

Stories from the field

Mexico improving influenza data sharing: Hurdles overcome and resulting benefits

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Secretaría de Salud de México

One Flu Strategic Retreat
Feb 1-3, 2011, Castelbrando-Italy

AGENDA

- Mexico epidemiological surveillance system before and after AH1N1 pandemic 2009
- What did we gain after the pandemic?
- What happened with the integrated approach with animal and wild life influenza surveillance?
- Lessons-learned and priorities

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National Program of Epidemiological Surveillance (SINAVE)

Mission:

Provide epidemiological, good quality and analyzed information to oriented and evaluated health preventive and control diseases programs

Components:

- Assistant General Direction of Epidemiology and National Epidemiologist Network
- Assistant General Direction of InDRE and National Network of Public Health Laboratories (InDRE/RLESP)

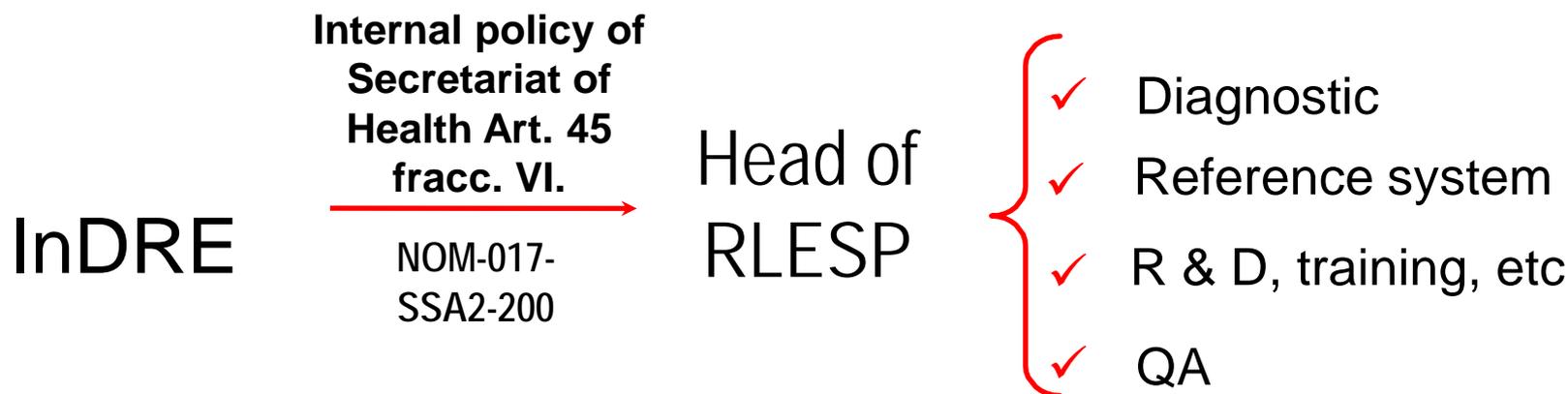
Evolution of Public Health Laboratory Network in México

- ✓ 2001- 2004, a total of 28 LESP
- ✓ 2009, 30 LESP
- ✓ 2010, 31 LESP(one per each State) except México City



