

Supporting the Biosafety and Biosecurity efforts in the North Hemisphere:


Mexico's history, perspectives and challenges with biological safety


MSc. Luis Alberto Ochoa Carrera

May 11th, 2021


HOW BIG IS THE LATAM REGION?




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“Different perspectives”

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Emerging infectious diseases


- ☐ H1N1 Influenza (2009)
- ☐ Cholera outbreak (2013)
- ☐ Chikungunya outbreak (2014)
- ☐ Emergency preparedness and response against Ebola outbreak in West Africa (2014 – 2016)
- ☐ Zika and Measles outbreaks in the Americas Region (2016)
- ☐ Dengue outbreak in (2019)


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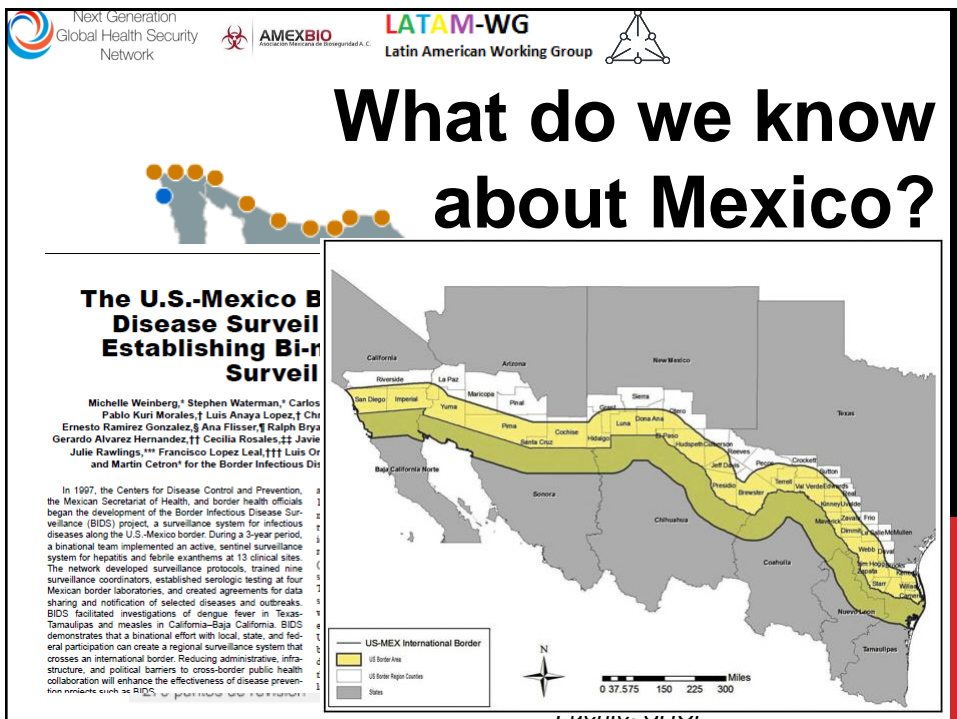
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The impact of biosecurity in the region




- Global health

Including:

- Researchers
- Physicians
- Public health officials
- Community health workers
- and anyone else who could encounter a dangerous pathogen.

US/MEXICO REGULATIONS & GUIDANCE

	US	Mexico
Select Agent Regulations	✓	
NIH Guidelines	✓	
Convention of Biological Diversity (Parties)		✓
Nagoya Protocol (Parties)		✓
Biological Weapons Convention (Parties)	✓	✓
Emerging Technologies Guidance/Regulations	✓	
Transport of Infectious Substances according to WHO/IATA Guidelines?	✓	✓

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...ne national reality.....




Re: [Tab] Busqueda de cepa de Burkholderia pseudomallei

Subject: Fwd: [Tab] Busqueda de cepa de Burkholderia pseudomallei

...alguien que le explique que eso es un select agent tier 1!!!!
----- Mensaje reenviado -----
De: <fedetab@bq.unam.mx>
Fecha: 15 mar. 2017 6:22 AM
Asunto: [Tab] Busqueda de cepa de Burkholderia pseudomallei
Para: <tab@laguna.fmedic.unam.mx>
Cc:

From:
Estimados colegas: Requerimos la donacion o intercambio de una *Burkholderia pseudomallei* para la estandarizacion de distintas tecnicas de identificacion de esta bacteria a partir de muestras clinicas.
Por favor comunicarse con el Dr. XXXX.
Gracias de antemano
Atentamente
Dr. XXXX Lab. Bacteriologia Experimental, Instituto XXX

Tab mailing list
Tab@laguna.fmedic.unam.mx

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What was the status with biosecurity in Mexico and Latin America in the past years?

