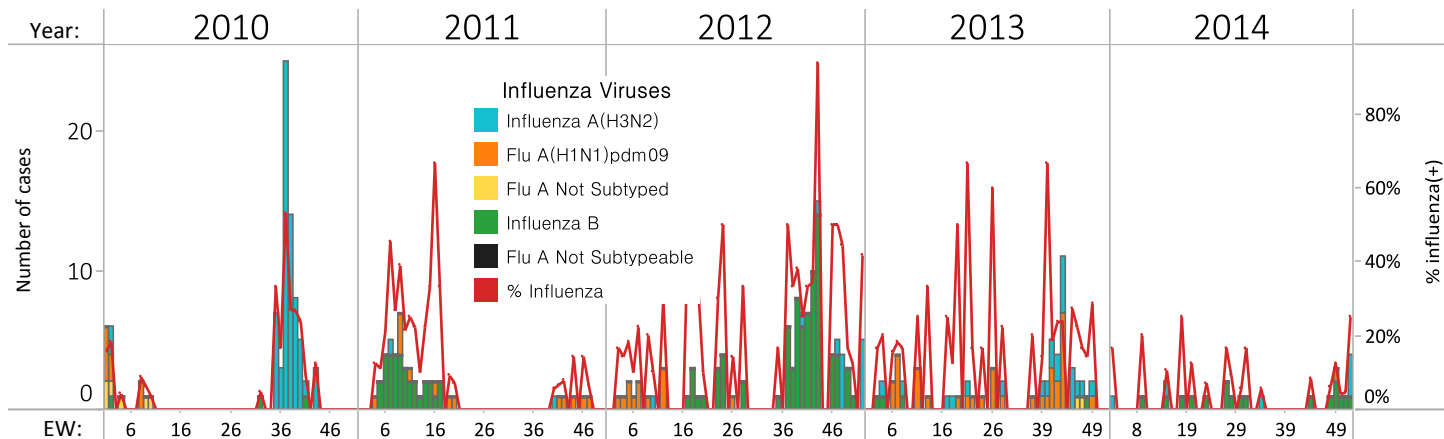
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	NA
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Jamaica – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI/ARI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	Yes (ILI)	National Influenza Center (NIC)		Yes
	Trainings per year	1	<1	Year established as NIC		1952
Case selection/sampling	Selection for sampling	Quota 5/week	Quota 5/week	Samples received from all surveillance systems		Yes
	Systematic randomized sampling	No	No	National weekly average samples processed (2011-2013)		8
	Collection of clinical-epidemiological variables	Yes	No	Access to epidemiological case information		No
Data management, analysis, reporting	Frequency of shipment to the laboratory	Daily	Varies	Samples sent to WHO Collaborating Center		Yes
	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR		No
	Denominator of number of cases	Hospital admissions	Outpatient visits	Plan for quality control		Yes
Evaluation/monitoring	Use of baselines or endemic channels	Yes	No			
	Sentinel sites evaluated	No	No			
	Evaluations per year	NA	NA			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Northern Hemisphere (since 2006)
Vaccination period	Oct-Jan
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	NA
Percentage of children (6-24 months) that received the vaccine against influenza, 2012	NA

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2007

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** An acute respiratory infection with history of fever or measured fever of $\geq 38^{\circ}\text{C}$ and cough with onset within the last 10 days that requires hospitalization
ILI/ARI case definition: An acute respiratory infection with history of fever or measured fever of $\geq 38^{\circ}\text{C}$ and cough with onset within the last 10 days

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Saint Lucia – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2012)¹

Total population: **169,115**

Life expectancy (years)

- Men: **72.7**
- Women: **77.5**
- Total: **75.1**

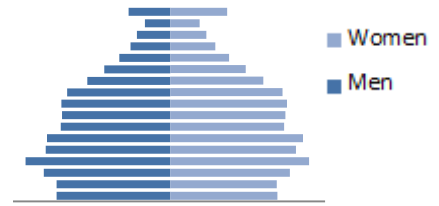
General mortality rate per 1,000 inhabitants

- All causes: **6.9**
- Communicable diseases: **0.44**

Hospital beds per 1,000 inhabitants: **1.5**

Public health expenditure (% of GDP): **1.59**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
Syndromic Surveillance (includes ARI/ILI)	National	No	Aggregate

Sentinel Sites²

▲ National laboratory with IF capacity (N=1)
Victoria Hospital Laboratory
- Technical capacity: IF



● SARI Hospitals (N=2)
Catsries: Victoria Hospital (general hospital with ICU),
Vieux Fort: St. Jude Hospital (general hospital with ICU)

Information Systems

Integrates epidemiological and virologic information	No
Integrates different surveillance information systems	No
Allows for monitoring of the sentinel site system	No
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

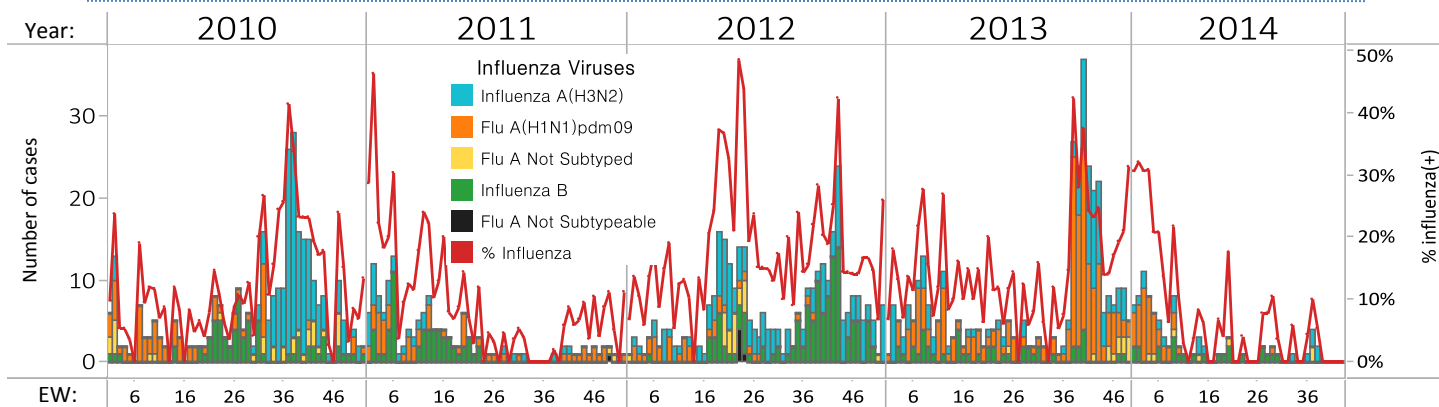
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	No
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ²

Saint Lucia – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	NA	National Influenza Center (NIC)	No	
	Trainings per year	<1	NA	Year established as NIC	NA	
Case selection/sampling	Selection for sampling	100%	NA	Samples received from all surveillance systems	No	
	Systematic randomized sampling	NA	NA	National weekly average samples processed (2011-2013)	NA	
	Collection of clinical-epidemiological variables	Yes	NA	Access to epidemiological case information	Yes	
Data management, analysis, reporting	Frequency of shipment to the laboratory	As required	NA	Samples sent to WHO Collaborating Center	Yes ²	
	Frequency of national updates	NA	NA	Detection of other respiratory viruses by PCR	Yes ²	
	Denominator of number of cases	NA	NA	Plan for quality control	NA	
Evaluation/monitoring	Use of baselines or endemic channels	No	NA			
	Sentinel sites evaluated	No	NA			
	Evaluations per year	NA	NA			

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere (since 2006)
Vaccination period	NA
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	NA
Percentage of children (6-24 months) that received the vaccine against influenza, 2012	NA

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2010
Year first developed	NA

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Saint Lucia Ministry of Health: Basic Indicators, 2012

² Sentinel hospitals in Saint Lucia send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

³ **SARI case definition:** An acute respiratory infection with history of fever or measured fever of $\geq 38^\circ\text{C}$ and cough with onset within the last 10 days that requires hospitalization

ILI case definition: An acute respiratory infection with history of fever or measured fever of $\geq 38^\circ\text{C}$ and cough with onset within the last 10 days

⁴ Aggregate results from CARPHA laboratory. Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hip/viz/ed_flu.asp





Saint Vincent and the Grenadines – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **103,000**

Life expectancy (years)

- Men: **72.7**
- Women: **76.6**
- Total: **74.6**

General mortality rate per 1,000 inhabitants

- All causes: **8.5**
- Communicable diseases: **0.82**

Hospital beds per 1,000 inhabitants: **5.2**

Public health expenditure (% of GDP): **NA**

Population by age group

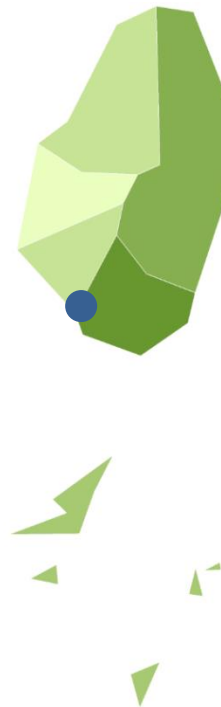


Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
Communicable Disease Surveillance (includes ILI)	National	Yes	Aggregate

Sentinel Sites²

- SARI Hospitals (N=1)
- Kingstown: Milton Cato Memorial Hospital (general hospital with ICU)



Information Systems

Integrates epidemiological and virologic information	No ³
Integrates different surveillance information systems	No ³
Allows for monitoring of the sentinel site system	No
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

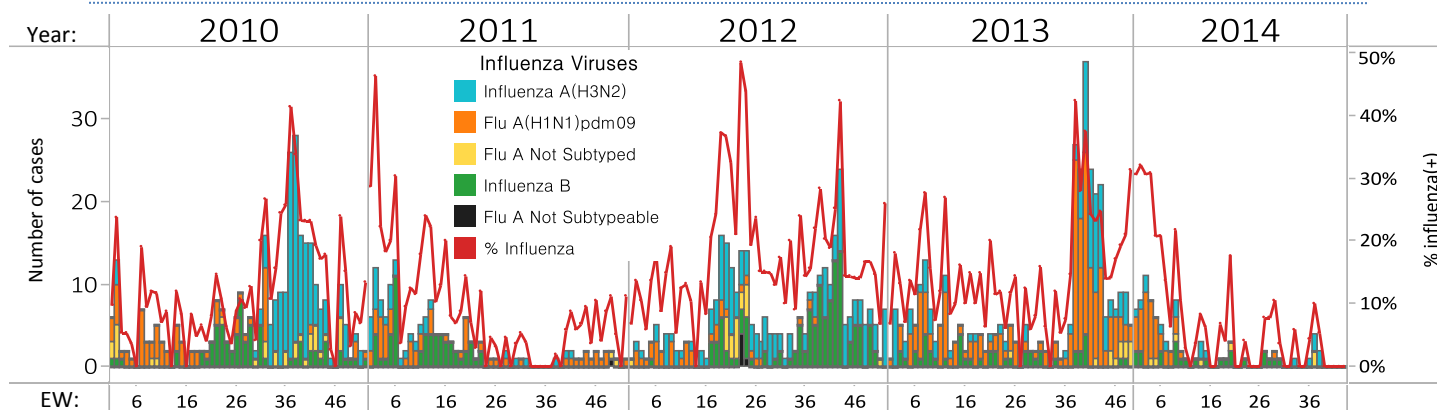
Bulletins/reports generated automatically	No ³
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ²

Saint Vincent and the Grenadines – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance⁴

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	Yes	NA	National Influenza Center (NIC)	No
	Trainings per year	<1	<1	NA	Year established as NIC	NA
Case selection/sampling	Selection for sampling	100%	100%	NA	Samples received from all surveillance systems	Yes
	Systematic randomized sampling	NA	NA	NA	National weekly average samples processed (2011-2013)	NA
	Collection of clinical-epidemiological variables	Yes	Yes	NA	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory	As required, daily	As required, daily	NA	Samples sent to WHO Collaborating Center	Yes ³
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly	NA	Detection of other respiratory viruses by PCR	Yes ³
	Denominator of number of cases	NA	NA	NA	Plan for quality control	Yes
	Use of baselines or endemic channels	No	No	NA		
Evaluation/monitoring	Sentinel sites evaluated	No	No	NA		
	Evaluations per year	NA	NA	NA		

Circulation of Influenza Viruses 2010-2014⁵



Vaccines

Influenza vaccine not yet introduced in the public sphere

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2006

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² Sentinel hospitals in Saint Vincent and the Grenadines send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

³ As of the last update, SARI surveillance in Saint Vincent and the Grenadines does not complete this capacity; however a new system is currently being implemented.