31 Public Health State Laboratories one per State. All of them in capital States

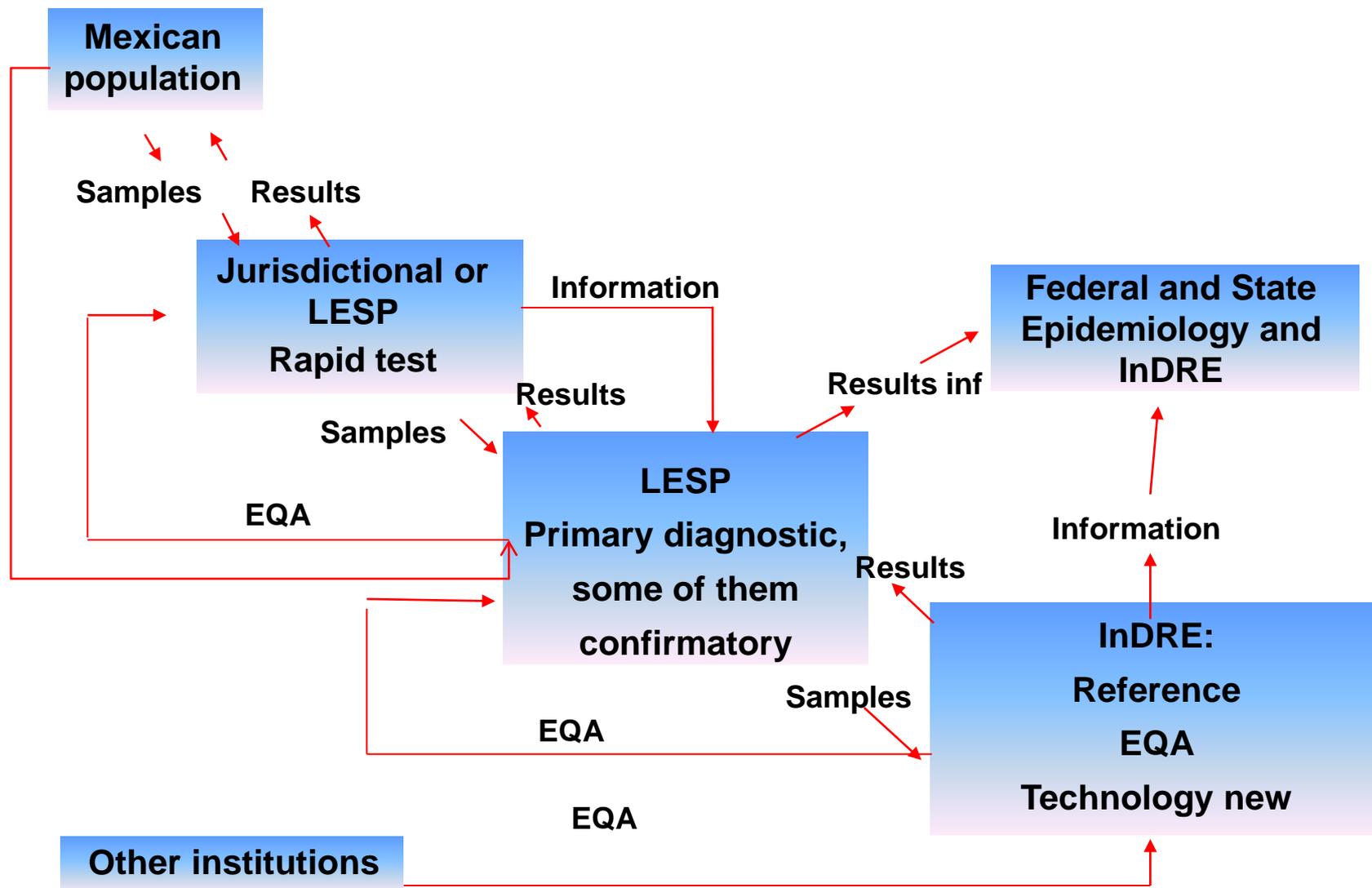
Legal frame work of InDRE/RLESP as support for Epidemiological Surveillance



Current situation of RNLSP

- State level: dual activity because half of each LESP works in sanitary regulation and the other half in human samples diagnostic for epidemiological surveillance
- Federal: separate National Laboratories for Epidemiological Surveillance and Sanitary Regulation (different offices under *Secretaria de Salud*)
- **RLESP lab to lab differences: 1) infrastructure, 2) human resources, 3) organization, 4) general budget**

Work Flow chart of InDRE/RLESP in México



Defining Technical quality of work in the RLESP



“walking to excelency”

National Network of Public Laboratories

Evolution of performance index

- Analytic frame 27 algorithms
- Pro-efficiency panels in 2007 were for only 10 algorithm. 2010 26/27
- In addition of performance test we follow good standards service indicators
- Indicators are aligned to budget
- No more minimal performance index
- 16 laboratories in excellency range
- Influenza National performance index is >95% average
- InDRE is following evaluation program every month

