



**Pan American
Health
Organization**

Regional Office of the
World Health Organization

PAHO STRATEGIC AND OPERATIONAL PLAN TO PREPARE FOR AN INFLUENZA PANDEMIC 2008-2009

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List of Acronyms

AECI	Spanish Agency of International Cooperation
AI	Avian influenza
CAREC	Caribbean Epidemiology Centre
CD	PAHO's Communicable Diseases Unit
CDC	United States Centers for Disease Control and Prevention
CIDA	Canadian International Development Agency
CIRAD	French Agricultural Research Centre for International Development
ECC	Eastern Caribbean Countries
EOC	Emergency Operations Center
EPHF	Essential Public Health Functions
EV	PAHO's Essential Medicines, Vaccines and Health Technologies Unit
FAO	Food and Agriculture Organization of the United Nations
FDA	United States Food and Drug Administration
FLACMA	Latin American and Caribbean Federation of Municipal Authorities
GISN	Global Influenza Surveillance Network
GMC	Global Medicines Council
GPIS	Generic Protocol for Influenza Surveillance
HCWs	Health-care workers
HQ	PAHO Headquarters at Washington DC
HSS	PAHO's Occupational Health and Safety Area
IADB	Inter-American Development Bank
ICU	Intensive care units
IF	Immunofluorescence
IHR-2005	International Health Regulations 2005
IICA	Inter-American Institute for Cooperation on Agriculture
ILI	Influenza-like illness
IPC	Inter-Agency Pharmaceuticals Coordination Group
NICs	National Influenza Centers
NIPPPs	National influenza pandemic preparedness plans
NORAD	North American Aerospace Defense Command
OHS	Occupational health and safety
OIE	World Organization for Animal Health

OIRSA	International Regional Organization for Health in Agriculture and Livestock
OMCL	Official Control Medicine Laboratories
OS	PAHO's Health Services Organization Unit
PAHO	Pan American Health Organization
PANAFTOSA	Pan American Foot-and-Mouth Disease Center
PANDRH	Pan American Network for Drug Regulatory Harmonization
PCR	Polymerase chain reaction
PWRs	PAHO Country offices at Member States
QALY	Quality-adjusted life year
RF	PAHO's Vaccine Revolving Fund
RIOPPAH	Regional International Organization for Plant Protection and Animal Health
SARI	Severe acute respiratory infections
SARS	Severe acute respiratory syndrome
SOP	Strategic and operational plan for responding to pandemic influenza
TAG	PAHO's Technical Advisory Group on Vaccine Preventable Diseases
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VLA	Veterinary Laboratories Agency of the United Kingdom
VP	PAHO's Veterinary Public Health Unit
WHA	World Health Assembly
WHO	World Health Organization

Introduction

In May of 2005, the World Health Organization (WHO) unveiled a strategic plan describing suggested activities for influenza preparedness planning to help countries to prepare for the next influenza pandemic and mitigate its impact once international spread has begun. In September of 2005, the Pan American Health Organization (PAHO) presented a strategic and operational plan for responding to pandemic influenza (SOP). The latter set forth the technical cooperation strategies to be carried out to prepare the countries of the Region for an influenza pandemic during the biennium 2006-2007.

The present document describes the main activities undertaken in the period 2006-2007, highlights the lessons learned, and presents an organizational framework under which technical cooperation activities should be implemented in the period 2008-2009. The SOP 2008-2009 looks to address the identified needs at the sub-national and local levels, through an integrated strategy of capacity-building, planning tools, and simulation exercises, involving the active participation and ownership of national and sub-national governments. Such interventions will strengthen core public health capacities, as established in the revised International Health Regulations adopted in May 2005 (IHR-2005) and serve at any public health emergency, including an influenza pandemic.¹

Background

Influenza is a viral disease that affects millions of people worldwide and kills approximately one million people annually. The higher burden of disease occurs in children in their first two years of life and adults older than 60 years of age. It is also believed that the burden is higher in developing countries.

There are three types of influenza viruses: A, B, and C. The most important strains of human influenza are types A and B, which are responsible for major outbreaks each year. Influenza A virus has two surface glycoproteins: hemagglutinin (HA) and neuraminidase (NA) which define viral subtypes. Subtypes circulating in humans in the last two decades have been H1N1, H3N2, and recently, H1N2. Wild aquatic waterfowl are the natural reservoir for all known influenza A subtype virus. Other animals, usually pigs, can also serve as reservoirs to some influenza A subtypes virus, which can be transmitted between animals and from animals to humans.

Influenza viruses are continuously evolving, and periodically, HA and NA surface antigens undergo changes. Constant, usually small, changes in antigenic composition, known as antigenic drift, cause annual outbreaks which require influenza vaccine composition to be changed annually.

Major antigenic changes can occur and are a result of human and animal influenza A viral genetic reassortment. Antigenic “shift” refers to the emergence of a novel influenza A subtype in humans. This can occur through genetic reassortment or through direct animal-to-human transmission (e.g., poultry-to-human transmission). When a new strain of influenza virus emerges and adapts to enable transmission from person-to-person, the disease can quickly spread far and wide, resulting in a pandemic. The lack of previous exposure to this

¹ The IHR-2005 came into effect in June 15, 2007.

virus renders the world population susceptible, which facilitates the spread of the virus. Outbreaks of influenza in animals, especially when happening simultaneously with annual outbreaks in humans, increase the chances of a pandemic, through the reassortment of animal and human influenza A viruses.

In the last century three pandemics occurred. The most devastating was the Spanish Flu of 1918-1919 (A/(H1N1) virus), with an estimated 50 million deaths world-wide. The other two pandemics occurred in 1957-1958 (Asian Flu, A/(H2N2) virus) and 1968-1969 (Hong Kong Flu, A/(H3N2) virus), each one responsible for an estimated excess mortality of 4 million people when compared to previous non-pandemic years.

It is impossible to predict when the next influenza pandemic will occur. Nevertheless, it has been almost 40 years since the last pandemic, the longest inter-pandemic interval recorded to date. The burden of the next influenza pandemic is also difficult to predict. PAHO estimates that an influenza pandemic with an incidence rate of 25%, would cause between 0.3 and 2.4 million deaths; between 0.2 and 11.8 million hospitalizations; and between 68 and 76 million outpatient visits in the Latin American and Caribbean Region.

Type A influenza is also responsible for outbreaks in animals, particularly in poultry. Such outbreaks carry significant economic costs, especially in a Region with intense poultry farming as the Americas. According to the latest Food and Agriculture Organization (FAO) estimates, in 2005 the Americas were responsible for the production of 43% of the 84 billion tons of poultry produced worldwide, being the largest poultry exporting region in the world (57% of 10.4 billion tons). Industrial production was concentrated in 13 countries which produced 98% of total poultry in the Region (United States, Brazil, Mexico, Canada, Argentina, Venezuela, Colombia, Peru, Chile, Dominican Republic, Ecuador, Guatemala, and Bolivia). Nevertheless, only 5 countries were responsible for 99% of total exports (United States, Brazil, Canada, Argentina, and Chile).²

In addition, several important activities are directly or indirectly dependent on the poultry industry such as grain production, trade, farming services, poultry transportation, among others. Considering poultry production scale, outbreaks of highly pathogenic avian influenza A viruses (e.g., H7 or H5) with high transmissibility, morbidity, and mortality would imply a major economic impact for the region. Emergency control activities such as culling, quarantine, and commercial restrictions would also incur a significant cost. In addition, massive culling could have an impact on the environment as a consequence of disposing of large quantities of organic matter.

A recent cluster of severe infection of humans with an avian influenza A virus was first documented in Hong Kong in 1997, with an H5N1 virus causing respiratory disease in 18 humans, of whom 6 died. This cluster coincided with an epidemic of highly pathogenic avian influenza A (H5N1) in Hong Kong's poultry population. Extensive investigation of that outbreak determined that close contact with live infected poultry was the source of human infection. From December 2003 to December 2007, a total of 346 H5N1 human cases with 213 deaths were reported to the WHO in Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Lao People's Democratic Republic, Myanmar, Nigeria, Pakistan, Thailand,

² Data computed from FAOSTAT, available at <http://faostat.fao.org/>

Turkey, Viet Nam, indicating a very high case fatality rate of 62% among reported cases to date.³

All that is necessary for a pandemic to occur is for the H5N1 virus to become adapted to sustained person-to-person transmission. Experts agree that the unprecedented epizootics of avian influenza (AI) in Asia, the possibility for the H5N1 to adapt to person-to-person transmission, and recent virological and surveillance findings are signs that a pandemic may be imminent. Human global spread is likely to occur more rapidly than in previous pandemics due to increased travel and urbanization.

Influenza H5N1 virus is being disseminated among domestic poultry and possibly migratory birds. The spread of the virus in birds beyond their original focus in South East Asia to Europe and Africa emphasizes the virus' ease of mobility and the potential risk for the Region of the Americas.