⁴ **SARI case definition:** An acute respiratory infection with history of fever or measured fever of $\geq 38^\circ\text{C}$ and cough with onset within the last 10 days that requires hospitalization

⁵ Aggregate results from CARPHA laboratory. Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO-WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Suriname – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **544,000**

Life expectancy (years)

- Men: **68.2**
- Women: **74.5**
- Total: **71.2**

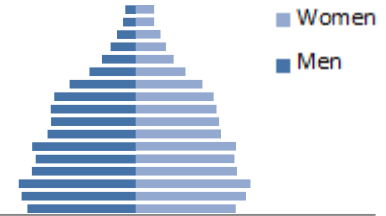
General mortality rate per 1,000 inhabitants

- All causes: **6.3**
- Communicable diseases: **0.68**

Hospital beds per 1,000 inhabitants: **3.1**

Public health expenditure (% of GDP): **3.4**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ILI Surveillance (outpatient)	Sentinel	Yes	Nominal

Sentinel Sites²

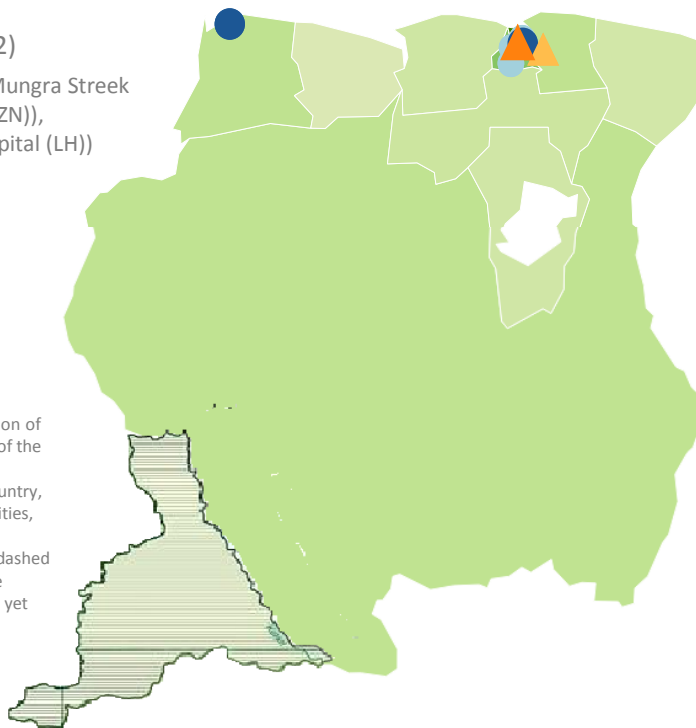
SARI Hospitals (N=2)

Nickerie (Lachmipersad Mungra Streek Ziekenhuis Nickerie (LMSZN)), Paramaribo ('s Lands Hospital (LH))

ILI Centers (N=3)

Paramaribo (2), Wanica

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Pan American Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



▲ National laboratory with IF capacity (N=1)
Bureau voor Openbare Gezondheidszorg
- Technical capacity: IF

▲ National laboratory with PCR capacity (N=1)
Central Medical Laboratory
- Technical capacity: PCR-RT, IF
Academisch Ziekenhuis Paramaribo (AZP)
- Technical capacity: multiplex PCR, IF
- Currently this lab carries out research only, not surveillance

Information Systems

Integrates epidemiological and virologic information	Partial
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	No
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

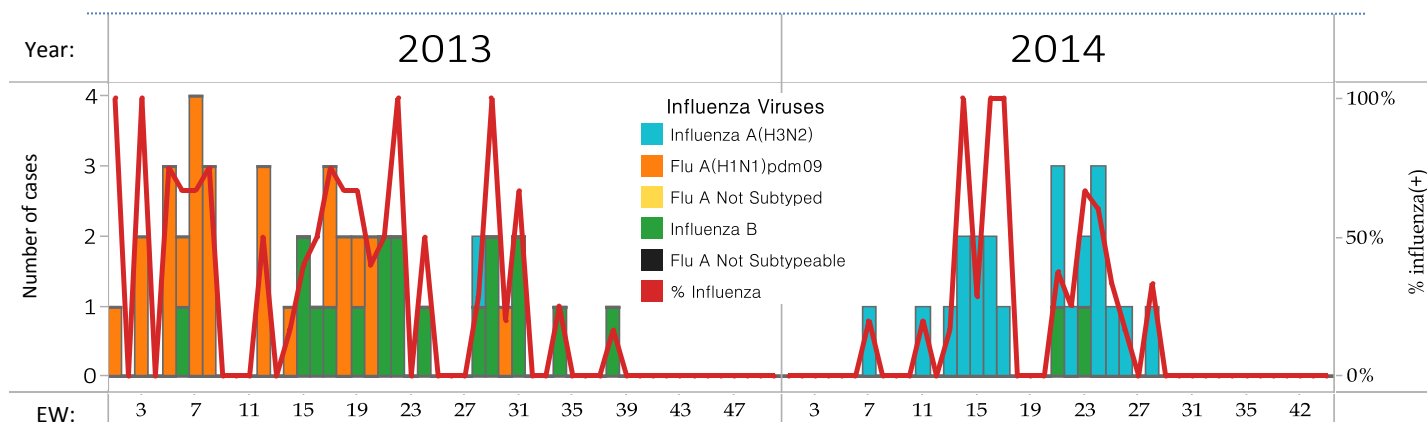
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	No
Bulletins/reports include sentinel surveillance data	NA
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes ²

Suriname – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	Yes	National Influenza Center (NIC)		No
	Trainings per year	1	<1	Year established as NIC		NA
Case selection/sampling	Selection for sampling	100%	Quota 5/week	Samples received from all surveillance systems		Yes
	Systematic randomized sampling	NA	No	National weekly average samples processed (2011-2013)		≤ 50
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information		Yes
	Frequency of shipment to the laboratory	Weekly	Weekly	Samples sent to WHO Collaborating Center		Yes ²
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR		Yes ²
	Denominator of number of cases	Reference population	Reference population	Plan for quality control		Yes
	Use of baselines or endemic channels	No	No			
Evaluation/monitoring	Sentinel sites evaluated	No	No			
	Evaluations per year	NA	NA			

Circulation of Influenza Viruses 2013-2014⁴



Vaccines

Vaccine composition	Northern Hemisphere
Vaccination period	Nov-Jul
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	NA
Percentage of children (6-24 months) that received the vaccine against influenza, 2012	NA

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2009
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: St. Lucia Ministry of Health: Basic Indicators, 2012

² Sentinel hospitals in Suriname send samples to the CARPHA (Caribbean Public Health Agency) laboratory, a NIC.

³ **SARI case definition:** An acute respiratory infection with history of fever or measured fever of ≥38 °C and cough with onset within the last 10 days that requires hospitalization

ILI case definition: An acute respiratory infection with history of fever or measured fever of ≥38 °C and cough with onset within the last 10 days

⁴ Source: Pan American Health Organization.

Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phil/viz/ed_flu.asp



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Andean Region



Bolivia – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **10,848,000**

Life expectancy (years)

- Men: **65.3**
- Women: **69.8**
- Total: **67.5**

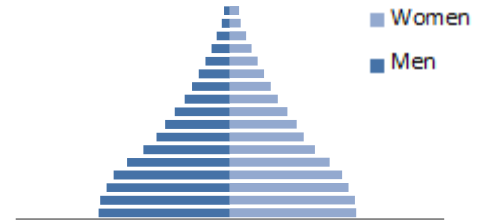
General mortality rate per 1,000 inhabitants

- All causes: **7.2²**
- Communicable diseases: **NA**

Hospital beds per 1,000 inhabitants: **1.1**

Public health expenditure (% of GDP): **4.1**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
Pneumonia Surveillance	National	No	Aggregate
ARI Surveillance	National	No	Aggregate

Sentinel Sites

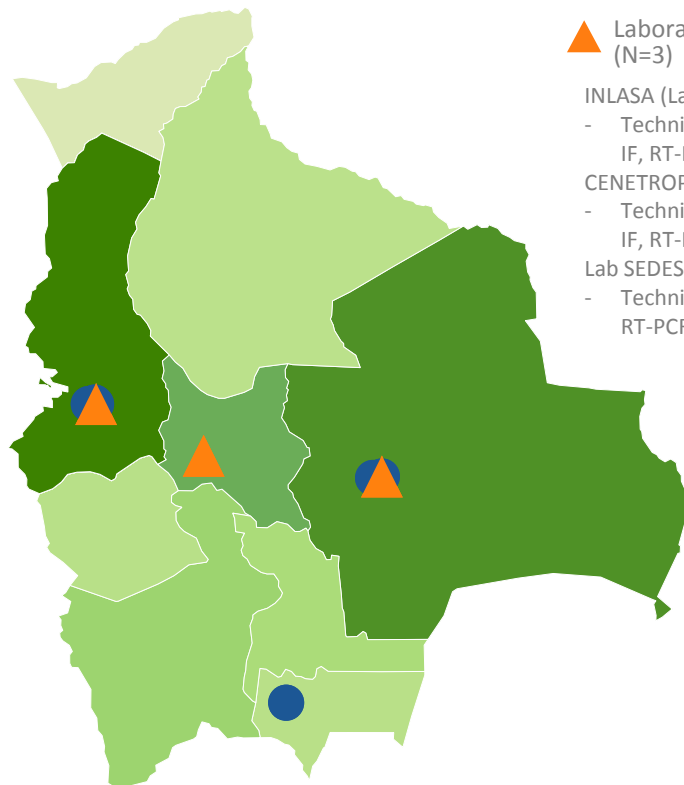
● SARI Hospitals (N=8)

El Alto (Hospital Boliviano Holandés), La Paz (Hospital del Niño, Instituto Nacional del Tórax, Hospital Materno Infantil de la Caja Nacional Seguro, Hospital Arco Iris), Santa Cruz (Hospital San Juan de Dios, Hospital del Niño, Hospital Obrero Número 3 de la Caja Nacional Seguro)

▲ Laboratory with PCR capacity (N=3)

- INLASA (La Paz)
 - Technical capacity: IF, RT-PCR, viral isolation
- CENETROP (Santa Cruz)
 - Technical capacity: IF, RT-PCR, viral isolation
- Lab SEDES Cochabamba
 - Technical capacity: RT-PCR

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

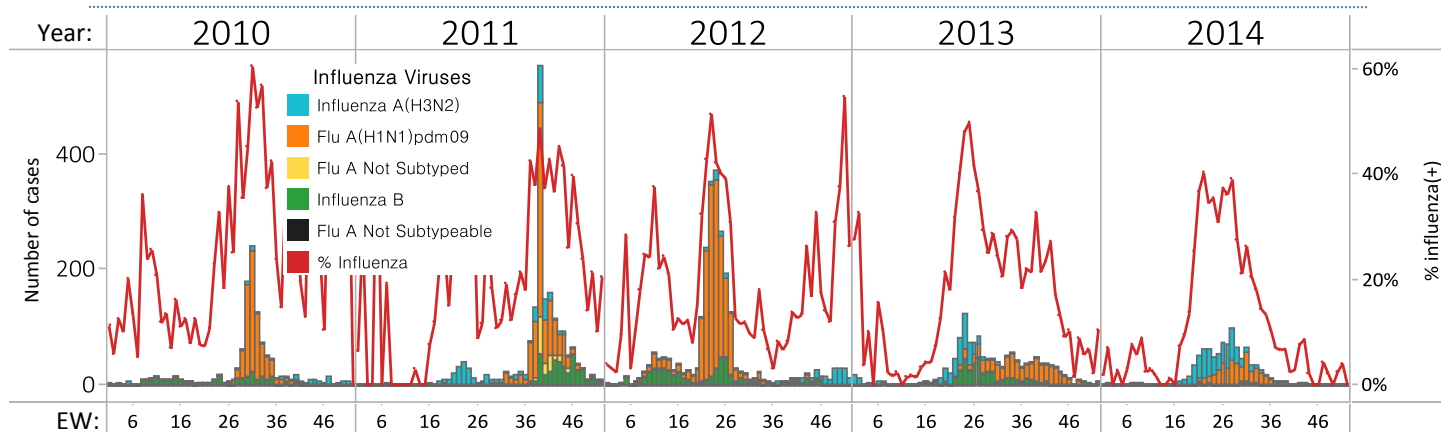
Bulletins/reports generated automatically	Partial
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Bolivia – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	Yes	NA	National Influenza Center (NIC)	No
	Trainings per year	1	1	NA	Year established as NIC	NA
Case selection/sampling	Selection for sampling	100%	100%	NA	Samples received from all surveillance systems	Yes
	Systematic randomized sampling	NA	NA	NA	National weekly average samples processed (2011-2013)	47
	Collection of clinical-epidemiological variables	Yes	Yes	NA	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory	Daily	Daily	NA	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates	Weekly	Weekly	NA	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases	Hospital admissions	Hospital admissions	NA	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels	Yes	Yes	NA		
	Sentinel sites evaluated	Yes (La Paz) No (Sta Cruz)	Yes (La Paz) No (Sta Cruz)	NA		
	Evaluations per year	<1	<1	NA		