ESTADOS	2008	2009	Region	DIFERENCIA
Aguascalientes	76.43	83.11	Centro	7
Baja California	65.27	71.12	Norte	6
Baja California Sur	70.72	76.21	Norte	6
Campeche	79.34	88.32	Sur	9
Coahuila	72.82	82.00	Norte	10
Colima	73.62	75.60	Centro	12
Chiapas	95.11	95.54	Sur	0.4
Chihuahua	78.02	86.83	Norte	8
Distrito Federal	0.00	0.00	Centro	0
Durango	80.97	83.42	Norte	3.5
Guanajuato	90.22	91.73	Centro	1.5
Guerrero	92.15	93.09	Sur	1
Hidalgo	94.43	95.54	Centro	1.1
Jalisco	92.84	93.18	Centro	1.7
México	75.64	76.51	Centro	1
Michoacán	87.63	87.88	Centro	0.2
Morelos	87.00	90.80	Sur	3.8
Nayarit	79.79	82.80	Norte	3
Nuevo León	91.41	90.94	Norte	MENOS 0.5
Oaxaca	90.98	90.18	Sur	MENOS 0.8
Puebla	93.57	92.14	Sur	MENOS 1.3
Querétaro	90.02	91.75	Centro	MENOS 1.7
Quintana Roo	87.78	88.90	Sur	2.2
San Luis Potosí	92.43	93.01	Centro	0.8
Sinaloa	70.51	83.60	Norte	12.9
Sonora	81.30	90.01	Norte	8.9
Tabasco	82.36	92.21	Sur	10
Tamaulipas	83.31	88.08	Norte	4.8
Tlaxcala	91.59	92.15	Centro	1
Veracruz	94.36	95.54	Sur	0.9
Yucatán	80.95	83.10	Sur	2.9
Zacatecas	87.76	92.39	Norte	4.6
Nacional	81.20	84.72		3.5

Epidemiological Surveillance of Influenza in México before AH1N1 2009 pandemic

What did we have?

Surveillance since 2001. Organized sentinel epidemiology surveillance (SISVEFLU) since 2006, reinforced in 2008.

On line report from epi jurisdictional offices (no from clinical units).

InDRE was already a National Center for GISN- WHO. CDC Influenza division was our collaborating Center in this system.

Network of Influenza diagnostic (26/31) state PH lab, based on IF and WHO algorithm. EQA *to Network* by InDRE (federal) to PHSL and CDC to InDRE. In addition to Hong Kong panels

InDRE had end point PCR, Real Time PCR and virus isolation protocols. Only 6 PHSL in addition to InDRE with end point PCR protocols

Subtyping, viral isolation and further characterization only by InDRE

Two years training program in biosecurity and biosafety by LRN and biosafety CDC, in addition of PHAC, personnel

BIDs, EWIDs, IPIPI programs

Epidemiological Surveillance of Influenza in México before AH1N1 2009 pandemic

Limitations	Problematic
<p>Low adherence to SISVEFLU (less than 30%). FLU Diagnosis network based on IF. Very limited sampling never reaching year goal.</p>	<p>National Epidemiological Surveillance of Influenza was limited</p>
<p>Report based on manual paper work (separate questioner from lab and epi) and manually loaded to the IT system at the epi jurisdiccional office.</p> <p>Delay to report: 3-4 weeks. Delay to refer samples 1.5 months.</p>	<p>Delayed identification of the ambulatory cases and we detected when we saw the increased severe cases</p>
<p>Absence of protocols to characterize possible new virus</p>	<p>Full characterization of Influenza positive cases centralized to InDRE also limited to define new virus</p>
<p>No BSL3 facilities at InDRE, only at one PHSL (Veracruz).</p>	
<p>The National System of epidemiological Surveillance (SINAVE) not connected to daily or weekly direct hospitalized report</p>	

Immediate changes in the Influenza Epidemiological Surveillance System in Mexico as a consequence of pandemic influenza response in 2009

- Use of preparedness and response plan for pandemic influenza as baseline activity for all the areas within Public Health Sector.
- SISVEFLU change to mandatory active surveillance to every public clinic in the country and private hospitals
- Daily zero reporting of hospitalization and deaths due to ILI/SARI
- *The initial severity risk assessment was misinterpreted because we were focused in the tip of the iceberg “severe cases”*
- Review, update, diffusion and implementation of new guidelines for epidemiological surveillance including laboratory: case definition, sampling, diagnosis new algorithm, reports etc.
- Implementation of a new epidemiological informatics system including laboratory results.

Changes in FLU Laboratory Network in response to AH1N1 pandemic 2009

- Logistic to develop a TOTAL NEW INFLUENZA laboratory NETWORK around the country: 1) defining protocols, 2) training, 3) purchasing equipment, supplies and reagents, 4) standardizing questioner to asses minimal requirements to include Laboratories in this networks, 5) LIMS,6) EQA
- Major weakness handling laboratory data and deliver of results to epidemiologist and clinicians in less than 48-72 hrs.
- **GREAT NORTH AMERICA PARTNERSHIP: Influenza Division CDC (US) and NML (PHAC)**

What do we have now for FLU surveillance?