The present WHO level of pandemic influenza risk, remains at phase 3 (pandemic alert period), meaning that a novel influenza virus is causing sporadic human cases but is still poorly adapted to humans. Therefore, highly pathogenic avian influenza caused by the H5N1 virus remains primarily a disease of domestic birds. WHO global influenza preparedness plan of 2005 redefines the phases of increasing public health risk associated with the emergence of a new influenza virus subtype that may pose a pandemic threat. Accordingly, phases 1 and 2 correspond to an inter-pandemic period; phases 3 to 5 are considered a pandemic alert period; while phase 6 correspond to a pandemic period where there is efficient and sustained transmission in general human population.⁴

The population of Latin America and the Caribbean was estimated to be around 556 million people in 2006 (approximately 9% of the world population and 13% of the population of the developing world, excluding China); 78% of this population being urban. The World Bank estimates that 11% of the population of Latin America and the Caribbean lived below the international poverty line⁵ and around 124 million people lived in rural areas, most of them in direct contact with chickens and pigs that provide a major source of protein for rural inhabitants.⁶ The impact of a pandemic in the Region will be not only a public health problem, but an economic disaster for the poorest population in rural areas and for national economies.

Influenza pandemics have historically taken the world by surprise, leaving minimal time for health services to prepare for the abrupt increases in cases and deaths that characterize these events and make them so disruptive. The present situation is markedly different as the world has been warned in advance. This warning has brought an unprecedented opportunity to prepare for a pandemic and develop ways to mitigate its effects even in areas with problems of access to basic health services.

³ WHO (2007), Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO, available at http://www.who.int/csr/disease/avian_influenza/country/en/index.html

⁴ http://www.who.int/csr/disease/avian_influenza/phase/en/index.html

⁵ Measured by the proportion of population living under \$1 (PPP) a day.

⁶ Data computed from World Bank's Health, Nutrition and Population Stats, available at <http://devdata.worldbank.org/hnpstats/>

Justification

The emergence of a new highly pathogenic strain of avian influenza that has demonstrated the capacity to infect humans has propelled the need to further national preparedness and develop the infrastructure to mitigate the effects of a potential pandemic, considering gaps in access to basic public health services. Such preparedness should be undertaken in the context of strengthening countries basic public health capacities to face any public health emergency as required under the IHR-2005.

The IHR-2005, provide a powerful tool for harmonizing public health action among Member States. It also sets forth a framework for the identification, reporting and response to public health emergencies of international concern. It stipulates that countries must develop, strengthen and maintain core capacities to detect, assess and intervene to control events of international public health importance including human influenza caused by a new serotype. It also specifies the obligations that WHO and its Regional and Country offices are to meet.

In addition, the 56th World Health Assembly and the 44th Pan American Health Organization Directing Council held in 2003 issued resolutions urging countries to strengthen their capacity to prevent, detect, and diagnose influenza virus infection, and to be prepared to respond to a pandemic situation. During the 2005 Summit of the Americas in Mar del Plata, Argentina, Presidents of the countries of the Region also reaffirmed their commitment to develop and implement National Influenza Pandemic Preparedness Plans (NIPPPs).

PAHO's Governing Bodies and the Presidents of the countries of the Region requested the Pan American Sanitary Bureau (PAHO's Secretariat) to provide the necessary support to countries in order to reach those objectives during the pandemic alert period, to better respond to this widespread threat that may have catastrophic consequences worldwide. Since 2005, PAHO has provided support to its Member States and currently all countries in the Region are actively engaged in influenza preparedness activities.

Effective preparedness for a potential influenza pandemic requires an intersectoral strategy of collaboration among the health, agriculture, trade and other government agencies, international organizations, universities and research centers, as well as the private sector. PAHO has the mandate to support efforts of the Ministries of Health to lead the response to a pandemic and mobilize additional financial resources for this purpose, beyond institutional and intersectoral limits.

As implementation of national plans gets under way, new challenges emerge in the process of maintaining NIPPPs updated and relevant. Such efforts involve strengthening infrastructure at the local level, as a vital component of influenza pandemic mitigation so that sub-national levels have the necessary capacity to fully implement NIPPPs. Countries with inadequate service delivery networks, health-care access gaps and lack of multisectoral involvement are particularly vulnerable to the effects of a pandemic. Therefore, technical cooperation actions will be targeted at addressing the identified needs at the sub-national and local levels, through an integrated strategy of capacity building, planning tools, and simulations exercises; involving the active participation and ownership of national and sub-national governments. Such capacity building will strengthen the implementation of the IHR-2005 and serve for any public health emergency, including an influenza pandemic.

Strategic objectives of PAHO's technical cooperation to prepare for an influenza pandemic 2008-2009

During the period 2008-2009, PAHO's technical cooperation to prepare for an influenza pandemic will be guided by eight strategic objectives. These objectives are the result of the commitment of all technical units of the organization to trigger synergies at the planning, programmatic and operational levels to maximize the impact and effectiveness of preparedness activities in the countries of the Region.

1. Promote and support the improvement, continual update and local level implementation of national influenza pandemic preparedness plans

The IHR-2005 established a new international legal framework for WHO Member States that sets standards for reporting risks and diseases. This framework recommends that countries develop their necessary core capacities to detect and respond to potentially epidemic diseases like influenza. In turn, WHO is obligated to support the countries in assessing, developing, strengthening and maintaining these capacities. To comply with this obligation, PAHO will continue to support the countries in the enhancement of their public health infrastructure for an effective response to public health emergencies of international concern such as human influenza caused by a new serotype. Strengthening countries' core capacities will be a critical factor to support countries develop and sustain the implementation of their NIPPPs.

The main capacities on which pandemic preparedness activities will be built are the generic core capacities which include the ability to define policies, norms, regulations, and institutional responsibilities; exchange and disseminate information; and investigate suspected outbreaks. In all of these areas, a preliminary assessment of the influenza basic useful standards and requirements for efficient operations should be prepared. Identifying the country's existing capacity should be viewed as a participatory process whereby strategies and plans of action will be generated to reduce or eliminate the problems identified. Assessment of the status of current services should look not only at Ministry of Health surveillance and laboratory services, but also into the different programs that are related to influenza pandemic response such as those of risk and social communication, legal affairs, health care delivery services and national disaster preparedness, among others. Infectious disease clinical services and hospital medical care should also be a priority.

Pandemic preparedness builds on existing processes and programs and should not be disconnected from routine and existing activities, both at national and sub-national levels. Conversely, the development of NIPPPs could booster the strengthening of such capacities. Preparing for a pandemic should be a dynamic process, where plans are constantly being tested and adjusted through simulation exercises and drills at the different levels of government, including facility and local jurisdictions and actors beyond health sector. PAHO Headquarters (HQ) and Country Offices (PWRs) should actively participate on the simulation exercises. When conducted at different levels, these exercises enable the testing of contingency plans for patient care to deal with surges and delivery of services, particularly where there are problems of access. In addition, it is important to organize national debriefing on response whenever a country has experienced an outbreak with pandemic potential and conduct periodic reviews of its NIPPP to include new evidence and technical

developments. Existing structures such as hospital preparedness committees should be considered in pandemic planning and simulations.

During 2006-2007, PAHO's technical cooperation in influenza preparedness was directed at supporting Member States in the elaboration, evaluation and implementation of their NIPPPs. All Member States were actively engaged in influenza preparedness activities and, as of December 2007, PAHO had received draft NIPPPs from 35 countries or territories. Technical cooperation was aimed at strengthening core competencies of Member States to detect and respond to unusual or unexpected public health events, as established by the IHR-2005. As part of this process, an assessment tool to measure the level of advancement of such core capacities was developed in coordination with the Inter-American Development Bank (IADB). This tool allows countries to analyze their capacity to implement their NIPPPs, thus facilitating the prioritization of activities by Ministries of Health and technical cooperation partners.

In order to determine the completeness of NIPPPs, PAHO developed an assessment tool based on WHO's Checklist for Influenza Preparedness. This tool was applied in four subregional workshops for multidisciplinary and multisectoral country delegations.^{7,8} The assessment workshops had the participation of 300 officials from health, agriculture, communication, emergency services, and foreign relations agencies of 41 countries and territories, plus PAHO technical advisors as well as representatives from international cooperation agencies such as the United Nations Development Program (UNDP), FAO, the United Nations Children's Fund (UNICEF), the Inter-American Institute for Cooperation on Agriculture (IICA), the International Regional Organization for Health in Agriculture and Livestock (OIRSA), the IADB, and the United States Agency for International Development (USAID).

The application of the assessment tool allowed participants to identify those areas in their NIPPPs that needed to be strengthened and discuss the challenges of implementation at the national, sub-national and local levels. For example, the NIPPPs for Southern Cone countries were stronger in the sections of the checklist called "emergency preparedness" and "population containment" and weaker in "maintaining essential services continuity." The assessments of the NIPPPs in the Andean Area revealed that, along with the need to improve lines of coordination and communication in pandemic situations, there is an urgent need to review the legal framework and address the ethical issues related to several aspects of the national response to a pandemic contingency. The assessment of Central America countries' NIPPPs showed a great range in the preparedness levels among them. The component of the checklist called "surveillance" is one of the areas requiring the most attention in this subregion. A clear weakness in the NIPPPs from the Caribbean are those around "population containment," which include the planning of measures directed at the implementation of non-pharmacological interventions, including community infection control and social distancing measures. In all sub-regions, the assessment process also revealed the need for further multisectoral collaboration in the development of the preparedness plans. As a result, each country elaborated an action plan to address the needs identified by the self-assessment and tabletop simulations.