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Southern Hemisphere (since 2010)
Vaccination period	May-Jun
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	32
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	36

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2011
Year first developed	2008

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2011

³ **SARI case definition:** An acute respiratory infection with history of fever or measured fever of ≥38 °C and cough with onset within the last 10 days that requires hospitalization

⁴ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phip/viz/ed_flu.asp



Colombia – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **48,930,000**

Life expectancy (years)

- Men: **70.6**
- Women: **77.9**
- Total: **74.2**

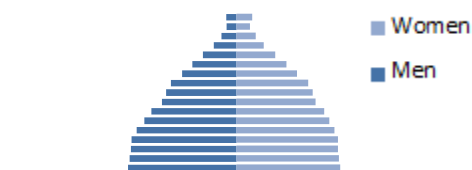
General mortality rate per 1,000 inhabitants

- All causes: **6.8**
- Communicable diseases: **0.45**

Hospital beds per 1,000 inhabitants: **1.5**

Public health expenditure (% of GDP): **5.2**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
ESI (ILI) Surveillance	Sentinel	Yes	Nominal
SARI Surveillance	Sentinel	Yes	Nominal
Unusual SARI Surveillance	National	Yes	Nominal
ARI Mortality Surveillance in <5-year-olds	National	Yes	Nominal
ARI Morbidity Surveillance	National	No	Aggregate

Sentinel Sites

● SARI Hospitals (N=19)

Amazonas, Antioquia, Arauca, Barranquilla, Bogotá (5), Boyacá (2), Cartagena, Caldas, San José del Guaviare, Meta, Nariño (2), Tolima, Valle

● ILI Centers (N=10)

Amazonas, Antioquia, Arauca, Boyacá, Cartagena, Caldas, San José del Guaviare, Meta, Norte de Santander, Valle

▲ National Influenza Center (N=1)

National Institute of Health of Colombia

- Technical capacity: IF, RT-PCR, viral isolation
- Average samples processed/year: 10,452

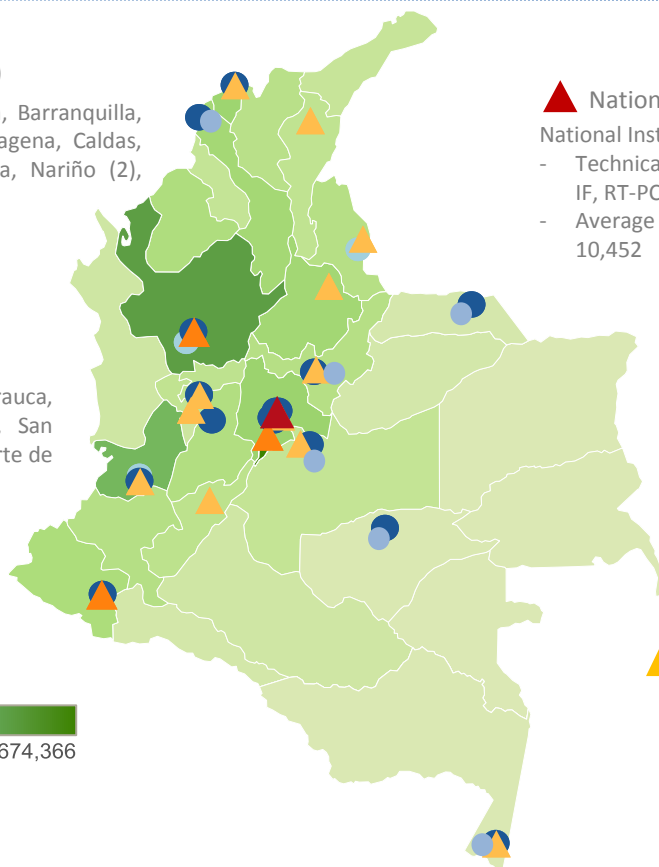
▲ Regional laboratories with PCR and IF capacity (N=3)

LSPD del Distrito de Bogotá
LSPD de Antioquia
LSPD de Nariño

▲ Regional laboratories with IF capacity (N=13)

Amazonas, Arauca, Atlántico, Bogotá, Boyacá, Caldas, Cesar, Huila, Meta, Norte de Santander, Risaralda, Santander, Valle Del Cauca

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

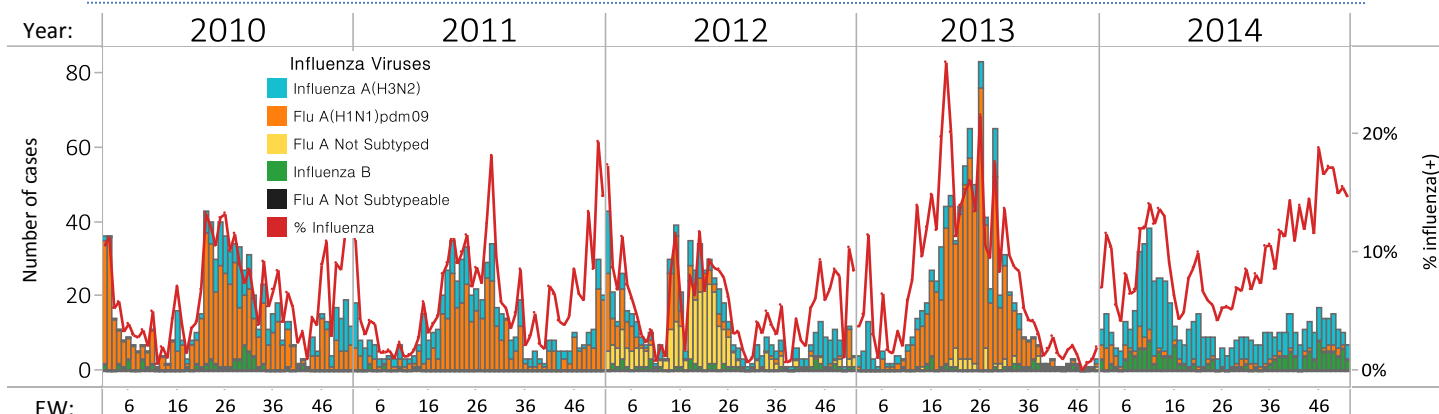
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	No
Data reported to FluID (PAHO/WHO)	Yes
Data reported to FluNet (PAHO/WHO)	Yes

Colombia – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	Yes
	Trainings per year		1-2	1-2	Year established as NIC	2007
Case selection/sampling	Selection for sampling		Quota 5/site	Quota 5/site	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		Yes	Yes	National weekly average samples processed (2011-2013)	201
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory		Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes
Data management, analysis, reporting	Frequency of national updates		Weekly/monthly	Weekly/monthly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		Hospital admissions	Outpatient visits	Plan for quality control	Yes
	Use of baselines or endemic channels		No	No		
Evaluation/monitoring	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		2	<1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 2008)
Vaccination period	Apr
Percentage of older adults (>60 years) that received the vaccine against influenza, 2013	28
Percentage of children (6-23 months) that received the vaccine against influenza, 2013	81

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2010
Year first developed	2007

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² SARI case definition: Person with acute respiratory infection with history of fever and cough of no more than 10 days of progression, that requires intra-hospital management.

ILI case definition: Patient with acute respiratory infection, with fever greater than or equal to 38 °C and cough, of no more than 7 days of progression, and that requires ambulatory clinical management.

³ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Ecuador – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

- Total population: **15,930,000**
- Life expectancy (years)
- Men: **74.0**
 - Women: **79.6**
 - Total: **76.7**
- General mortality rate per 1,000 inhabitants
- All causes: **5.9**
 - Communicable diseases: **0.62**
- Hospital beds per 1,000 inhabitants: **1.5**
- Public health expenditure (% of GDP): **3.9**

Population by age group



Surveillance Systems

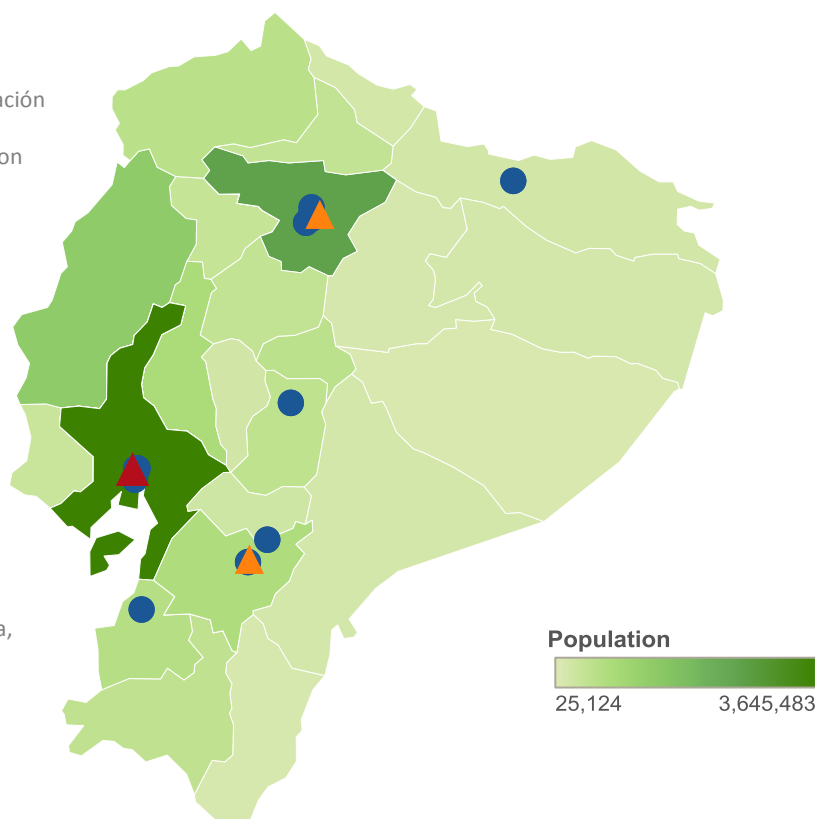
Surveillance System	Scope	Sample Collection	Data Collection
Sentinel SARI Surveillance	Sentinel	Yes	Nominal
Event- or Outbreak-based Surveillance	National	Yes	Aggregate

Sentinel Sites

- ▲ National Influenza Center (N=1)
Instituto Nacional de Salud Pública e Investigación (INSPI) Guayaquil
 - Technical capacity: IF, RT-PCR, viral isolation
 - Average samples processed/year: 6,240

- ▲ Regional Laboratories with PCR Capacity (N=2)
INSPI Cuenca
INSPI Quito
 - Technical capacity: RT-PCR, IF

- SARI Hospitals (N=17)
Azogues, Cuenca, Guayaquil (6), Imbabura, Nueva Loja, Quito (6), Riobamba