Sentinel Surveillance:

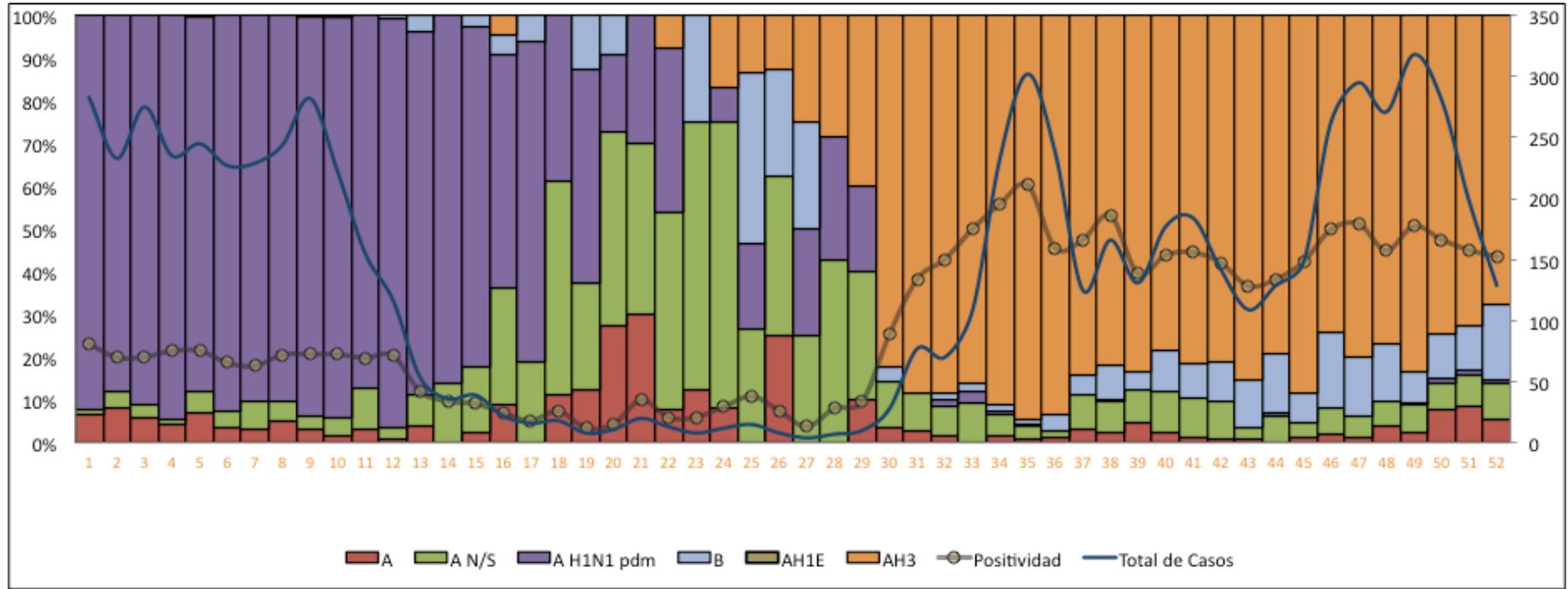
- Back to sentinel surveillance
- Define new sentinel units to get information for ambulatory and hospitalized cases
- New informatics system (real time) web based coming from sentinel clinical units, epi and lab
- Working in ICS implementation with detailed SOPs

Laboratory surveillance

- InDRE 28 PHSL
- IMSS 4 centers
- ISSSTE 2 centers
- INNSZ, INER , INSP
- 4 PHSL doing end point PCR
- InDRE and 2 PHSL for viral isolation
- InDRE subtyping, molecular characterization, antiviral susceptibility analysis,
- InDRE seroprevalence analysis
- Other virus differential diagnosis PHSL, IF. InDRE, Luminex- Bioplex platform.