⁷ Panama, February 20-24, 2006; Barbados, July 17-21, 2006; Uruguay, August 14-18, 2006 and Peru, September 11- 15, 2006.

⁸ For the purposes of this document, the four PAHO sub-regions are: Andean Area, Central America and the Latin Caribbean, Non-Latin Caribbean and, southern Cone.

A second round of the NIPPPs' self-assessment was carried out in July of 2007. Preliminary results show that between 2006 and 2007 the average level of pandemic preparedness in the Region grew with significant differences by sub-region. The Central America and Mexico sub-region and the Southern Cone sub-region observed the highest progress. The Caribbean and Andean sub-regions observed just modest increases in their level of preparedness. Of the 24 countries with data for both years, 17 of them surpassed or maintained the level of preparedness reported in 2006.

Now that pandemic preparedness has been effectively undertaken by Member States, it will be necessary to extend that effort to sub-national levels. It has been widely recognized that an influenza pandemic will be most intensely felt at the community level, at the front line of pandemic mitigation. NIPPPs are therefore only as strong as their local contingency plans. As national strategies are put in place, PAHO's technical cooperation will shift from the planning and awareness raising stage to the local adoption and implementation of these strategies.

Expected results

ER 1.1 Countries in the Region will have developed, updated and / or finalized National Multisectoral and sectoral Influenza Pandemic Preparedness Plans (NIPPPs), including dissemination, implementation and testing at national, sub-national, and local levels.

Targets:

- PAHO will support 10 countries of the Region in developing sub-national contingency plans to prepare for a pandemic. These plans will be developed as part of wider national preparedness efforts, taking in consideration local realities and existing infrastructure
- Sub-national plans tested through simulation exercises in 10 countries of the Americas Region, covering all PAHO sub-regions.

Key activities:

- Work with countries in the periodic assessment of NIPPPs to ensure that pandemic preparedness remains as a dynamic process and that NIPPPs comply with the recommendations of the WHO checklist.
- Promote the carrying out of impact estimation exercises at the local level in order to determine likely pandemic scenarios.
- Work with countries to operationalize national plans so that they include emergency logistic procedures and mechanisms for rapid transport and distribution of necessary supplies and equipment for control measures.
- Support countries in enacting legislation for the implementation of activities proposed in their NIPPPs.
- Work with countries to develop and organize adapted simulation (tabletop) exercises to strengthen multisectorial coordination for pandemic influenza planning and preparedness at national, sub-national and local levels.
- Develop indicators to evaluate effectiveness of simulation exercises and modify plans accordingly.
- Conduct a simulation exercises in 10 countries, at least 1 from each of PAHO's sub-regions, including actors beyond the health sector.

- Conduct simulation exercises for PAHO HQ and PWRs.
- Collaborate with the World Organization for Animal Health (OIE), FAO, IICA and OIRSA in the organization of sub-regional simulation exercises for the agriculture sector promoting the active participation of health sector personnel.

ER 1.2 Pandemic influenza preparedness and response included as a specific component of regional, national, sub-national, and local emergency coordination mechanisms.

Targets:

- 21 countries of the Region will have included pandemic influenza preparedness in national multisectoral pandemic influenza committees.
- 21 countries of the Region will have organized multi-sectoral emergency response mechanisms for pandemic influenza.

Key activities:

- Work with countries to ensure that pandemic influenza is included in regular disaster preparedness and response activities.
- Train national emergency and disaster personnel to develop a multisectoral action plan for preparedness and response to pandemic influenza.
- Work with Ministries of Health in the mobilization of partners from other relevant sectors such as agriculture, national disaster coordination entities, law enforcement, military, civil aviation, transportation, financial institutions and education.

2. Strengthen countries' capacity to detect and respond to any human influenza virus caused by a new subtype

Under the IHR-2005, countries are expected to establish and maintain minimum core surveillance and response capacities in order to successfully implement the epidemic alert and response strategy. These requirements are listed in Annex 1 of the IHR-2005 and include detection of events involving disease and death above expected levels; reporting essential information immediately within the country; assessment of reported events within 48 hours; implementation of immediate control measures and reporting information on public health emergency of international concern immediately to the WHO.

By adopting the IHR-2005, countries are committed to inform WHO within 24 hours about the existence of evidence of a potential public-health risk of international relevance. Any human influenza A case suspected to be caused by a new viral subtype is considered to provide such a risk, since this is classified as one of four diseases in which a single case would be considered unusual and may have a serious public health impact. In response to such a notification, WHO will make use of expert panels to assess the public health risk involved and recommend evidence-based control measures.

As part of its influenza prevention and control efforts, WHO established the Global Influenza Surveillance Network (GISN) in 1952. Its main objectives are to identify circulating influenza virus strains and annually recommend vaccine composition based on this

information. Participating countries have one or more National Influenza Centers (NICs) which receive samples collected in sentinel sites from influenza-like illness (ILI) and process them for viral diagnosis, isolation, and typing. There are currently 119 NICs worldwide in 91 countries⁹ which send influenza viruses and specimens to four international WHO Collaborating Centres located in Atlanta (USA), London (UK), Melbourne (Australia), and Tokyo (Japan), where viral characterization and genomic sequencing of identified strains are conducted.

Until recently, the main objectives of influenza surveillance both worldwide and in the Region have been the early detection of new influenza virus strains and the ongoing analysis of viral circulation patterns at both the regional and national levels. The need to expand influenza surveillance to include other objectives has become evident in recent years. To this end, a new Generic Protocol for Influenza Surveillance (GPIS) was developed in collaboration with the U. S. Centers for Disease Control and Prevention (CDC). The GPIS seeks to harmonize influenza surveillance throughout the Region and ensure that any single case of influenza caused by a new viral subtype be notified immediately to WHO, as required by the IHR-2005. Furthermore, generation of robust data of the epidemiological characteristics of influenza in the Region will provide a better understanding of viral circulation patterns in tropical areas to guide decision-making regarding the introduction of vaccine.

The GPIS proposes a sentinel surveillance system and an enhanced nationwide Severe Acute Respiratory Infections (SARI) surveillance system. A sentinel modality is proposed for the surveillance of ILI in clinic patients and for SARI and mortality related to such infections in hospital patients. The protocol attempts to improve the existing surveillance system by expediting collection, aggregation, interpretation, and dissemination of more specific and complete data on influenza and other respiratory viruses. An enhanced nationwide SARI disease surveillance system will allow the detection, verification, and investigation of influenza-related events in a timely manner and the adoption of the necessary control measures. This enhanced system attempts to improve the sensitivity of influenza surveillance in compliance with the IHR-2005.

In addition, implementation of the enhanced nationwide SARI disease surveillance system will require education and awareness-building of health-care providers to watch for patients at risk of developing infections from new or emerging viruses, such as influenza H5N1. Such training will be coordinated by PAHO's Health Services Organization Unit (OS) to ensure that respiratory infections associated with epidemiologic triggers (e.g., clusters of unusual severity related to travel or exposure to sick animals) result in the immediate start of outbreak investigations.

The introduction of the GPIS has already started in the Region, where over 200 officials from every country in Latin America participated in technical workshops to plan for the implementation of the GPIS. In the Caribbean sub-region, implementation of the GPIS is underway in seven countries under the coordination of Caribbean Epidemiology Centre (CAREC) and Eastern Caribbean Countries (ECC) focal points.

A key component of the implementation of the GPIS has been the reinforcement of laboratory capacity in countries in the Region, with the financial support of the CDC. In the

⁹ <http://www.who.int/csr/disease/influenza/centres/en/>

2006, immunofluorescence (IF) microscopes were purchased for four Caribbean countries and one was procured for Paraguay. Diagnostic reagents have also been provided to the Caribbean sub-region, Central America countries, Uruguay and Paraguay. Furthermore, laboratory technicians from Caribbean countries implementing the protocol will receive hands-on laboratory training in CAREC. Regarding molecular diagnosis of influenza viruses, 12 countries in the region have received polymerase chain reaction (PCR) training. This effort has resulted in the strengthening of influenza surveillance in the Region and the designation by WHO of three new NICs -Costa Rica, El Salvador, and Panama—increasing the number of NICs in the Region to 26 in 2007. Regional participation in the GISN has steadily increased in the past few years, as evidenced by the NIC designations, the increased number of countries performing influenza virus isolation, and the increased number of samples shipped to the Regional Reference Laboratory at the CDC.

When cases of avian influenza A virus infection occur in humans, information on the extent of influenza infection in animals as well as humans and on circulating influenza viruses is urgently needed to aid the assessment of risks to public health and to guide the best protective and response measures. The Veterinary Public Health Unit (VP), through the Pan American Foot-and-Mouth Disease Center (PANAFTOSA) is working with countries in the Region on addressing coordination issues of the human-animal interphase for this purpose. When such human infections with avian viruses occur, prompt investigation and response mechanisms need to be activated to assist in the containment of such threats.