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

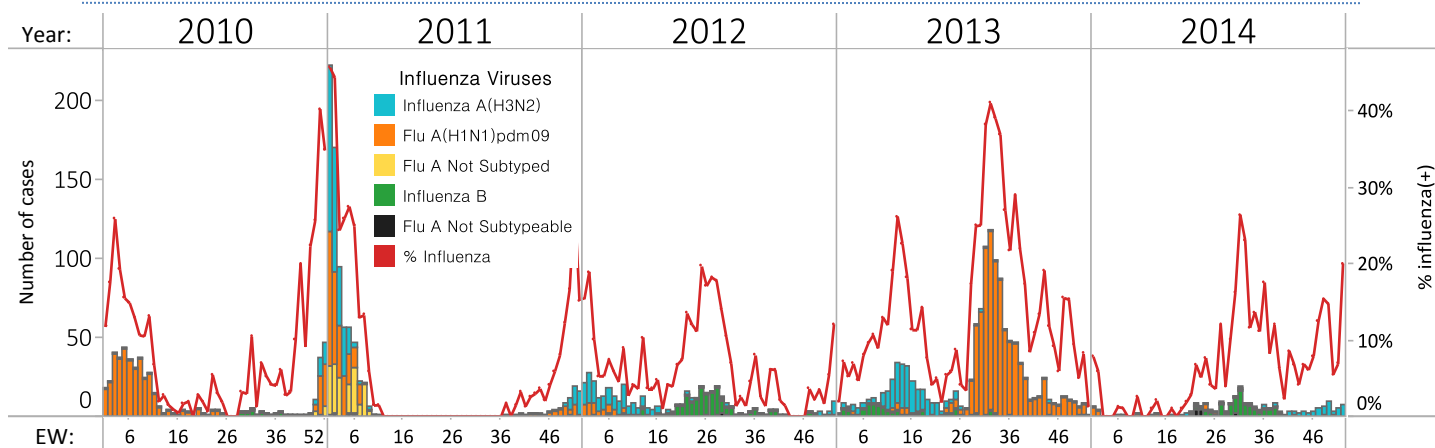
Bulletins/reports generated automatically	No
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	Yes
Data reported to FluNet (PAHO/WHO)	Yes

Ecuador – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	Yes	NA	National Influenza Center (NIC)		Yes
	Trainings per year	<1	NA	Year established as NIC		2006
Case selection/sampling	Selection for sampling	Not standardized	NA	Samples received from all surveillance systems		Yes
	Systematic randomized sampling	No	NA	National weekly average samples processed (2011-2013)		120
	Collection of clinical-epidemiological variables	Yes	NA	Access to epidemiological case information		Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory	Daily	NA	Samples sent to WHO Collaborating Center		Yes
	Frequency of national updates	Weekly	NA	Detection of other respiratory viruses by PCR		No
	Denominator of number of cases	Hospital admissions	NA	Plan for quality control		Yes
Evaluation/monitoring	Use of baselines or endemic channels	No	NA			
	Sentinel sites evaluated	Yes	NA			
	Evaluations per year	1	NA			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Northern Hemisphere (since 2006)
Vaccination period	Oct-Dec
Percentage of older adults (>55 years) that received the vaccine against influenza, 2012	54
Percentage of children (6-59 months) that received the vaccine against influenza, 2012	83

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2013 (draft)
Year first developed	2009

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² SARI case definition: Acute respiratory infection with history of fever or measured fever $\geq 38^{\circ}\text{C}$ and cough, with onset in the last 10 days, that requires hospitalization

³ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Peru – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **30,769,000**

Life expectancy (years)

- Men: **72.5**
- Women: **77.9**
- Total: **75.1**

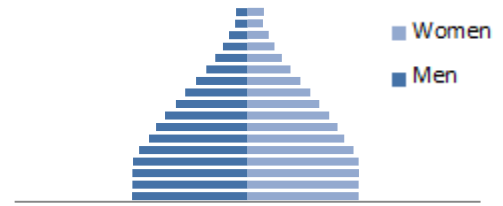
General mortality rate per 1,000 inhabitants

- All causes: **6.6**
- Communicable diseases : **1.55**

Hospital beds per 1,000 inhabitants : **1.5**

Public health expenditure (% of GDP): **3.0**

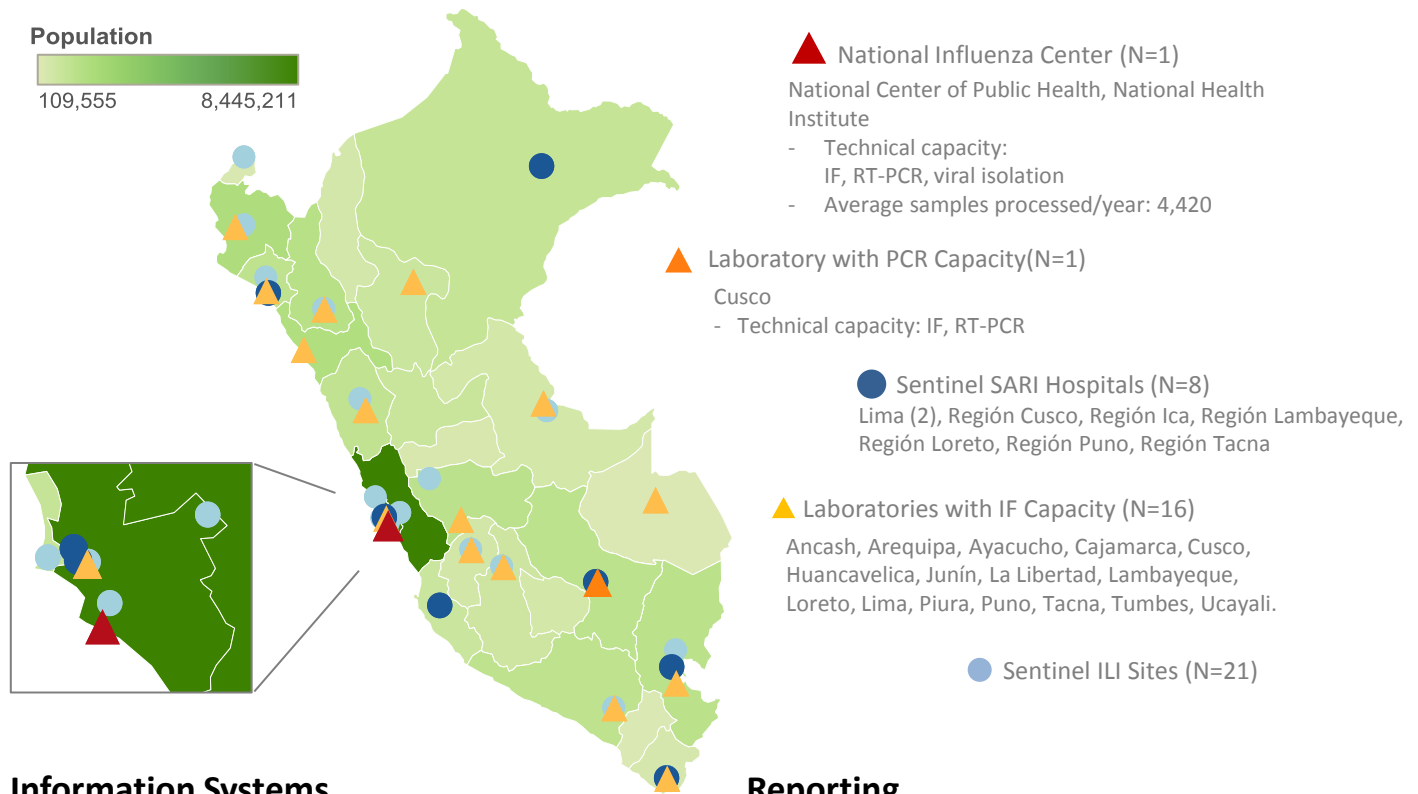
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal
ARI Surveillance in Children <5 Years Old	National	No	Aggregate
Pneumonia Surveillance in Children <5 Years Old	National	No	Aggregate

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	No
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

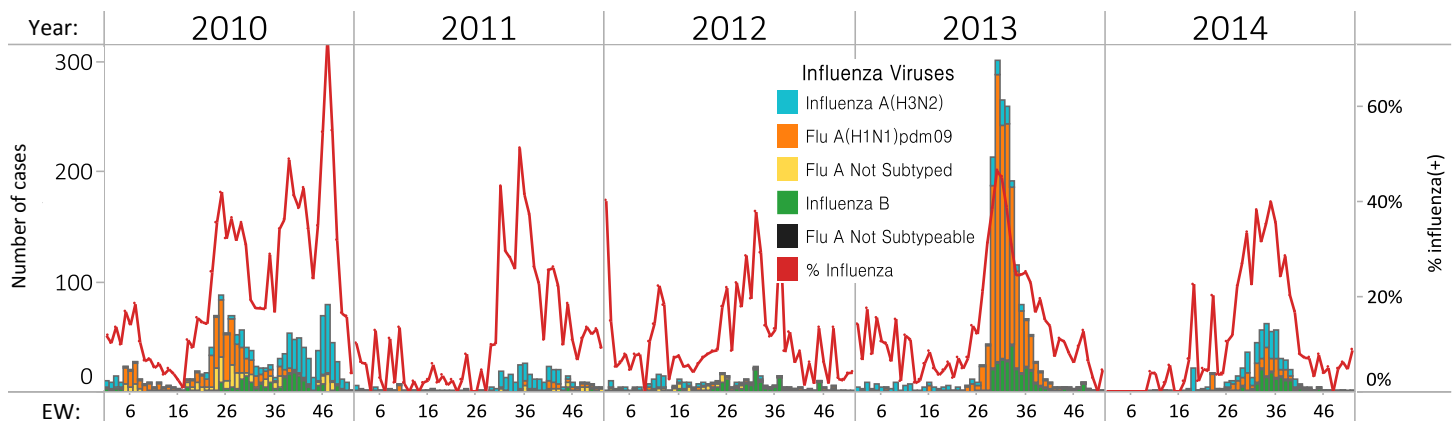
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	No
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Peru – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		NA	NA	National Influenza Center (NIC)	Yes
	Trainings per year		1	1	Year established as NIC	1999
Case selection/sampling	Selection for sampling		NA	NA	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		NA	NA	National weekly average samples processed (2011-2013)	85
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		Weekly	Twice weekly	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		NA	NA	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		NA	NA		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1	1		

Circulation of Influenza Viruses 2010-2014²



Vaccines

Vaccine composition	Northern Hemisphere (North/East regions) Southern Hemisphere (remaining regions)
Vaccination period	Dec-Mar (North/East) May-Sep (remaining)
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2014	47
Percentage of children (6-23 months) that received the vaccine against influenza, 2014	<1 year: 23 1 year: 11

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2014
Year first developed	2007

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phil/viz/ed_flu.asp



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Southern Cone and Brazil



Argentina – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2013)¹

Total population: **40,900,496**

Life expectancy (years)

- Men: **71.6**
- Women: **79.1**
- Total: **75.2**

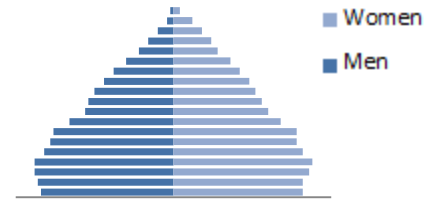
General mortality rate per 1,000 inhabitants

- All causes: **7.8** (2011)
- Communicable diseases: **0.73** (2011)

Hospital beds per 1,000 inhabitants : **3.7**

Public health expenditure (% of GDP): **6.21** (2009)

Population by age group

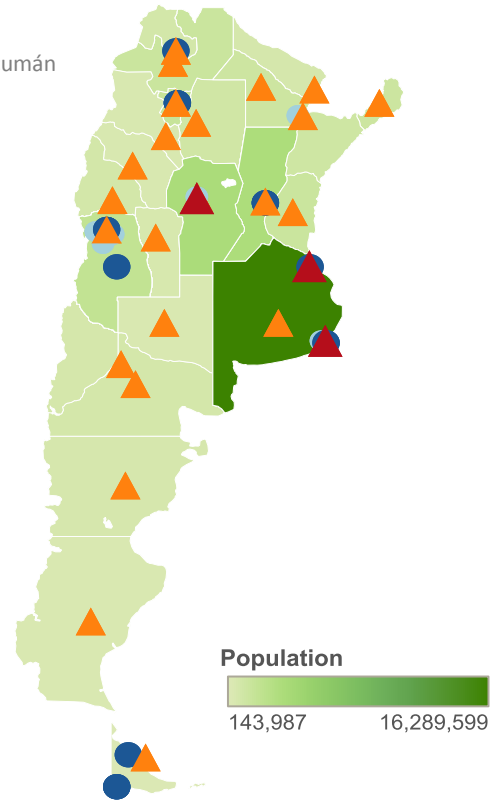


Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel/universal	Yes	Nominal/numeric
ILI Surveillance	Sentinel/universal	Yes	Nominal/numeric
Pneumonia Surveillance	Sentinel/universal	Yes	Nominal/numeric
Bronchiolitis Surveillance	Universal	Yes	Numeric
Unusual Respiratory Event Surveillance	Universal	Yes	Numeric
Mortality Surveillance	Vital Statistics	No	Nominal