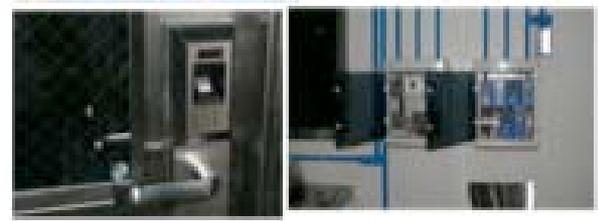
**42 centers
capable to run 5000
samples per day
Federal government
invested 40 million
dollars in Epi
surveillance and lab
improvement**

Influenza Epidemiological Sentinel Surveillance System in México



- Epidemiological surveillance works in an integrate system Epi and Laboratory
- 650 influenza sentinel units (monitoring hospitalized and ambulatory cases)
- Laboratory testing is based on all SARI/ILI hospitalized cases in the sentinel units and 10-20% of the ambulatory cases. In addition samples from possible outbreaks
- If the ambulatory cases per sentinel units are 10 or less per week, all the cases will be tested.
- We are reporting GISN- WHO and CDC Influenza division as our collaborating Center in this system.

Two years and half of training BSL3 accomplish and on going National Biosecurity plan





DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

APR 21 2010

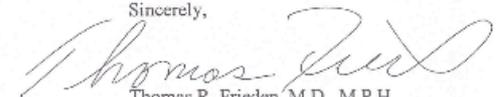
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C.P. 11340
Del. Miguel Hidalgo.
Mexico D.F.
MEXICO

Dear Dr. Alpuche:

On behalf of the Centers for Disease Control and Prevention (CDC), I extend my congratulations to the Instituto de Diagnóstico y Referencia Epidemiológicos for advances you have made in the capacity and capability to detect biologic threat agents and for becoming a partner and member of CDC's Laboratory Response Network. Such public health achievements further strengthen the bioprotection strategy for Mexico, North America, and the world.

I thank you for your ardent dedication and I look forward to our continued collaboration in addressing public health challenges.

Sincerely,



Thomas R. Frieden, M.D., M.P.H.
Director, CDC, and
Administrator, Agency for Toxic Substances
and Disease Registry

Changes in the Influenza Epidemiological Surveillance System in Mexico as a consequence of pandemic influenza response in 2009

- Share information helped us to a better response during pandemic and to be much better prepare for a future one
- To share information to the international community, it is essential to develop harmonized standards (quality, indicators etc) to be sure everybody is talking in the same “language”, particularly in initial risk assessment
- Risk assessment is a dynamic situation
- Share open and transparent information also have harmful consequence (closing borders, travel warning, trade threats etc.)
- Risk communication of our information was a an important weakness during pandemic 2009 and it is not still way

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What happened with the integrated approach with animal and wild life influenza surveillance?

- In the preparedness and response plan for pandemic influenza it was described to reinforce the link of Animal, wild life and human influenza surveillance but there were no detailed SOPs and as a consequence there was no implementation
- In the event crisis of pandemic AH1N1 2009 there was no joint work with SAGARPA (Secretary of Agriculture, Ranching, Rural development, Fisheries and Food Supply) and SEMARNAT (Secretary of Environment and Natural Resources)
- There has been a good work in influenza surveillance in both SAGARPA and SEMARNAT wild life in México but very limited interaction with Secretary of Health

What happened with the integrated approach with animal and wild life influenza surveillance?

- An initiative of Epidemiological Surveillance group started 6 months ago to create a link between the influenza epidemiological surveillance system and the animal and wild life
- Technical working group: DGEPI, InDRE, SAGARPA and SEMARNAT (Wild Life)
- Objective: to review the technical, legal and policy context, current barriers and opportunities to develop, cross-sectorial sharing influenza surveillance

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- **Pandemic influenza 2009, Lessons-learned priorities**

Priorities (Surveillance) and lessons-learned

- There was a preparedness and response plan for pandemic influenza but there was a weakness in detailed implementation of SOPs
- Early warning system based on syndromic surveillance is important for opportunity of the response facing unknown diseases
- Integrated approach of the epi and lab is essential to provide representative, quality and quick information for a better response
- We need to guarantee the quality of the information
- Risk assessment must follow well defined national and international standards to avoid under or overestimation of the situation and the impact on global health

Priorities (Surveillance) and lessons-learned

- Risk management and communication are key element to face a public health threat and they change over the time
- Collaboration with national and international partners is a key element for a better response
- Integrated and cross-sectorial approach of routine surveillance and response in the local areas within the country level will help to improve quality information and protection for global health
- R&D and friendly IT systems are essential for a better response
- Open and transparent sharing information systems on a routine manner is essential to protect global health
- Full implementation of IHR