In compliance with IHR-2005, technical cooperation has aimed at strengthening countries' ability to respond to epidemic-prone diseases such as influenza, through the conformation and training of rapid response teams. Rapid response teams are trained to be able to detect, identify, characterize, and contain suspected or confirmed outbreaks of human influenza. In addition, to conduct field investigation methodologies, training included implementation of effective strategies for adequate infection control; safe handling of clinical samples from suspected cases; risk communication; use of personal protective and communication equipment; stress management; and crisis and mass fatality management. To date, 32 officials in the Region have been trained as members of the PAHO regional rapid response team and 87 officials from 35 countries and territories as members of national rapid response teams. This means that every country in Latin America has already at least one rapid response team fully trained and equipped with the required supplies. The Caribbean subregion also has a team trained and equipped for this purpose. Members of national (or sub-regional) rapid response teams are expected to replicate this body of knowledge by leading training workshops at the sub-national and local levels. PAHO also secured a donation from USAID of 10,000 personal protective equipment kits for countries of the Caribbean. Other procurement actions have already taken place for the purchase of personal protective equipment kits, antivirals, and IF kits for rapid response teams.

As part of its institutional response to a pandemic, PAHO's Secretariat has also established an Emergency Operations Center (EOC) at Headquarters. The EOC has the required networking capability, computers, communications, software and other equipment to effectively coordinate PAHO's surveillance and analysis activities with country teams in emergency situations. The EOC is ready to respond to any request from the Communicable Diseases Unit (CD), which gathers and analyzes data and reports from media and nonofficial sources on outbreaks and assesses their public health impact and risk of spread, as mandated under the IHR-2005. Between January and August 2007, CD registered 57 events of potential importance to international public health. Of these, 41 were verified by the Ministries of

Health, 10 events were unsubstantiated and 6 events did not require verification but were registered for information only.

During March and April 2007, nine Caribbean countries hosted the International Cricket Council World Cup. Preparing for a potentially increased risk of outbreaks, these countries agreed to set up a special alert system to strengthen their existing communicable disease surveillance capabilities, to gather epidemiological intelligence, and to improve response capacity, under the coordination of CAREC. The system consisted in a daily report of specific syndromes at selected sentinel sites, with the joint support of approximately 60 national and foreign experts. In the referred period, 24 events were identified by the early detection alert procedure, all of them promptly investigated and most discarded. Only three unusual disease events deserved special attention. This effort contributed significantly to the enhancement of the subregion's core capacities for surveillance and response, as required under the IHR-2005.

Expected results

ER 2.1 PAHO-CDC GPIS implemented and yielding epidemiological data on the behavior of influenza viruses.

Targets:

- All countries in Latin America and the Caribbean will have received support in the establishment of sentinel surveillance of ILI and SARI.
- All countries in Latin America and seven countries in the Caribbean will have received support in the implementation of an enhanced nationwide disease surveillance system to detect unusual or unexpected outbreaks of respiratory infections associated with epidemiologic triggers.
- 3 additional countries of Latin America and the Caribbean will have received the designation as NICs.
- A new information management system for influenza to aggregate and organize data generated by implementation of the GPIS

Key activities:

- Support countries in the implementation of sentinel surveillance system and an enhanced nationwide disease surveillance system in accordance with the GPIS
- Support the GISN through the strengthening of National NICs by collaborating in the increase of their surge capacity and establishing a quality assurance process.
- Promote the designation of three new NICs in the Region in countries without such designation.
- Conduct training on diagnosis of influenza viruses for laboratory personnel in the Region.
- Work with countries to expand their sentinel surveillance system to ensure that data is representative of the geographic and demographic characteristics of the national situation during influenza epidemics.
- Support countries in the decentralization of influenza diagnosis by immunofluorescence.
- Support countries in the establishment of a quality-assurance process for sub-national laboratories.

- Collaborate with national NICs and the Collaborating Center in CDC on the standardization of laboratory protocols for molecular diagnosis of influenza in Region.
- Collaborate in the development of a new information management system to aggregate and organize data generated by implementation of the GPIS.

ER 2.2 Regional and national response strengthened.

Targets:

- New, updated EOC established in PAHO HQ
- EOCs in at least 3 countries, one in each sub-region
- Sub-national rapid response teams conformed and trained in 10 countries of the Region.

Key activities:

- Strengthening PAHO's EOC in HQ through Standard Operations Procedures, improved equipment, furniture and information display.
- Establish and support daily operations of EOCs in selected countries in each subregion.
- Provide instructional materials to support training of sub-national rapid response teams
- Develop drills to test pandemic influenza response for outbreak control, health-care, and multisectorial coordination.
- Systematize and disseminate updated technical material on effective non-pharmaceutical interventions for pandemic influenza.

3. Plan for health-care services, occupational health and infection control

In the event of a pandemic influenza episode, health facilities will likely be impacted by overwhelming numbers of patients and existing resources may be insufficient. In order to prepare pandemic response strategies, the impact on the health services in the Region has been analysed using various scenarios. During a pandemic influenza episode, between 15 and 35% of the population could become ill; 15% would require hospitalization in ICU, and 7.5% would require assisted ventilation.¹⁰ 53% of the population could require outpatient visits and between 1.5% and 2% will need to be hospitalized.¹¹ This forces the health services to plan the response with regard to human, physical and logistical resources. In this context it is necessary for health services to be prepared, organized, and trained in order to respond adequately to the crisis.

Health managers and operational personnel at the health facilities level should have full knowledge of the measures and actions that should be taken in responding to the influenza pandemic, such as the most effective measures for management of cases, contacts, and communities at risk. To this end, publications, guidelines, protocols and information on best practices have been compiled and made available to PAHO's Focal Points on a SharePoint

¹⁰ Zhang X, Meltzer MI, Wortley P. (2005) FluSurge 2.0: A Manual to Assist State and Local Public Health Officials and Hospital Administrators In Estimating the Impact of an Influenza Pandemic on Hospital Surge Capacity (Beta Test Version). Atlanta, GA, Centers for Disease Control and Prevention

¹¹ Ontario Ministry of Health and Long-term Care (2006). Ontario Health Plan for an Influenza Pandemic, September 2006.

for dissemination of knowledge in their respective countries. However, it is necessary to assist Member States in the actual hands-on development and testing of health-care facilities (hospitals and ambulatory care units) and response plans, particularly at the local level. These plans should include, *inter alia*, the establishment of coordination structures; triage and admission protocols; protocols for the management of influenza patients; plans for increased surge capacity; occupational health protocols for health providers; infection control protocols; protocols and retrofitting for environmental ventilation and isolation systems; and protocols for management of excess number of dead bodies.

Health-care workers (HCWs) face several and repetitive biological, physical, ergonomic, chemical, and psychosocial occupational hazards. They are especially at high risk for occupational transmission of airborne infectious diseases due to their high and frequent exposure to infectious pathogens. This occupational vulnerability is especially present in case of a pandemic where HCWs are at the forefront of exposure as it was clearly demonstrated during the advent of Severe Acute Respiratory Syndrome (SARS). In Canada, 51% of the persons infected with SARS in 2003 were HCWs¹². In addition to being at an increased exposure to infectious pathogens, the stress associated with the health-care response to a pandemic situation can result in significant psychological distress for HCWs.

Occupational health and safety principles include a hierarchy of effective measures at environmental, administrative, organizational, and individual levels. Training programs on these topics need to be available to HCWs. Strengthening human resources capacity is specially needed at the local level to respond effectively and rapidly to a pandemic. Occupational environment health surveillance needs also to be implemented at the country and local levels to rapidly identify disease outbreaks among HCWs.

Expected results

ER 3.1 Health-care services and health-care workers prepared to respond to pandemic influenza

Targets:

- Delivery mechanisms of pharmaceutical and non-pharmaceutical measures during a pandemic planned and tested in 10 countries
- Case management and surveillance systems for antiviral drugs' susceptibility and influenza vaccine adverse events prepared and assessed in 10 countries
- Health-care providers trained on issues surrounding influenza and pandemic preparedness in support of local implementation of NIPPPs.

Key activities:

- Develop and disseminate planning and organizational tools to be implemented by the health facilities of Member States.
- Carry out training for HCWs, distribute guidelines and technical information on issues surrounding influenza and pandemic preparedness in support of local implementation of NIPPPs.

¹² Moore,D., Gamage,B., Bryce, E., Copes, R., Yassi, A. (2005) Protecting health care workers from SARS and other respiratory pathogens: Organizational and individual factors that affect adherence to infection control guidelines. American Journal of Infection Control, pp. 89-121

- Elaborate and disseminate an online course to train health personnel on case management and surveillance systems for antiviral drugs' susceptibility and influenza vaccine adverse events
- Estimate the vaccination coverage, including influenza vaccine coverage, among health-care workers in Latin America and the Caribbean.
- In collaboration with the Immunizations Unit (IM), implement, monitor and evaluate vaccinations campaigns for health-care workers.
- Elaborate protocol for mandatory periodic health examinations.
- Follow-up with countries the application of occupational health and safety principles.
- Work with countries in the organization of safety committees in the workplace.

ER 3.2 Health-care delivery network trained to catalyze local level, multisectoral contingency planning and local implementation of NIPPPs.

Target:

- Local response plans designed and implemented in 10 countries with participation of health-care delivery providers as well as wide multisectoral participation to improve response capacity.