Sentinel Sites

- SARI Hospitals (N=8)
Buenos Aires, CABA, Jujuy, Mendoza (2), Tierra del Fuego (2), Tucumán
- ILI Centers (N=10)
Buenos Aires, Mendoza, Santa Fe, Tucumán
- ▲ Laboratories with PCR capacity (N>24)
The total number of regional laboratories, including those with IF capacity, is greater than 100 (only those with PCR capacity shown on map).
- ▲ National Influenza Centers (N=3)
 - 1 – National Institute of Infectious Diseases (Buenos Aires)
National Reference Laboratory for Influenza and respiratory viruses and Coordinator of the National Network of Influenza and RV.
 - Immunofluorescence (IF), RT-PCR, viral isolation (VI), Hemagglutination Inhibition (IHA), sequencing, antiviral susceptibility, serology.
 - Molecular detection of other respiratory viruses: HMPV, SARSCoV, MERSCoV, HCoV-OC43, HCoV-229E, HCoV-NL63, HCoV-HKU1, HBoV y RhinoV.
 - 2 - Influenza and Respiratory Virus Laboratory, Virology Institute (UNC) (Córdoba)
 - IF, RT-PCR, VI, IHA, sequencing, serology (human influenza avian subtypes)
 - Molecular detection of other respiratory viruses: HMPV, HCoV-OC43, HCoV-229E, HHBoV
 - 3 - National Institute of Epidemiology (Mar del Plata)
 - IF, RT-PCR, VI, IHA, sequencing, antiviral susceptibility
 - Molecular detection of other respiratory viruses



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

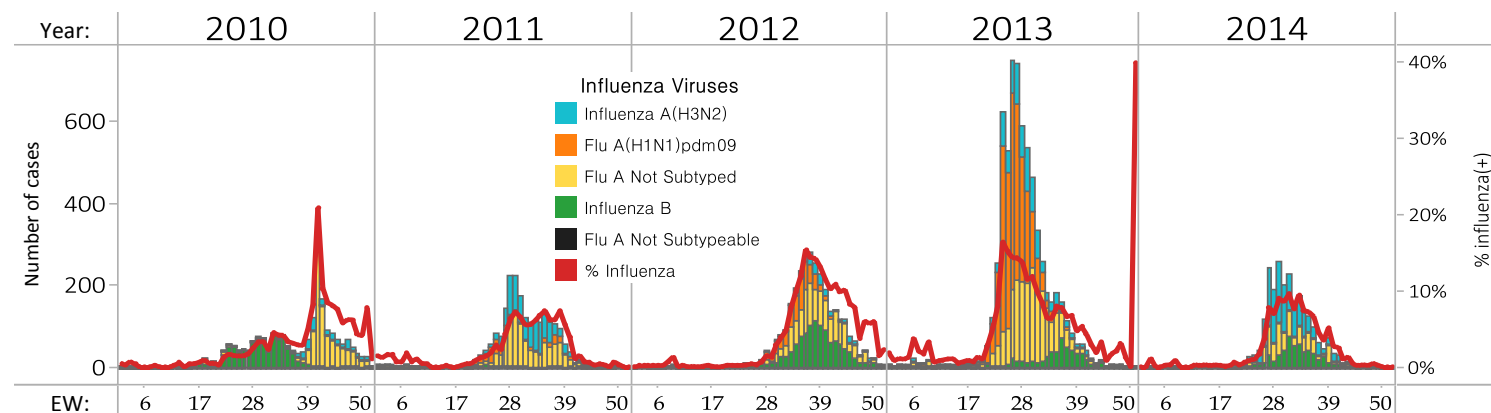
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	No
Data reported to FluID (PAHO/WHO)	Yes
Data reported to FluNet (PAHO/WHO)	Yes

Argentina – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		Yes	Yes	National Influenza Center (year established as NIC) <i>listed on the first page</i>	Buenos Aires (1968) Córdoba (1964) Mar del Plata
	Trainings per year		<1	<1		
Case selection/sampling	Selection for sampling		NA	Quota	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		NA	No	National weekly average samples processed (2011-2013)	1,515
	Collection of clinical-epidemiological variables		Partial	Partial	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory		Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes
Data management, analysis, reporting	Frequency of national updates		Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		Hospital admissions	Outpatient visits	Plan for quality control	Yes
	Use of baselines or endemic channels		No	No		
Evaluation/monitoring	Sentinel sites evaluated		Partial	Partial		
	Evaluations per year		<1	<1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 1993)
Vaccination period	Feb-Nov
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	68
Percentage of children (6-24 months) that received the vaccine against influenza, 2012	76

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	Ongoing
Year first developed	2007

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Argentina Basic Health Indicators 2013. National Ministry of Health.

² **SARI case definition:** Sudden appearance of fever higher than 38 °C, cough or sore throat, dyspnea, and need for hospitalization

ILI case definition: Patient of any age with history of sudden fever higher than 38 °C and cough or sore throat, and absence of other diagnoses

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



Brazil – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **202,034,000**

Life expectancy (years)

- Men: **70.6**
- Women: **77.8**
- Total: **74.2**

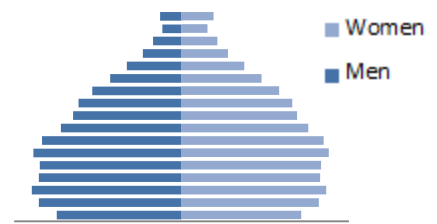
General mortality rate per 1,000 inhabitants

- All causes: **6.4**
- Communicable diseases: **0.62**

Hospital beds per 1,000 inhabitants: **2.3**

Public health expenditure (% of GDP): **4.0**

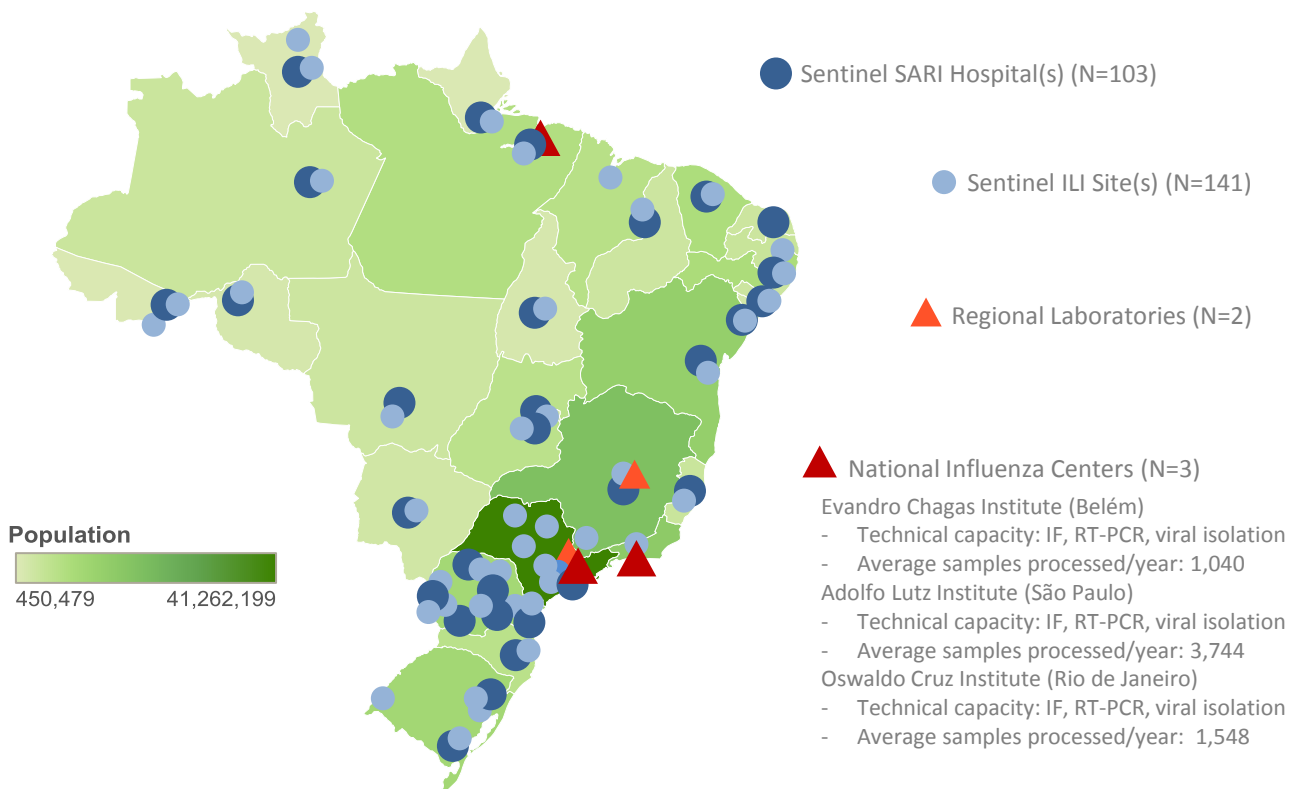
Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
Sivep-gripe (SARI Surveillance)	Sentinel	Yes	Nominal/Aggregate
Sinan web influenza	National	Yes	Nominal

Sentinel Sites



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	No
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

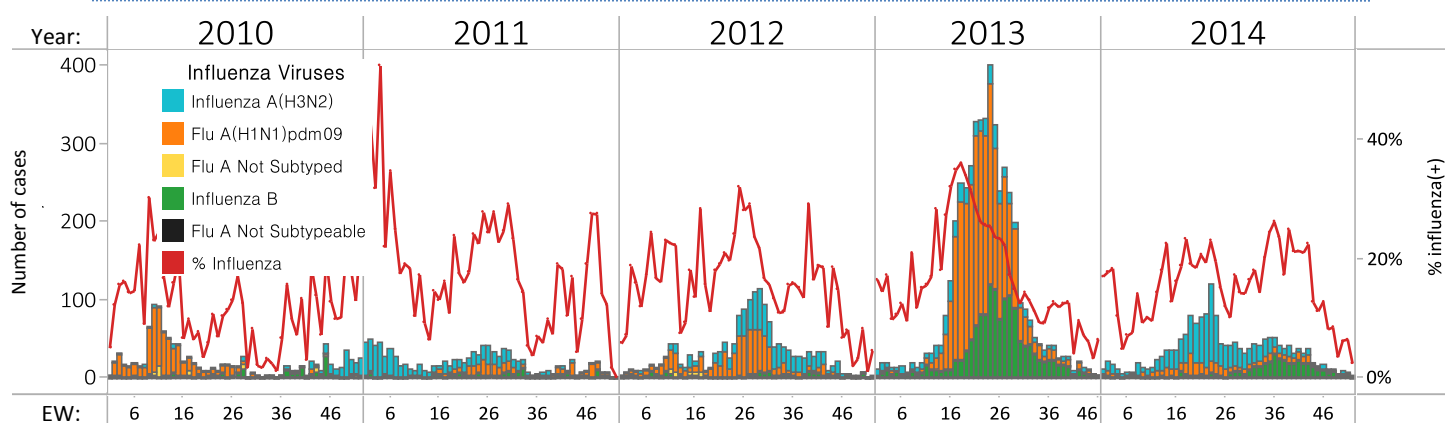
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Brazil – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	No	No	National Influenza Centers (year established as NIC)	Pará (NA) São Paulo (1960s) Rio de Janeiro (1950s)	
	Trainings per year	27	27		Samples received from all surveillance systems	Yes
Case selection/sampling	Selection for sampling	100%	100%	National weekly average samples processed (2011-2013)	168	
	Systematic randomized sampling	NA	NA	Access to epidemiological case information	Yes	
	Collection of clinical-epidemiological variables	Yes	Yes	Samples sent to WHO Collaborating Center	Yes	
Data management, analysis, reporting	Frequency of shipment to the laboratory	Daily	Daily	Detection of other respiratory viruses by PCR	Yes	
	Frequency of national updates	Weekly	Weekly	Plan for quality control	Yes	
	Denominator of number of cases	NA	NA			
Evaluation/monitoring	Use of baselines or endemic channels	No	Yes			
	Sentinel sites evaluated	Yes	Yes			
	Evaluations per year	1	1			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Influenza Pandemic Preparedness Plan

Vaccine composition	Southern Hemisphere (since 1999)	National Pandemic Preparedness Plan	Yes
Vaccination period	Apr-Jun	Year last updated	2014
Percentage of older adults (≥60 years) that received the vaccine against influenza, 2012	82	Year first developed	2006
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	96		

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Individual of any age, admitted with influenza-like illness and who presents dyspnea or O₂ saturation <95% or difficulty breathing. He/she should be registered or reported dead for SARI independent of the admission.

ILI case definition: Individual with fever, accompanied by cough, and with onset of symptoms in the last 7 days.

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hip/viz/ed_flu.asp



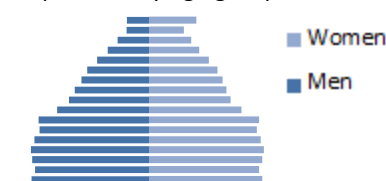
Chile – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

- Total population: **17,773,000**
- Life expectancy (years)
- Men: **77.4**
 - Women: **82.9**
 - Total: **80.2**
- General mortality rate per 1,000 inhabitants
- All causes: **4.9**
 - Communicable diseases : **0.30**
- Hospital beds per 1,000 inhabitants: **2.2**
- Public health expenditure (% of GDP): **3.5**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
ILI Surveillance	Sentinel	Yes	Aggregate
ARI Surveillance in Primary Health Care (APS)	Sentinel	No	Aggregate
SARI Surveillance	Sentinel	Yes	Nominal
Laboratory Surveillance	National	Yes	Aggregate
Outbreak Surveillance	National	Yes	Nominal
ARI/ILI Urgent Care Hospital Registry	National	No	Aggregate
Registry of Deaths due to Respiratory Causes and Influenza	National	No	Aggregate

Sentinel Sites

● SARI Hospitals (N=6)

Concepción (Hospital Guillermo Grant Benavente), Iquique, Puerto Montt, Santiago (Hospital San Juan de Dios, Hospital Militar) Viña del Mar (Hospital Gustavo Fricke)

▲ National Influenza Center (N=1)

Public Health Institute of Chile: Respiratory and Exanthematic Virus Section (Viral disease sub department)

- Technical capacity: Cellular cultivation, IF, RT-PCR, IH, viral isolation, sequencing, phenotype and genotype analysis of antiviral resistance
- Average samples processed/year: 41,808

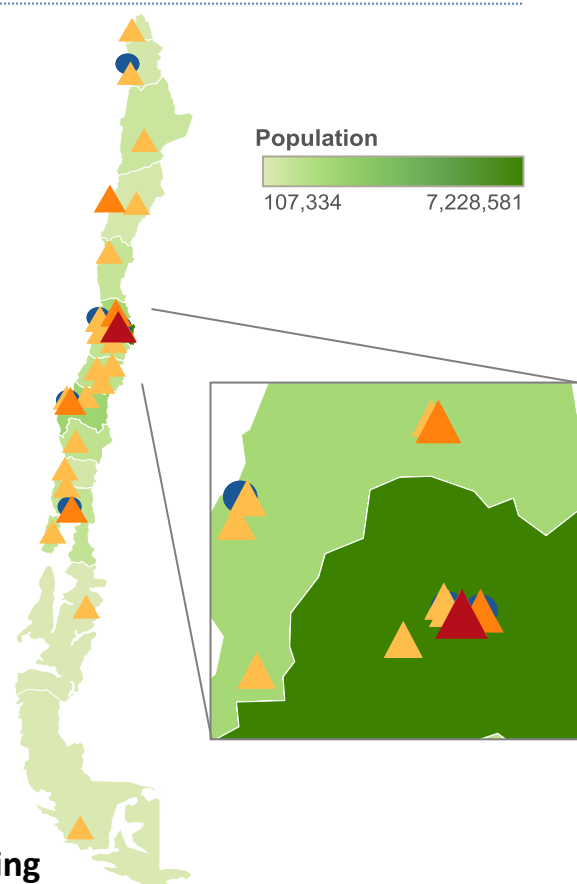
▲ Laboratories with PCR capacity (N=6)

Antofagasta, Concepción, Puerto Montt, Santiago, San Felipe, Temuco

▲ Laboratories with IF capacity (N=24)

Antofagasta, Arica, Atacama, Biobío (2), Coquimbo, Iquique, Los Lagos (2), Los Ríos, Maule (3), Región Aisén, Región Magallanes (2), Región Metropolitana de Santiago (4), Región O'Higgins, Valparaíso (3)

ILI Centers(N=43)
(Not shown on the map)



Information Systems

Integrates epidemiological and virologic information	Partial
Integrates different surveillance information systems	Partial
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

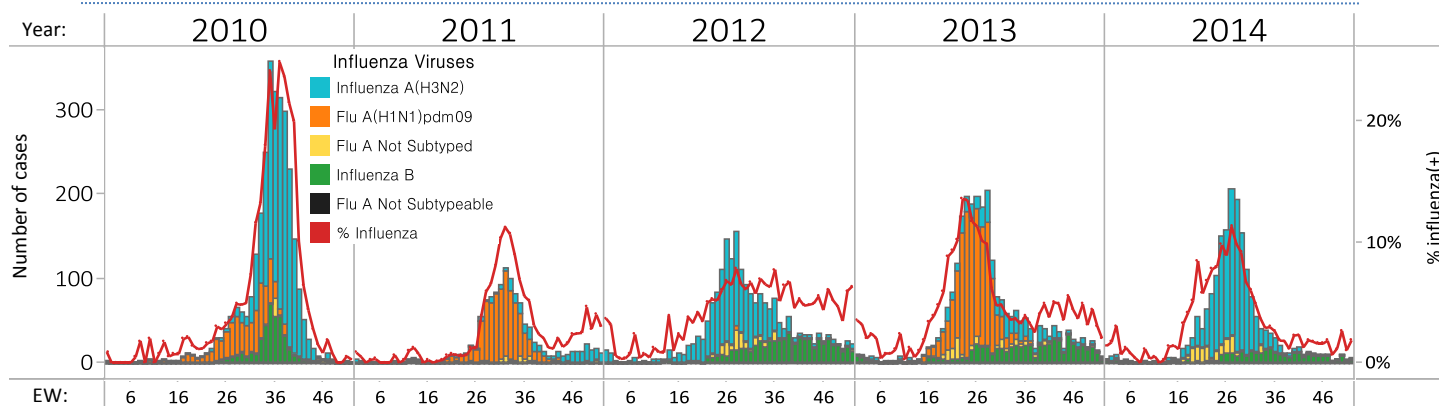
Bulletins/reports generated automatically	Yes
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Chile – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition	No	No	National Influenza Center (NIC)	Yes	
	Trainings per year	<1	1	Year established as NIC	1968	
Case selection/sampling	Selection for sampling	100%	Quota 10/site	Samples received from all surveillance systems	Yes	
	Systematic randomized sampling	NA	No	National weekly average samples processed (2011-2013)	840	
	Collection of clinical-epidemiological variables	Yes	Yes	Access to epidemiological case information	Yes	
	Frequency of shipment to the laboratory	Daily	Daily	Samples sent to WHO Collaborating Center	Yes	
Data management, analysis, reporting	Frequency of national updates	Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes	
	Denominator of number of cases	Hospital admissions	Population registered with APS	Plan for quality control	Yes	
	Use of baselines or endemic channels	Yes	Yes			
Evaluation/monitoring	Sentinel sites evaluated	Yes	Yes			
	Evaluations per year	<1	<1			

Circulation of Influenza Viruses 2010-2014³



Vaccines

Influenza Pandemic Preparedness Plan

Vaccine composition	Southern Hemisphere (since 1975)
Vaccination period	end of Mar
Percentage of older adults (≥65 years) that received the vaccine against influenza, 2012	73
Percentage of children (6-23 months) that received the vaccine against influenza, 2012	98

National Pandemic Preparedness Plan	Yes
Year last updated	2010
Year first developed	2007

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² SARI case definition: Any person that requires hospitalization for: Fever over 38 °C and cough, and difficulty breathing

ILI case definition: Person who seeks medical attention for influenza-like illness: axillary fever ≥38.5 °C and cough, associated with any of the following symptoms: myalgia, odynophagia, or headache

³ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phis/viz/ed_flu.asp



Paraguay – Influenza and Other Respiratory Virus (ORV) Surveillance

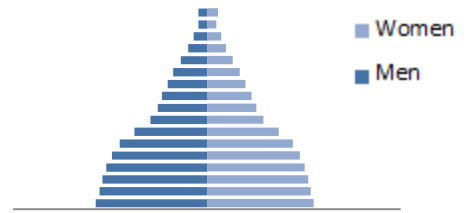
(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **6,918,000**
 Life expectancy (years)
 - Men: **70.1**
 - Women: **74.7**
 - Total: **72.3**

General mortality rate per 1,000 inhabitants
 - All causes: **7.1**
 - Communicable diseases: **0.61**
 Hospital beds per 1,000 inhabitants: **1.3**
 Public health expenditure (% of GDP): **4.3**

Population by age group



Surveillance Systems

Surveillance System	Scope	Sample Collection	Data Collection
ILI Surveillance	Sentinel	Yes	Nominal
Universal ILI Surveillance	National	No	Aggregate
SARI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites

● SARI Hospitals (N=7)

Asunción (Instituto de Medicina Tropical, Hospital Central del Instituto de Previsión Social, Instituto Nacional de Enfermedades Respiratorias y del Ambiente), Central (Hospital Nacional de Itauguá, Hospital General Pediátrico “Niños de Acosta Ñu”), Ciudad del Este (Hospital Regional de Ciudad del Este) Encarnación (Hospital Regional de Encarnación)

● ILI Centers (N=5)

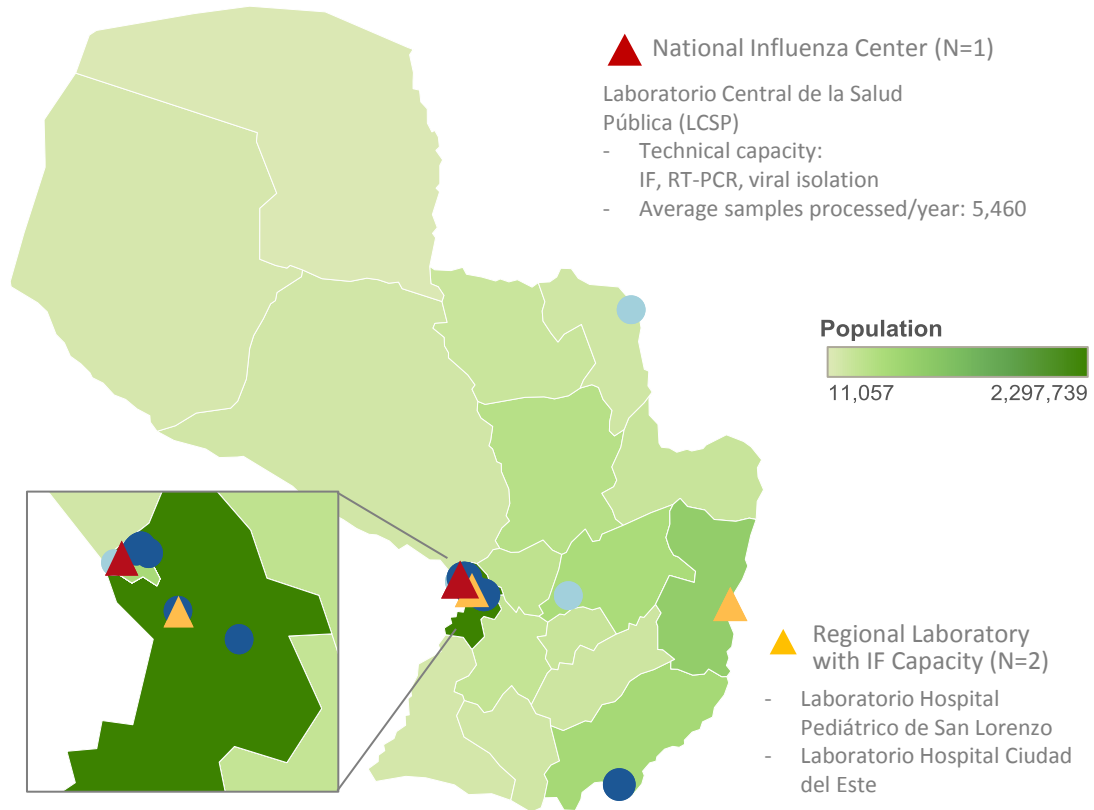
Asunción, Ciudad del Este, Coronel Oviedo, Encarnación, Pedro Juan Caballero

▲ National Influenza Center (N=1)

Laboratorio Central de la Salud Pública (LCSP)

- Technical capacity: IF, RT-PCR, viral isolation
- Average samples processed/year: 5,460

Population



Information Systems

Integrates epidemiological and virologic information	Yes
Integrates different surveillance information systems	No
Allows for monitoring of the sentinel site system	Yes
Generates influenza activity indicators	Yes
Generates interactive online dashboard	No