Key activities:

- Adapt local level planning methodologies and promote their utilization in selected localities of the Region
- Work with countries to ensure sub-national contingency plans are up to date and are known by the health delivery network
- Support health facilities for the implementation of activities proposed in NIPPPs

ER 3.3 Health-care services organized according to demand, including development and testing of triage protocols for outpatient care, inpatient care and intensive care, as well as management of dead bodies.

Target:

- Effective triage protocols for classification of patients and efficient management of unusually high mortality in health facilities of the Region.

Key activities:

- Disseminate guidelines and provide training on triaging outpatient, inpatient and intensive care patients.
- Provide guidelines and training for management of dead bodies and mass casualties

ER 3.4 Occupational health and safety principles and best practices integrated into pandemic preparedness plans for the prevention and control of occupational transmission of airborne diseases in health-care environments.

Target:

- Ten countries in Latin America and the Caribbean trained on principles of occupational health and safety as it pertains to pandemic influenza.

Key activities:

- Improve access to local, national, and international guidelines on occupational and health safety focusing on the prevention and control of airborne infectious diseases.
- Include and translate material on pandemic preparedness for healthcare workers in the PAHO's Workers' Health and Safety in the Health Sector manual
- Identify, adapt, and implement occupational health surveillance system for HCWs.

4. Develop and adapt recommendations to guide policy making regarding influenza pandemic control

The effectiveness of NIPPPs will be highly dependent on the level of development of the public health capacities at the country level. Pandemic preparedness builds on existing processes and programs and cannot be disconnected from routine and existing public health actions, both at the national and sub-national levels. Conversely, the development of NIPPPs represents a valuable opportunity to identify gaps in the existing infrastructure and booster the strengthening of public health capacities.

It is important to take advantage of the momentum and progress built thus far by the countries and sub-regional and regional organizations in the Americas in regards to the development of NIPPPs and other measures to strengthen public health capacity for surveillance and response to epidemics. In order to ensure the sustainability of the achievements made to date, it is crucial that governments translate these efforts into policies and legal frameworks, and address the ethical aspects related to the preparation and response to a pandemic. In addition, governments must ensure the allocation of the required financial resources to guarantee the adequate and effective prevention, preparedness and response to the threats posed by AI or any other pandemic event. In this context, Ministries of Health are responsible for enacting policies, draft and sponsor laws to guarantee that technical achievements and collaborative agreements achieved to date are sustained in the long-term.

From the perspective of public policies, the most significant milestone was the approval of the IHR-2005. To help countries in the process of developing national and sub-national public health capacities, the Health Systems Strengthening Area (HSS) has contributed in the efforts to assess the Essential Public Health Functions (EPHF) at the national and sub-national levels and in the elaboration of the required strengthening plans. One of such functions, EPHF #11, is directly related to the reduction of the impact of emergencies and disasters on health.

In addition, HSS elaborated the document: *Public Health Capacity in Latin America and the Caribbean: Assessment and Strengthening*, in which public health capacity is defined as the underlying foundation that supports the planning, delivery, and evaluation of all public health activities and practices. In this document, public health capacity is comprised by five elements: (i) public health workforce; (ii) information systems; (iii) public health technologies; (iv) organizational and institutional capacity; and (v) financial resources. It is necessary to mention that to date no single tool to measure all specific elements of public health capacity exists.

Finally, HSS is currently working in the identification of the contents and costs of a set of interventions required for preparedness and response to various epidemic events, such as SARI, that can be incorporated into benefit plans or service packages of social security institutions in countries where the health systems are based on social security. Currently, the experiences of Colombia and Chile regarding the management of epidemic respiratory diseases are being reviewed and a document with lessons learned is under elaboration. The good practices identified in the case studies will be used to develop a set of policy options to be shared among countries in the Region.

HSS aims to help countries develop their public health capacity, according to the requirements stipulated by the IHR-2005, to better prevent, prepare and respond at the local level to a pandemic event. It aims to achieve this by providing and facilitating technical cooperation to countries in the development of policies, regulatory frameworks and adequate allocation of financial resources to build well-functioning public health systems.

Expected results

ER 4.1 Public Health Capacity strengthened at the local level, particularly as it relates to public health workforce; public health information systems; institutional and organizational capacity; public health technologies; public health financial resources, to better prepare for and respond to an influenza pandemic.

Target:

- 10 Countries in Latin America and the Caribbean have their public health capacity assessed with a focus on preparedness and response to a pandemic event.

Key Activities

- Identify the public health capacities (human resources, financing, institutional and organizational capacity, technologies and information systems) needed to prevent, prepare and respond to an influenza pandemic and other epidemics.
- Support countries in the assessment of public health capacity and the elaboration of plans to strengthen public health capacity at the local level, with a focus on preparedness and response to a pandemic event.
- Provide technical cooperation to the National Health Authorities to develop policy options to strengthen public health capacity to prevent, prepare and respond to epidemics.
- Promote that key initiatives and activities of the NIPPPs are translated into sustainable policies and recognized on legal frameworks.

5. Reduce opportunities for human infection

Currently, highly pathogenic AI caused by the H5N1 virus, remains primarily a disease of domestic birds. Therefore, the disease is still an animal problem. Although no cases of human infection by influenza H5N1 have been reported in the Americas until December of 2007, many cases in humans have occurred in other Regions of the world. As no effective human to human transmission has been established yet, the interface between animal and human health is key for the prevention and control of this zoonosis.

In Latin America and the Caribbean, 22% of the population lives in rural areas, while 0.88% of the economically active population consists of aviculture workers, most of them in direct contact with chickens. The latter represents a population considered as a risk group. It is possible for AI, to become endemic in poultry farms. This risk is especially significant in the context of non-commercial production, small scale commercial poultry farms, backyard flocks, and places where live poultry is traded. Some poultry outbreaks of AI viruses have demonstrated a surprising level of aggressiveness, surpassing biosafety precautions in larger-scale poultry farms with adequate sanitary safeguards.

Several measures can help to minimize the global public health risks that could arise from large outbreaks of highly pathogenic AI in birds. An immediate priority is to halt further spread of epidemics in poultry populations and reduce opportunities for human exposure to the virus. Genetic reassortment of human and AI viruses can occur in humans co-infected with current human H1 or H3 subtypes of influenza A and an AI virus acquired from poultry. Vaccination of persons at high risk of exposure to infected poultry with human influenza vaccine can reduce the likelihood of co-infection of humans with avian and influenza strains, minimizing the risk of genetic reassortment.

Influenza vaccines are normally made by growing the seed viruses in fertilized chicken eggs. The time between the identification of the strain and the availability of the vaccine is 6 to 8 months. Twice a year (in February for the Northern Hemisphere and September for the Southern Hemisphere), WHO holds a consultation with the directors of the Collaborating Centers and representatives from the national laboratories to issue recommendations on the composition of the trivalent vaccine, containing two type A virus subtypes (H3N2 and H1N1), and a type B virus. Since 2005, global vaccine production has increased from 300 to 350 million doses. Production has been mostly concentrated in Australia, Europe, Japan, and North America, but most recently WHO has promoted the transfer of technology to increase Regional vaccine production. In 2005, Brazil and Mexico have received grants to support the transfer of technology to produce both seasonal and pandemic influenza vaccines.

Annual influenza vaccine is 70%-90% effective for preventing seasonal influenza infection in young adults and 30%-40% in the institutionalized elderly. In this group, the vaccine reduces the severity and incidence of complications by 50%-60%, and mortality by 80%. Vaccine effectiveness is dependent upon matching of the circulating and vaccine strain, being higher when the vaccine antigen is very similar to the strains of the circulating virus. In the non-institutionalized elderly, the vaccine is 58% effective in reducing influenza infections and 30-70% effective in reducing hospitalization and pneumonia. A recent clinical trial has demonstrated that vaccination in non-institutionalized individuals aged 65 and older reduced

hospitalization for cardiac disease by 19%, stroke by 16-23% and death due to all causes by 48-50%.

Annual immunization of human high-risk populations has proven to be a very cost-effective intervention. Economic studies conducted in the United States of influenza vaccination in persons aged 65 years and over demonstrated overall societal cost savings and substantial reductions in hospitalizations and deaths. One study demonstrated that vaccination resulted in net savings per quality-adjusted life year (QALY) gained in elderly and resulted in costs of \$23-\$256 per QALY among younger age groups.

PAHO's Technical Advisory Group on Vaccine Preventable Diseases (TAG) for 2004 and 2006 recommended that countries should utilize the yearly influenza vaccine in their population aged 60 years and over, chronically ill individuals, immunodeficient populations, health-care workers, pregnant women, and children (6-23 months). TAG has also recommended that countries conduct studies on the disease burden and the economic impact of annual influenza epidemics, in order to support influenza immunization policies in the context of other national health priorities.

Influenza vaccine has been gradually being introduced in the Region. From 2004 to 2006, the number of countries including seasonal influenza vaccine in their national programs increased from 13 to 28, well above the target established in the PAHO's SOP 2006-2007. Currently, countries are vaccinating high risk groups such as the elderly, children, and HCWs. Of the 28 countries using the influenza vaccine, 13 countries are vaccinating children from 6 to 23 months; 25 countries vaccinate HCWs and 7 countries vaccinate poultry workers. In 2007, 5 additional countries planned to introduce the vaccine in their national immunization programs.