Reporting

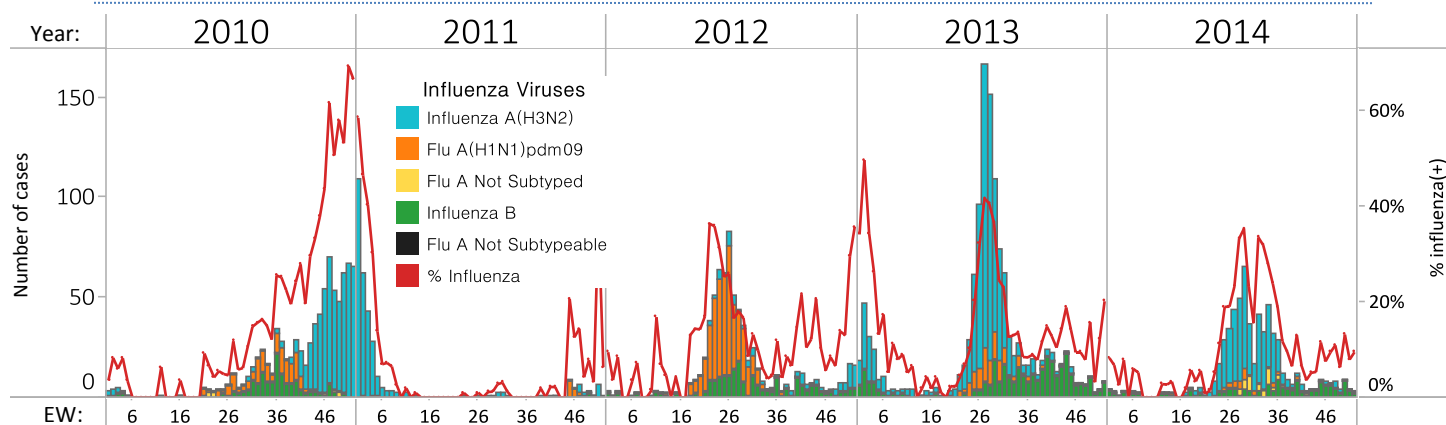
Bulletins/reports generated automatically	Partial
Bulletins/reports published weekly	Yes
Bulletins/reports include sentinel surveillance data	Yes
Data reported to FluID (PAHO/WHO)	No
Data reported to FluNet (PAHO/WHO)	Yes

Paraguay – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance²

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		No	No	National Influenza Center (NIC)	Yes
	Trainings per year		<1	<1	Year established as NIC	1998
Case selection/sampling	Selection for sampling		100%	Local quotas	Samples received from all surveillance systems	No
	Systematic randomized sampling		No	No	National weekly average samples processed (2011-2013)	105
	Collection of clinical-epidemiological variables		Yes	Yes	Access to epidemiological case information	Yes
Data management, analysis, reporting	Frequency of shipment to the laboratory		Weekly	Weekly	Samples sent to WHO Collaborating Center	Yes
	Frequency of national updates		Weekly	Weekly	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		Hospital admissions	Outpatient visits	Plan for quality control	Yes
Evaluation/monitoring	Use of baselines or endemic channels		No	Yes		
	Sentinel sites evaluated		Yes	Yes		
	Evaluations per year		1-12	1		

Circulation of Influenza Viruses 2010-2014³



Vaccines

Vaccine composition	Southern Hemisphere (since 2005)
Vaccination period	Apr-May
Percentage of older adults (>60 years) that received the vaccine against influenza, 2012	41
Percentage of children (6-35 months) that received the vaccine against influenza, 2012	35

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2011
Year first developed	2008

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² **SARI case definition:** Any person who manifests or has manifested: sudden appearance of fever (measured or referenced and cough and difficulty breathing and need for hospitalization)
ILI case definition: Any person who manifests sudden appearance of axillary temperature above or equal to 37.5 °C and: cough or sore throat, in the absence of other diagnosis

³ Source: Pan American Health Organization. *Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO*. Available at: http://ais.paho.org/hiph/viz/ed_flu.asp



Pan American
Health
Organization



World Health
Organization
REGIONAL OFFICE FOR THE
Americas



Uruguay – Influenza and Other Respiratory Virus (ORV) Surveillance

(2014 edition)

Sociodemographic indicators (2014)¹

Total population: **3,419,000**

Life expectancy (years)

- Men: **73.9**
- Women: **80.7**
- Total: **77.4**

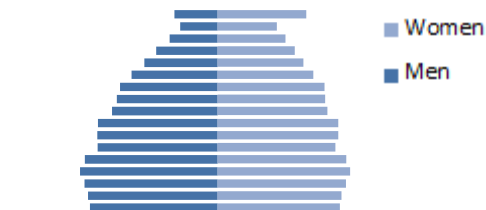
General mortality rate per 1,000 inhabitants

- All causes: **6.0²**
- Communicable diseases: **0.37²**

Hospital beds per 1,000 inhabitants: **2.5**

Public health expenditure (% of GDP): **5.9**

Population by age group



Surveillance Systems

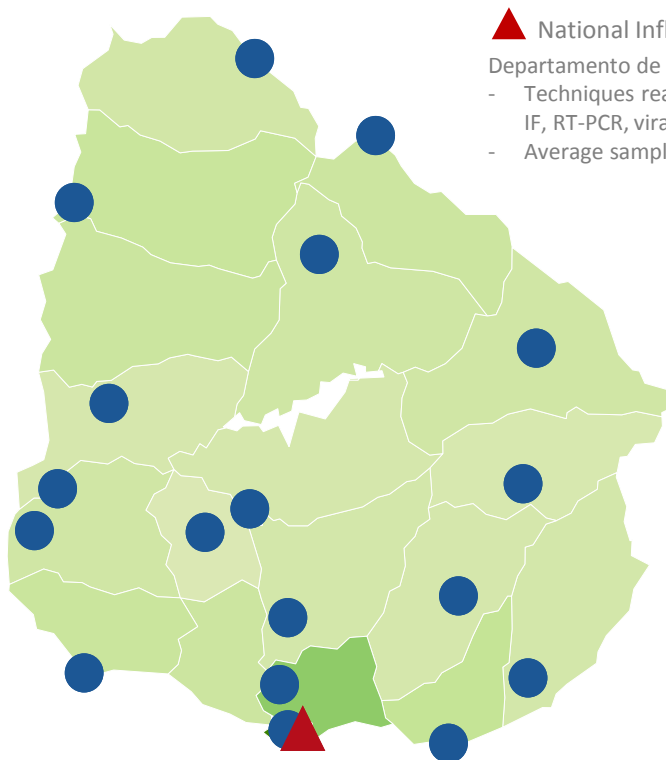
Surveillance System	Scope	Sample Collection	Data Collection
SARI Surveillance	Sentinel	Yes	Nominal

Sentinel Sites

● SARI Hospitals (N=44)

Artigas (2), Canelones (4), Cerro Largo, Colonia (3), Durazno, Flores (2), Florida (2), Lavalleja, Maldonado (2), Mercedes (2), Montevideo (12), Río Negro (2), Rivera (3), Rocha, Salto (2), Paysandú (2), San José, Tacuarembó

Population



▲ National Influenza Center (N=1)
 Departamento de Laboratorio de Salud Pública
 - Techniques realized:
 IF, RT-PCR, viral isolation
 - Average samples/ year: 1,196

Information Systems

Integration of epidemiological/virologic information	Yes
Integration of different surveillance information systems	Yes
Allows for monitoring of the sentinel site system	Yes
Provides influenza activity indicators	Yes
Provides interactive online dashboard	Yes

Reporting

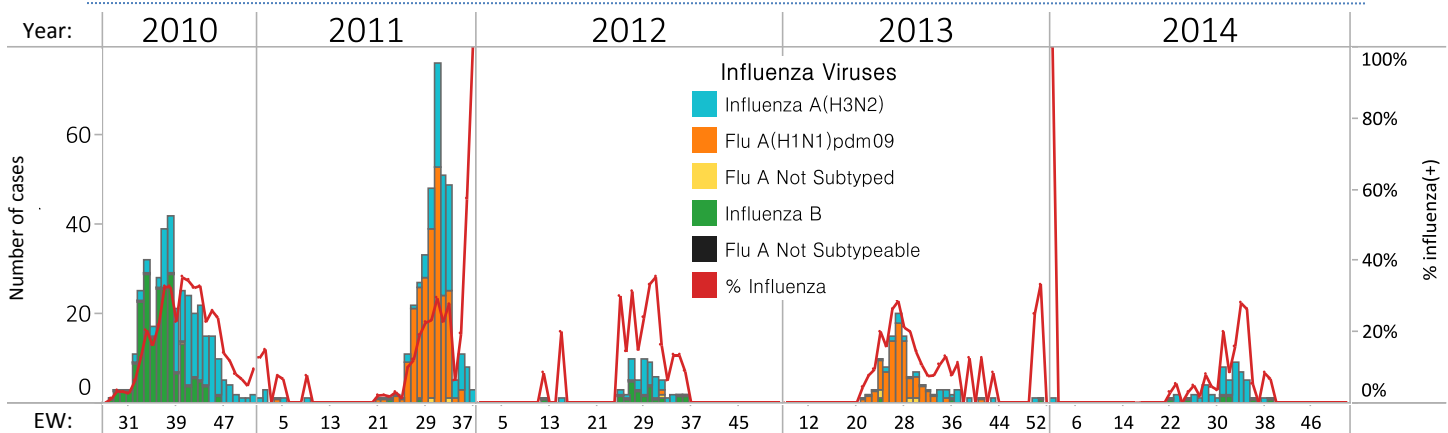
The data bases generate bulletins/reports automatically	Yes
A national bulletin/report is published weekly	No
Includes SARI/ILI sentinel surveillance data	NA
Data reported to PAHO/WHO system FluID	No
Data reported to PAHO/WHO system FluNet	Yes

Uruguay – Influenza and ORV Surveillance

SARI/ILI Sentinel Surveillance³

Sentinel Surveillance Characteristics			SARI	ILI	Laboratory Surveillance	
General	PAHO/WHO case definition		Yes (2009)	NA	National Influenza Center (NIC)	Yes
	Trainings per year		1	NA	Year established as NIC	1980
Case selection/sampling	Selection for sampling		100%	NA	Samples received from all surveillance systems	Yes
	Systematic randomized sampling		NA	NA	National weekly average samples processed (2011-2013)	23
	Collection of clinical-epidemiological variables		Yes	NA	Access to epidemiological case information	Yes
	Frequency of shipment to the laboratory		Immediate	NA	Samples sent to WHO Collaborating Center	Yes
Data management, analysis, reporting	Frequency of national updates		Immediate	NA	Detection of other respiratory viruses by PCR	Yes
	Denominator of number of cases		Hospital admissions	NA	Plan for quality control	No
	Use of baselines or endemic channels		No	NA		
Evaluation/monitoring	Sentinel sites evaluated		Yes	NA		
	Evaluations per year		NA	NA		

Circulation of Influenza Viruses 2010-2014⁴



Vaccines

Vaccine composition	Southern Hemisphere (since 1996)
Vaccination period	Starting in Apr
Percentage of older adults (>65 years) with chronic illness that received the vaccine against influenza, 2012	30
Percentage of children (6-48 months) with chronic illness that received the vaccine against influenza, 2012	26

Influenza Pandemic Preparedness Plan

National Pandemic Preparedness Plan	Yes
Year last updated	2010
Year first developed	2008

Unless otherwise specified, all data were collected by the PAHO/WHO Influenza Surveillance Team from one or more of the following sources: PAHO questionnaires completed by epidemiology or laboratory experts, influenza bulletins published/ shared by the countries, country presentations in regional influenza meetings, consultation with country influenza surveillance experts. The document was approved by the relevant national authority.

¹ Source: Pan American Health Organization. Health Situation in the Americas: Basic Indicators, 2014.

² 2010

³ SARI case definition: Acute respiratory infection with history of fever or measured fever $\geq 38^{\circ}\text{C}$ and cough, with onset in the previous 10 days that requires hospitalization

⁴ Source: Pan American Health Organization. Regional Influenza and Other Respiratory Virus Surveillance, PAHO/WHO. Available at: http://ais.paho.org/phil/viz/ed_flu.asp

Annex 1. Epidemiological Questionnaire (English)

General information	
Country:	
Date of survey completion: (dd/mm/yyyy)	
Person completing the survey:	
Position of the person completing the survey:	
Institution/Organization:	

Acute Respiratory Infections/Influenza and Other Respiratory Virus Surveillance Systems

a. Please write the name of each different acute respiratory infection and/or influenza surveillance system (ex 1: SARI Surveillance; sentinel; yes [sample is collected]; nominal. Ex 2: Pneumonia surveillance; national or universal; no sample taken; aggregate data [because numbers of pneumonia cases re reported by hospital].)