In order to ensure the supply of quality influenza vaccines to countries in the Region, PAHO's Vaccine Revolving Fund (RF) is supporting 25 countries on the purchase of seasonal influenza vaccines. The lower price of the vaccine supplied through the RF has helped foster the introduction of the vaccine in the Region. Resolution WHA 56.19 of May 2003 stated that "better use of vaccines for seasonal epidemics will help to ensure that manufacturing capacity meets demand in a future pandemic". Increasing the utilization of influenza vaccine will help not only to decrease the morbidity and mortality caused by influenza virus, but also to expand manufacturing capacity, making more vaccine available in case of an emergency due to an influenza pandemic.

WHO recommends targeted administration of seasonal influenza vaccine to selected groups at increased risk of exposure to the H5N1 virus currently circulating in Asia, specifically in countries experiencing outbreaks of highly pathogenic H5N1 in poultry, as one of several measures for reducing opportunities for the simultaneous infection of humans with avian and human influenza viruses. Although vaccination with current inter-pandemic vaccine will not protect humans from infection with avian H5N1 influenza, it minimizes the risk of co-infection and genetic reassortment of human and avian influenza viruses in humans.

A vaccine for influenza H5N1 was approved in 2007 by the U.S. Food and Drug Administration (FDA). Given the availability of this vaccine, during the WHA of May of 2007, WHO was requested to "establish, in close consultation with Member States, an international stockpile of vaccines for H5N1 or other influenza viruses of pandemic potential as appropriate", for use in countries in need in a timely manner.

For the 2008-2009 biennium, technical cooperation will continue to promote the introduction of seasonal vaccine, based on robust epidemiological data produced by the implementation of the PAHO/CDC GPIS. Cooperation will also support cost-effectiveness and mortality studies to encourage the timely introduction of the vaccine.

PAHO's activities are also being directed to promote and reinforce an intersectoral approach to the prevention and control of this zoonosis and to reduce the opportunities for human infection. This strategy includes the preparation of guidelines, directly adapted to the Region and the dissemination of the main issues relevant to the human-animal interface. Technical cooperation lines are organized around three major topics: integration of surveillance across sectors, presentation of adequate biosecurity/biosafety procedures, and the dissemination of timely public information.

PAHO's activities have been also directed to improve integration among technical cooperation agencies in the health and agriculture sectors of the Member States. The Hemispheric Conference on the Surveillance and Prevention of Avian Influenza held in Brasilia in December of 2005, allowed the formation of a regional alliance, with the financial support of several international agencies, to disseminate hemispheric knowledge of AI; to improve countries' surveillance; and to assist countries to prepare for a potential outbreak.

Among the main products of this initiative are a proposal of joint efforts with the IADB, IICA and other agencies to build an Intra-agency avian influenza Internet site which would provide information for training in zoonosis and collection of baseline data. In addition, PANAFTOSA and PAHO's VP Unit produced an addendum for the NIPPPs self-assessment toll comprising the animal health and human interface. In order to analyze how the Region is addressing the human-animal interface in their NIPPPs based on the results of the aforementioned checklist, PAHO's VP Unit in conjunction with the Rural Development Unit of the IADB's Sustainable Development Department, elaborated the study "Avian and Human Pandemic Influenza: Addressing the Need for Integration between Health and Agriculture in the Preparedness Plans in Latin America".¹³

The study found that Southern Cone countries, with major poultry-related industries (meat and eggs), showed high levels of integration of the health and agriculture sectors as represented by the series of questions used for this evaluation (70%), while Central American countries showed the least integration. Moreover, the study concluded that the population of Central America could be strongly affected in case of an outbreak of Avian Influenza A/(H5N1) in animals, because it is the subregion with the most rural population, lowest income, most population under the poverty line, and highest percentage of workers in the agricultural sector.

In 2006-2007, PAHO's technical cooperation included interventions directed at enhancing national and local capacities to respond and contain emerging epizootic outbreaks with emphasis on AI. To reach this goal, training workshops were carried out to strengthen regional diagnostic capabilities in the veterinary laboratories for the diagnosis of AI and a National Laboratory Network in Central America and the Caribbean was established. In 2006, sub-regional workshops were held in Trinidad and Tobago and Colombia with the participation of 70 laboratory professionals and representatives of FAO, the United States

¹³ <http://www.iadb.org/sds/doc/RUR-AvianandHumanPandemicInfluenza.pdf>

Department of Agriculture (USDA), the French Agricultural Research Centre for International Development (CIRAD) and USAID. Participants received training on specimen collection, transportation, and field diagnosis and received personal protection kits. PANAFTOSA also coordinated training in molecular biology in collaboration with FAO, USDA, CIRAD, IICA, the Regional International Organization for Plant Protection and Animal Health (RIOPPAH), the University of Maryland, and the Veterinary Laboratories Agency of the United Kingdom (VLA) for the organization of basic courses in PCR.

Expected results

ER 5.1 Regional, subregional, and national plans for the prevention, surveillance, and emergency intervention in avian influenza implemented and strengthened in agreement and coordination with other United Nations (UN) and regional agencies.

Target:

- Surveillance systems of the Region able to detect highly pathogenic AI
- A surveillance system in place to quantify the avian population of the region, its sanitary status, its characterization and the risk introduction and diffusion factors.
- Control strategies of highly pathogenic AI defined and tested in 10 countries of the Region.

Key activities:

- Work with countries in the strengthening of national capacity to investigate the occurrence of epizootics when AI is suspected, laboratory diagnosis, and contingency plan intervention.
- Design and establish a regional information and surveillance system to quantify the avian population of the region, its sanitary status, its characterization and the risk introduction and diffusion factors.
- Work with countries and other agencies in the strengthening of poultry health programs.
- Work with countries in the strengthening of quarantine systems and veterinary border control activities in compliance with international regulations.
- In coordination with other agencies, promote training of national professionals on detection and control measures to be undertaken immediately if an epizootic of AI is suspected.
- Improve the information system network to facilitate the timely dissemination of information in the Region and worldwide when an epizootic, possibly caused by AI, is identified to promptly adopt recommended international measures.
- Develop or adapt guidelines and protocols to be utilized during the investigation and/or the implementation of control measures during a suspected and/or confirmed epizootics caused by AI.

ER 5.2 Regional, subregional and national collaboration between avian and human health public and private sectors intensified and coordinated poultry biosecurity and human biosafety protection plans implemented

Target:

- All countries in the Region have biosecurity and biosafety plans implemented for the protection of the human population against AI.

Key activities:

- Promote collaborative agreements and joint activities between animal and human health public and private sectors.
- Train of poultry workers on biosecurity guidelines in coordination with other agencies.
- Develop biosafety plans for the protection of laboratory personnel, health professionals and workers of the avian industry and facilitate the required training interventions.

ER 5.3 Seasonal Influenza vaccine introduced in the routine annual immunization schedule of high-risk populations in the Region.

Target:

- 33 countries in the Americas have introduced annual influenza routine immunization for high-risk populations by 2009. (Baseline: 28 countries in 2007).
- 17 countries introduced seasonal influenza vaccination for children 6-23 months in the routine immunization programs. (Baseline: 13 countries in 2007).

Key activities:

- Support countries in determining target populations and estimating needed doses of influenza vaccine.
- Continue to include influenza vaccine in the RF portfolio allowing countries to purchase needed vaccines at lower prices.
- Support countries in conducting studies on the disease burden and the economic impact of annual epidemics.
- Evaluate impact of the vaccine introduction in countries and share lessons learned.
- Analyze and monitor vaccine coverage data in order to identify areas of low vaccine coverage and propose targeted strategies.
- Increase number of suppliers and capacity of existing suppliers offering vaccine to participating countries in the RF.
- Continue to support the “Vaccination Week of the Americas”, which has diminished inequities in access to vaccines, including influenza, throughout the Region.

6. Implement a communication strategy and raise awareness to encourage pandemic planning

Pandemic influenza presents a massive global communication challenge for all levels of governments, organizations and the international community, all of whom are seeking to inform, educate, communicate, share and prepare the public for a still unknown outcome. Given the potential threat and uncertainty of both the science and the course of the pandemic, communication plays a key role in managing the crisis and potentially saving lives.

Communication efforts seek to establish trust, transparency and raise awareness among all sectors of society -the public, government agencies, poultry producers, the media- of the possible impact of an influenza pandemic and the measures that can be taken to mitigate it. During 2006-2007, all countries in the Americas worked on communication strategies linked to their NIPPPs. Workshops on risk and outbreak communication held in the Bahamas, Jamaica, Trinidad and Tobago, Argentina, Guatemala, and Colombia, put together communication professionals from health, agriculture, education and other areas, such as tourism, civil defense and finance. In addition to receiving training in risk communication, such intersectoral groups participated actively in the development and assessment of national communication strategies, under a sectoral integration approach. Participants worked with a checklist to assess gaps in national communication strategies and got acquainted with guidelines to create communication strategies for avian and pandemic influenza. As a result of these workshops, as of August 2007, 24 countries had completed national communication strategies linked to their NIPPPs.