System name	Range (sentinel/national)	Takes samples?	System is nominal (information from each case) or aggregate (numbers of cases)?	Brief comments about system
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	
	<input type="checkbox"/> sentinel <input type="checkbox"/> national	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> nominal <input type="checkbox"/> aggregate	

Information Systems

1-	Are there information systems/platforms for the different surveillance systems mentioned above?	<input type="checkbox"/> YES <input type="checkbox"/> Partially <input type="checkbox"/> NO
	<p>a. Please list the names of the different information systems (and their characteristic) for acute respiratory infection and/or influenza surveillance. Ex 1: SISFLU (SARI surveillance). Ex 2: VIGISALUD (respiratory infections and other events).</p>	
2-	How would you qualify the integration among the severe respiratory infection and influenza surveillance information systems in your country?	
	<input type="checkbox"/> Not applicable <input type="checkbox"/> There are systems, but they are not integrated <input type="checkbox"/> The systems are partially integrated <input type="checkbox"/> System integration is optimal	

3- Only for SARI surveillance: Which of the following functions/characteristics do the SARI surveillance information systems have? (select all that apply)	
<input type="checkbox"/> Not applicable <input type="checkbox"/> Registers clinical-epidemiological variables/data <input type="checkbox"/> Registers laboratory variables/data <input type="checkbox"/> Includes analysis module (automated analysis) <input type="checkbox"/> Allows for automated monitoring of different centers (management indicators) <input type="checkbox"/> Automatically generates reports or bulletins <input type="checkbox"/> Easy to use	
4- Are you satisfied with the SARI surveillance systems?	<input type="checkbox"/> YES <input type="checkbox"/> NO
a. If the answer is NO, Why not? What could be done to improve the situation?	
5- Is there an interactive dashboard for results and analysis of influenza and other respiratory viruses online? (For example, a dashboard that generates graphics that change according to the selection of regions/age groups/different years)	
<input type="checkbox"/> Not applicable <input type="checkbox"/> No <input type="checkbox"/> Yes, for internal use <input type="checkbox"/> Yes, for public use online	
a. Please describe any comment or needs regarding these surveillance systems:	

INSTRUCTIONS: If you don't have the information required to fill out the following sections (**Vaccination against Influenza** and **Influenza Pandemic Preparation Plans**); simply send the questionnaire with these sections incomplete.

Vaccination against Influenza

6- During what months is the influenza vaccine administered?	
--	--

Influenza Pandemic Preparation Plans

7- Does the country have a pandemic preparedness plan?	<input type="checkbox"/> SI <input type="checkbox"/> NO
7.1 Year of original publication	
7.2 Year of last revision or update	
8- Is there a mechanism to update and/or adapt the plan (especially in relation to changes in staff or administration)?	<input type="checkbox"/> SI <input type="checkbox"/> NO

General information

Country:	
Date of survey completion: (dd/mm/yyyy)	
Person completing the survey:	
Position of the person completing the survey:	
Institution/Organization:	

1- Does your country carry out SARI surveillance? YES NO

Please write the name of the different SARI sentinel hospitals and fill out the empty cells for each one. (Ex 1: Hospital of Santiago; La Reina, Santiago; adult; public; 250 beds; yes, has ICU; 20 ICU beds. Ex 2: Hospital of Colombia; Bogotá, pediatric; public; 75 beds; No ICU; NA.)

Name of SARI sentinel hospital	Location (City, province)	Type	Funding	Number of beds	Has ICU	Number of ICU beds
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other		<input type="checkbox"/> YES <input type="checkbox"/> NO	

2- Has a SARI surveillance protocol or a set of standard operating procedures been developed? YES NO

a. If so, when was it last updated? (please attach a copy of the protocol in the email)

2.1 Have the team professionals been trained on the implementation of the protocol? YES NO

Type of training	Number of trainings in the last year
SARI surveillance and case identification	
Sampling, storing and shipment	

3- What SARI case definition is used in your country?

4- Does this definition specify the start period of symptoms? YES NO

a. If so, how many days since the onset of symptoms?

5- Please briefly describe the method used to detect SARI cases: YES NO

5.1- Who identifies SARI cases? (ex. Epidemiologist, clinical professional, ward nurse, etc)	

6- From which patients are samples and files collected? All SARI cases
 A quota of patients
 Other

6.1- If not a sample is not collected from all cases, does the protocol include a plan for standard sampling? YES NO

a. If not all SARI patients are sampled, please briefly describe the sampling plan used.

6.2- Is the sampling random? <input type="checkbox"/> YES <input type="checkbox"/> NO	
---	--

7- How frequently are sentinel site SARI data sent, nationally?		
8- Please indicate how frequently the following data are calculated/gathered (if they are calculated) at the national level.		
Type of data	Calculated?	
Number of SARI admissions	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of SARI admissions with sample	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of hospital admissions	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of SARI deaths	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of hospital deaths	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of influenza (+) SARI cases	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of influenza (+) SARI cases with risk factors	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of influenza (+) SARI cases with symptoms	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of influenza (+) SARI cases with result	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Number of influenza (+) SARI cases by age	<input type="checkbox"/> YES <input type="checkbox"/> NO	
How frequently are these calculated? (if not calculated, write NA) (ex. Daily, weekly, monthly)		
9- Are data sorted by age?		<input type="checkbox"/> YES <input type="checkbox"/> NO
a. If so, describe the age groups		
10- What denominator is used to measure SARI activity?		
<input type="checkbox"/> 1. All hospitals x all causes <input type="checkbox"/> 2. Reference population corresponding to the hospital <input type="checkbox"/> 3. Other <input type="checkbox"/> 4. No denominators are calculated		
10.1- Are rates of SARI by population calculated at a national level?		<input type="checkbox"/> YES <input type="checkbox"/> NO
10.2- Are rates of influenza (+) SARI by population calculated at a national level?		<input type="checkbox"/> YES <input type="checkbox"/> NO
11- Is there a method of detecting errors in SARI data?		
a. Sentinel level		<input type="checkbox"/> YES <input type="checkbox"/> NO
a. If so, briefly describe		
b. National level		<input type="checkbox"/> YES <input type="checkbox"/> NO
b. If so, briefly describe		

National data reporting

12- Is a SARI report prepared at the national level?		<input type="checkbox"/> YES <input type="checkbox"/> NO
12.1- How frequently is it prepared?		
12.2- With which agencies or offices is the report shared?		
Sentinel centers		<input type="checkbox"/> YES <input type="checkbox"/> NO
Health ministry authorities		<input type="checkbox"/> YES <input type="checkbox"/> NO
PAHO Representative Office		<input type="checkbox"/> YES <input type="checkbox"/> NO
PAHO Washington, DC/WHO		<input type="checkbox"/> YES <input type="checkbox"/> NO
US Centers for Disease Control and Prevention		<input type="checkbox"/> YES <input type="checkbox"/> NO
Animal health authorities or ministry of agriculture		<input type="checkbox"/> YES <input type="checkbox"/> NO
Other		<input type="checkbox"/> YES <input type="checkbox"/> NO
13- Is there a national protocol for monitoring and evaluating SARI sentinel centers?		<input type="checkbox"/> YES <input type="checkbox"/> NO
14- How frequently do the members of the surveillance team visit sentinel centers for evaluation, quality control, or assessment?		
Briefly describe the activities carried out on these visits.		
15- Are the hospital admission registry books examined in order to verify if all SARI cases have been documented and identified?		<input type="checkbox"/> YES <input type="checkbox"/> NO
16- How frequently do sentinel hospitals send samples to the labs?		

General information

Country:	
Date of survey completion: (dd/mm/yyyy)	
Person completing the survey:	
Position of the person completing the survey:	
Institution/Organization:	

1- Does your country carry out ILI Surveillance? SI NO

Name of ILI sentinel site	Location (city, province)	Type	Public/Private
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other
		<input type="checkbox"/> pediatric <input type="checkbox"/> adult <input type="checkbox"/> specialized <input type="checkbox"/> general <input type="checkbox"/> other	<input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> other

2- Has an ILI surveillance protocol or national manual or a set of standard operating procedures been developed? YES NO

a. If so, when was it last updated? (Please attach a copy of the protocol in the email)

2.1 Have the team professionals been trained on the implementation of the protocol? YES NO

Type of training	Number of trainings per year
ILI surveillance and case identification	
Sampling, storing and shipment	

3- What ILI case definition is used?

4- Does this definition specify the start period of symptoms? YES NO

a. If so, how many days since the onset of symptoms?

5- Please briefly describe the method used to detect/capture/identify ILI cases:

5.1- Who identifies ILI cases? (Ex. Epidemiologist, clinical professional, ward nurse, etc)

6- From how many ILI patients are samples and files collected per health center each week?

6.1- If not a sample is not collected from all cases, does the protocol include a plan for standard sampling? YES NO

a. If so, please briefly describe the sampling plan used.

6.2- Is the sampling random? YES NO

7- How frequently are sentinel site ILI data sent, nationally? (Ex. every day, weekly, etc)	
8- Please indicate if the following data are calculated/gathered at the national level.	
Type of data	Calculated?
Number of ILI consultations	<input type="checkbox"/> YES <input type="checkbox"/> NO
Number of ILI consultations with sample	<input type="checkbox"/> YES <input type="checkbox"/> NO
Number of hospital admissions	<input type="checkbox"/> YES <input type="checkbox"/> NO
Number of influenza (+) ILI cases with sample	
How frequently are these data calculated? (ex. daily, weekly, monthly) (if not calculated, write NA)	
9- Are data sorted by age?	<input type="checkbox"/> YES <input type="checkbox"/> NO
a. If so, describe the age groups	
10- What denominator is used?	<input type="checkbox"/> 1. All hospitals x all causes <input type="checkbox"/> 2. Reference population corresponding to the hospital <input type="checkbox"/> 3. Other <input type="checkbox"/> 4. No denominators are calculated
10.1- Is the rate of ILI by population calculated for analysis at the national level?	<input type="checkbox"/> YES <input type="checkbox"/> NO
10.2- Is the rate of influenza(+) ILI by population calculated for analysis at the national level?	<input type="checkbox"/> YES <input type="checkbox"/> NO
11- Is there a method of detecting errors in ILI data?	
a. Sentinel level	<input type="checkbox"/> YES <input type="checkbox"/> NO
a. If so, briefly describe	
b. National level	<input type="checkbox"/> YES <input type="checkbox"/> NO
b. If so, briefly describe	

National data reporting	
12- Is an ILI report prepared at the national level?	<input type="checkbox"/> YES <input type="checkbox"/> NO
12.1- How frequently is it prepared?	
12.2- With which agencies or offices is the report shared?	
Sentinel centers	<input type="checkbox"/> YES <input type="checkbox"/> NO
Health ministry authorities	<input type="checkbox"/> YES <input type="checkbox"/> NO
PAHO Representative Office	<input type="checkbox"/> YES <input type="checkbox"/> NO
PAHO Washington, DC/WHO	<input type="checkbox"/> YES <input type="checkbox"/> NO
US Centers for Disease Control and Prevention	<input type="checkbox"/> YES <input type="checkbox"/> NO
Animal health authorities or ministry of agriculture	<input type="checkbox"/> YES <input type="checkbox"/> NO
Other	<input type="checkbox"/> YES <input type="checkbox"/> NO
13- Is there a national protocol for monitoring and evaluating ILI sentinel centers?	<input type="checkbox"/> YES <input type="checkbox"/> NO
14- How frequently do the members of the surveillance team visit sentinel centers for evaluation, quality control, or assessment?	
Briefly describe the activities carried out on these visits.	
15- Are the hospital admission registry books examined in order to verify if all ILI cases have been documented and identified?	<input type="checkbox"/> YES <input type="checkbox"/> NO
16- How frequently do the sentinel sites send samples to the laboratories? (Ex. every day, weekly, etc)	



Pan American
Health
Organization



World Health
Organization

REGIONAL OFFICE FOR THE Americas



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For more information about influenza surveillance in the Americas, please visit the PAHO Influenza page at www.paho.org/influenza, or the Severe Acute Respiratory Infection network at www.SARInet.org.