The communication plans were tested and analyzed using a PAHO-created self-assessment tool and template. The key to communication strategies lies in the ability to turn plans into action, especially at the local level. These plans must be tested through simulation exercises and drills, with the intent of ensuring that relevant messages reach all levels of government, stakeholders at the local level, the general population, including the most vulnerable groups, specially in hard to reach areas. Investment in the communication network capabilities and planning should strengthen communication strategies, seen as a core component of managing a pandemic crisis as well as any other outbreak or natural disaster.

Communication planning seeks to curtail major social disruption as well as contribute to build, maintain or restore trust between the health community, governments and the public. Communication needs to acknowledge uncertainty while avoiding excessive reassurance. Failure to act honestly, timely, and empathically during times of crisis can create havoc. To further stress the need for coherent and comprehensive communication a train-the-trainers workshop was held in Washington, D.C. in July 2006 with the participation of 80 officials from every country in the Americas. Currently, all the countries in the Region have at least one trained trainer. In addition, planning and outbreak communication components were included in subregional training sessions for Ministry of Health staff at workshops in Argentina, Barbados, Colombia, Peru, Turks and Caicos, and Uruguay. An objective for the biennium 2008-2009 is to make sure the trainers spread these messages and principles, both to senior officials and stakeholders at the local level.

Expected Results

ER 6.1 National communication strategies developed implemented, and tested for dissemination of messages to health-care delivery networks, general population, and target groups.

Target:

- Simulation exercises carried out and messages prepared and delivered in 10 countries in the Region.

Key Activities:

- Work with countries to test communication plans including consistent pre-pandemic preparedness messages.
- Work with Member States to create consistent overall communication plans that build and maintain trust and transparency.
- Develop a communication program to disseminate recommendations for healthy behaviours to prevent pandemic influenza as well as assisting with response and recovery.
- Suggest communication channels to reach communities allowing them to access and share information.
- Create and disseminate accurate messages on seasonal, avian and pandemic influenza risks for citizens.
- Identify and train credible spokespersons to deal with the media.
- Monitor and evaluate message delivery, impact and acceptance.
- Identify specific needs for information in various groups and communities.
- Collaborate and integrate information activities with other agencies and groups to ensure credibility, consistency and continuity of messages.
- Inter-ministerial training on communication to enhance the knowledge base of communication officers and lead to a network of communicators who can share and exchange information.
- Work with PAHO's Information and Knowledge Management Unit (IKM) to create subregional and regional networks to facilitate information exchange and serve as an early warning system.
- Hold a series of workshops for health journalists in the Region to advance on their understanding of the potential proportions, key messages and scientific facts of pandemic influenza and the IHR-2005.

ER 6.2 Health personnel and communication staff trained in the key concepts and utilization of risk and outbreak communication designed to maintain trust and transparency before, during and after a pandemic

Target:

- Training in risk and outbreak communication reaching the municipal and local levels with basic guidelines in 10 countries in the Region.

Key Activities:

- Enhance capacity throughout the PAHO and the Member States by providing advanced training in outbreak and risk communication.
- Develop training modules in risk communication of pandemic influenza for personnel of the health and agriculture sectors.
- Suggest and promote the use of a variety of communication channels such as internet, media access, television, and radio, to disseminate relevant information to the public and specific target groups.
- Gather and share accurate messages on pandemic influenza to target groups.
- Establish schedules for interviews, presentations, and other vehicles to keep a constant flow of information about influenza going to target audiences.
- Form an intersectoral team of experts in risk communication, educators, epidemiologists, researchers, press officers, and personnel from health and agriculture sectors to design, update, and disseminate accurate information.
- Continue to collaborate and integrate information activities with other agencies and groups to ensure credibility and continuity of messages.
- Review and update pandemic influenza published information materials.

7. Mobilize and educate local governments, community organizations and local businesses on best practices to prepare for an influenza pandemic

In the midst of events unfolding a worldwide outbreak –likely to overwhelm health facilities, and surge rates of absenteeism causing significant social disruption- many communities may have to resort on local solutions. Local preparedness can make a difference especially for disadvantaged communities with large vulnerable populations and limited access to health services. Hence, building capacity at the local level in order to enhance preparedness is a key component of PAHO's technical cooperation strategy for influenza pandemic preparedness.

Every community is vulnerable to the risk of pandemic influenza. Should an influenza pandemic occur, individuals, families and communities can and must know what to do for themselves and how to help others using simple measures to mitigate and limit the negative impact of an influenza pandemic. The appropriate response to an event of the magnitude of an influenza pandemic can not be placed only on the hands of the health workers. Local leaders and community members should be equipped with practical information describing, in lay and simple terms, the recommended actions that can be taken to better prepare and react during an actual pandemic.

For instance, school children can play an important role in the spread of influenza. Close interaction between students in classrooms facilitates the transmission of the virus among students and then to their homes and later on to other work places. Therefore, basic education is needed about the mechanisms of transmission of the virus, and the importance of hand washing, proper coughing and sneezing techniques, and sanitation of objects and surfaces where the virus can be found. To this end, appropriate educational tools need to be tailored according to the characteristics of each particular group. Whether caused by the currently circulating H5N1 or any other strain, every school and community has both the opportunity

and the challenge of preparing for any future influenza outbreak with the required knowledge and educational tools.

Lessons learned from past influenza pandemics and SARS show that global coordination and public cooperation at international, national, and local levels are essential tools to help mitigate the impact of a pandemic. At the closest interface with the population, local health authorities along with local health services are at the front lines of the implementation of NIPPPs.

In order to advance implementation of the NIPPPs currently being rolled out across the Region, technical cooperation in this area should be aimed to assist local institutions to better prepare, respond, and recover from an influenza pandemic. Coordinated efforts at regional, sub-regional and national levels will be promoted by PAHO in collaboration with strategic partners, to advocate the inclusion of pandemic preparedness as a priority into each municipality's health agenda linked to issues of equity, community participation, and sustainable development.

In case of a pandemic, the whole community, including large and small businesses, will need to be prepared in order to reduce the spread of disease and secure business continuity. Local leaders need to encourage pandemic preparedness planning and build local capacity for responding effectively and rapidly to a pandemic. Dialogue between the government, the public and private sectors is critical for the development of pandemic preparedness plans at all levels. There is a need to develop and implement policies and programs focused on promoting healthy workplace environments; improving knowledge not only about pandemic and avian influenza but also seasonal influenza; increasing practical knowledge on prevention for pandemic influenza in the workforce; educating employees on hygiene and sanitation controls; encouraging businesses to ensure that basic supplies such as soap, alcohol-based hand sanitizers and personal protection equipment are available to their workers.

PAHO has ample experience working with through initiatives such as the Healthy Municipalities and Communities. The forums developed through these initiatives can reach and inform thousands of municipalities in the Region through its electronic communication network as well as through communication with FLACMA (Latin American and Caribbean Federation of Municipal Authorities). FLACMA members include all the municipal associations in the Region. The Health Promoting Schools Initiative involves a large number of local schools in the Region and through its working committees and electronic networks is also permanently in contact with and informing stakeholders from the Ministries of Health and Education as well as universities. The Inter-American Healthy Housing Network works with communities, and national and local institutions throughout the Region improving housing conditions for underserved populations. Many of these municipalities, schools and housing initiatives are part of provincial, national and regional networks involving country representatives from the Ministries of Health, Education, and Housing agencies as well as Mayor's and Municipal Associations supported by PAHO's technical cooperation.

Existing health promotion networks and collaborating centers along with strategic partners can assist in mobilizing and educating communities; advocating local pandemic preparedness involving mayors and local government representatives, health workers, religious leaders, teachers, students, local police, business owners, backyard farmers, consumers, parents and community members.

PAHO's call for strengthening local pandemic preparedness comes with opportunities not only to innovate but also to put in place public education technologies that are known to work. In order to reach a varied group of audiences with different access to information, a diversified communication and educational approach is needed using traditional and new technologies available today. In addition to traditional media, a large body of knowledge has been accumulated in the use of an *enter-educate* format which combines entertainment and education for health purposes. For example, educational games have shown to be particularly effective for school settings and low literacy groups at the community level. In response to an increasing demand for distance education courses, PAHO and its Collaborating Centers have contributed to build capacity in the design of on-line courses across the Region. In a more technologically advanced world, the use of instant messaging, podcasting, webcasting, and other web-based technologies can provide new opportunities not available in previous pandemics. It is well known that it takes time to introduce, adopt and even reinforce existing behaviors. PAHO's approach on education and social mobilization for pandemic preparedness is to reach out key groups at the local level, way before the pandemic occurs.

Expected Results

ER 7.1 Guidance for local governments and community-based organizations on best practices to prevent and contain human-to-human transmission disseminated through specific networks.

Targets:

- Pandemic preparedness included in relevant activities involving Healthy Communities and Municipalities, Health Promoting Schools, and Healthy Housing Networks.
- 12 issues of the Community *e-FluInfo* Newsletter distributed through health promotion networks in Spanish, English, Portuguese, and French.
- Rapid-response database with answers to frequently asked questions posted in the *e-FluINFO* newsletter by community members.

Key activities:

- Advocacy work and guidance for local governments on pandemic preparedness disseminated in workshops and regular events organized in collaboration with regional, sub-regional and national Healthy Communities and Municipalities networks.
- Design and disseminate at least 6 issues per year (or more depending of the evolution of the pandemic) of the Community *e-FluInfo* Newsletter through health promotion networks in Spanish, English, Portuguese, and French.
- Develop a web-based help-desk linked to *e-FluInfo* to build-up a database of standard answers using lay language to most common questions or concerns
- Develop of an online course on local preparedness and response for influenza pandemic in collaboration with other programs at PAHO and strategic regional partners.
- Design and evaluate an educational game for the promotion of hand washing, coughing and sneezing etiquette among school children in Spanish and English.

E.R. 7.2 Countries' capacity to prevent and limit transmission of a pandemic virus at the workplace improved.

Targets:

- Key personnel from various Ministries at national level of the Region sensitized to the role of labor inspections in preventing and controlling the spread infectious diseases in the workplace
- Labor inspectors and other groups of workers at high risk of exposure in 10 countries in Latin America and the Caribbean trained on occupational health and safety (OHS) related to pandemic preparedness

Key activities:

- Support countries in developing training programs for labor inspectors and other workers (e.g. agriculture technicians, farm workers, educators) on the identification, notification, prevention, and control of infectious diseases outbreaks.
- Work with educational institutions to offer training sessions/ courses for representatives from the Ministries of Health, Education, Labor, Environment, and Agriculture on the prevention and control of diseases outbreaks in the workplace setting.
- Support countries in the development and implementation of programs, interventions, and policies aim to promote healthy workplace.

E.R 7.3 Occupational health and safety protocols incorporated into business continuity plans for medium and small enterprises at the local level

Target:

- Core group of facilitators trained in occupational health and safety protocols as part of local business continuity strategies for influenza pandemic.

Key activities:

- Increase awareness on the importance of integrating occupational health and safety protection in business continuity plans for pandemic preparedness.
- Built strategic intersectoral and interinstitutional alliances to develop and implement policies and interventions focusing on the protection of workers.
- Develop a tool-kit of basic control measures for healthy workplaces to be included in contingency planning.
- Assist countries in organizing train-the-trainers workshops to disseminate awareness and simple techniques to support occupational health and safety protection initiatives.

8. Support regional production capacity of developing pharmaceuticals and vaccines

Vaccination is the most important intervention available for preventing seasonal influenza and reducing its health consequences. However, the yearly vaccine for seasonal influenza will not protect against a pandemic strain. If a new pandemic virus strain emerges it will be critical to identify the first cases, isolate the virus and then use this virus to rapidly develop an effective vaccine. It will be a number of months before a vaccine is available, and even when vaccines are available, they will be in very short supply. Consequently, diverse short and long term strategies engaging several manufacturers are being pursued for the development of an adequate vaccine. Given the almost certain shortages, the best way to guarantee an opportune supply of vaccines for a pandemic would be promoting national or sub-regional vaccine manufacturing capacity.

To date, PAHO has coordinated activities with potential vaccine manufacturers to discuss possible production of pandemic influenza vaccines within the Region. To this end, PAHO conducted an analysis of already existing infrastructure in terms of equipment, knowledge and human resources, as well as available financial support from governments and other sources.

In 2007, the Essential Medicines, Vaccines and Health Technologies Unit (EV) organized a meeting to identify the referred issues with six potential vaccine manufacturers: INEVH, Argentina; Butantán and Bio-Manguinhos, Brazil; CIGB and I. Finlay, Cuba; Birmex, Mexico and INHRR, Venezuela. In April 2007, two of these manufacturers (Butantán and Birmex) were awarded a \$ 2,000,000 grant from WHO to develop pilot production plants for pandemic influenza vaccine.

In addition, international regulators are working together in order to develop international guidelines that could be used to regulate the use of pandemic vaccines in the countries. The Pan American Network for Drug Regulatory Harmonization (PANDRH) Vaccines Working Group has kept the regulators in the Region informed and updated of advances in this issue.

Like influenza pandemic vaccines, antiviral agents have an important function before and at the inception stages of a pandemic. Their usefulness is often constrained by the high cost and limited supplies of these medications. Increased production capacity will place the world in a better position to respond to an eventual future pandemic caused by an influenza virus.

PAHO has been involved in several initiatives to promote availability of antiviral drugs such as holding meetings with existing manufacturers, discussion in diverse forums such as Global Medicines Council (GMC) and the Inter Agencies Pharmaceuticals Coordination (IPC), among others.

Expected results

ER 8.1 Selected countries' capacity to produce pandemic influenza vaccine strengthened and stockpiles available when possible

Targets:

- At least two manufacturers within the Region being able to develop pandemic influenza vaccine to support national or regional demands.
- At least 6 regulatory agencies in the Region informed and aware on the licensing mechanisms agreed by the main international regulatory bodies.
- All countries in the Region interested in acquiring pandemic influenza vaccine have enough information and technical advice to get pandemic influenza vaccine of quality.

Key activities:

- Coordinate activities among the countries to share information on the development of pandemic influenza vaccine.
- Facilitate the necessary interaction between WHO and two manufacturers in the Region for the development of pandemic vaccine.
- Participate in the international regulators' group meetings and disseminate relevant information to the regional regulatory authorities and PANDRH.
- Keep countries informed about the manufacturers selected by WHO as adequate to supply with stockpile of quality

ER 8.2 Availability and scaling up capacity of antiviral drugs production assessed and selected countries' production capacity strengthened if needed

Target:

- Three countries in the Region receive support for the establishment of agreements with antiviral drug manufacturers for the transfer of antiviral drug production technologies.
- 21 countries in Latin America and the Caribbean have mechanisms established for contingency licensing for antiviral drugs during pandemic influenza.

Key activities:

- Assist countries to ensure that they have adequate supply and distribution systems, as well as accurate information on stockpiling, distribution and rational use of antiviral drugs.
- Strengthen the Official Control Medicine Laboratories (OMCL) in the countries for implementation of analytical methods for antiviral drugs quality control, to avoid counterfeit and sub-standard medicines when drugs are delivered.

9. Build partnerships and strategic alliances in support of an effective PAHO/WHO response to pandemic influenza in compliance with the UN influenza pandemic preparedness plan

International cooperation, as a whole, is undergoing significant changes, which represent important challenges for PAHO and the countries of the Region in the pursuit of funding for the implementation of the SOP. For instance, within the framework of ongoing regional harmonization and alignment processes, donors tend to support sector-wide approaches and financing from national budgets. In addition, pandemic preparedness is an important issue already in the international cooperation agenda and briefings, work meetings. Informal exchanges of action plans and strategies have already taken place between PAHO and other organizations. Since the Region of the Americas has not been affected by the influenza H5N1 virus, currently it is not a priority for international donors, which affects pre-pandemic preparations, especially in the poorest countries of the Region.

Facing a pandemic influenza episode will require the active involvement of global, regional, and country level partners, including international organizations, sub-regional integration systems, multilateral organizations, professional standards setting bodies, and the private sector. This larger community should be included in the planning phase, as they will need to be involved in the response to a pandemic. Advocacy among leaders beyond the health sector should be carried out as early as possible to garner the required support for implementation.

Effective partnerships at the local and regional levels directed towards public health activities are already in place. Pandemic preparedness planning should take advantage of the effective structures already in place as well as form new alliances. To date, PAHO has begun resource mobilization efforts to support the implementation of influenza preparedness activities at the regional, national and local levels.

Episodes of AI and pandemic influenza receive significant media coverage, and thus have the potential for forging new alliances with other sectors and non-health related partners. The prospective alliances that could be forged however would require migration from a traditional project focus to a more comprehensive program support strategy. This approach started at PAHO with the establishment of a cooperation agreement with the North American Aerospace Defense Command (NORAD) in 2002. In the last years, it has been extended to collaborative agreements with CDC, USAID, the Canadian International Development Agency (CIDA) and the Spanish Agency of International Cooperation (AECI).

Expected Results

ER 9.1 United Nations country plans implemented and operational

Target:

- All countries in the Region will have joint United Nations country plans that are funded and have standard operating procedures in place for major emergencies including pandemic influenza

Key activities:

- Support the mapping of key country level UN partners, including their potential contribution to an effective response.
- Support the gathering of key country partners to define their specific role in responding to the pandemic.
- Support the institutionalization of inter-agency groups at the national level
- Support the development of inter-agency collaboration plans and resource mobilization strategies at the national level
- Facilitate the dissemination of the UN Country plan within the National Emergency bodies.
- Facilitate the joint procurement of pandemic influenza drugs and supplies among the UN System

ER 9.2 Partnerships with regional and subregional intergovernmental organizations, UN agencies, international institutions, donor community and other actors for pandemic preparedness and response

Target:

- PAHO coordinates regional or sub regional intergovernmental partnerships for pandemic preparedness and response that are funded and have standard operating procedures in place

Key activities:

- Advocacy and consensus building between regional and sub-regional intergovernmental organizations.
- Mapping of key regional and sub-regional intergovernmental organizations including their potential contribution to an effective response.
- Gathering of key regional and sub regional intergovernmental partners to explore their specific role in pandemic influenza preparedness activities
- Advocate the institutionalization of intergovernmental groups at regional or sub-regional level