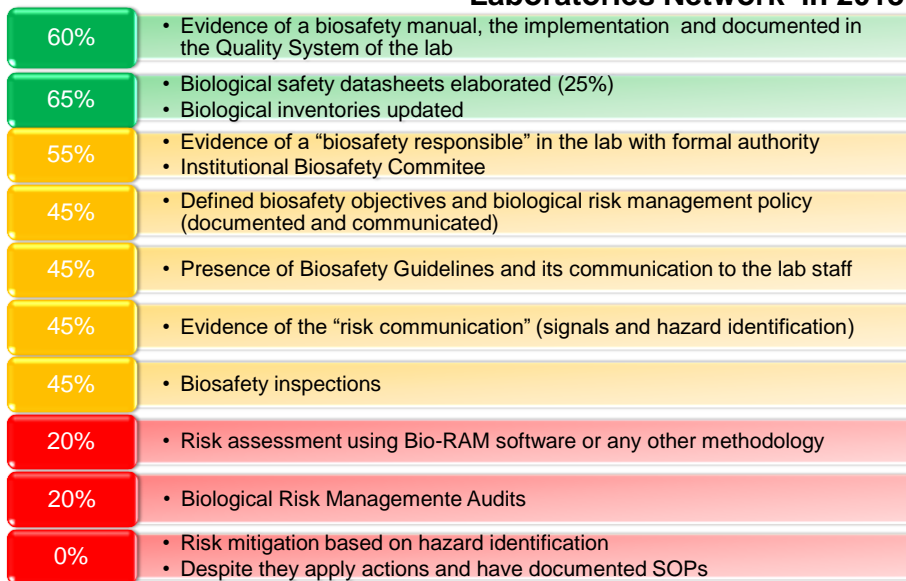
Lack of :


- a) Funding
- b) Training
- c) Personnel assigned to “biosafety-biosecurity tasks”
- d) Interest in the topic
- e) Opportunities for “knowing more about the topic”

What is the current situation with biosecurity in Mexico and LA (cont.)


- LA region shares a lot of similitudes.
- Increase on the implementation of biosafety but are do they have the same impact with biosecurity?
- “Barriers” need to be eliminated → “risk communication” and resources management.

Status of the Public Health Laboratories Network in 2013






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What has Mexico being doing.....




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The National Reference Lab: InDRE

- Several efforts have been done to promote biosafety at a local and national level (*since 2009 to date*)

Event	Place/Date	Results obtained
Biosafety and Biosecurity Workshop 3 courses	LESP Veracruz 2008, 2009 y 2010 CDC y EWIDS	23 LESP 10 InDRE
Biological Risk Management Workshop 3 courses	Mexico City May 2011; WHO/PAHO October 2011; CDC/EWIDS June 2012; InDRE	38 LESP 3 InDRE
Infectious Substance Shipping Certification Course (IATA/PAHO)	InDRE November 2011 WHO/PAHO	15 LESP 8 InDRE
Biosafety and Biosecurity Basics in the Laboratory	InDRE November 2011 WHO/PAHO	15 LESP 8 InDRE
Other training: Maintenance of Laboratory Equipment	InDRE, February 2011	31 LESP, Maintenance responsables





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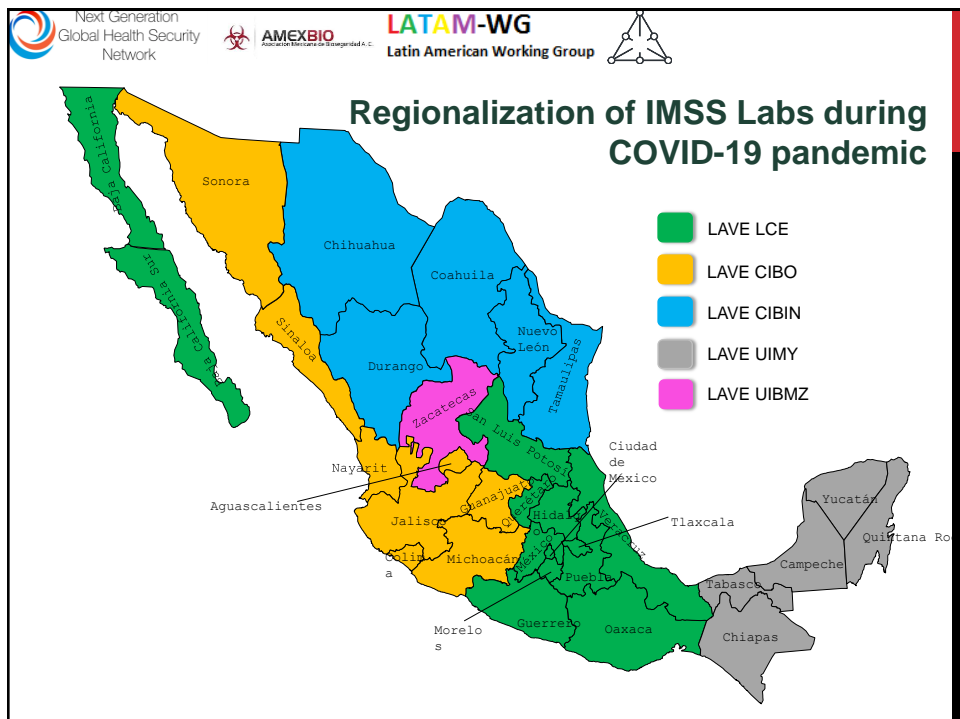
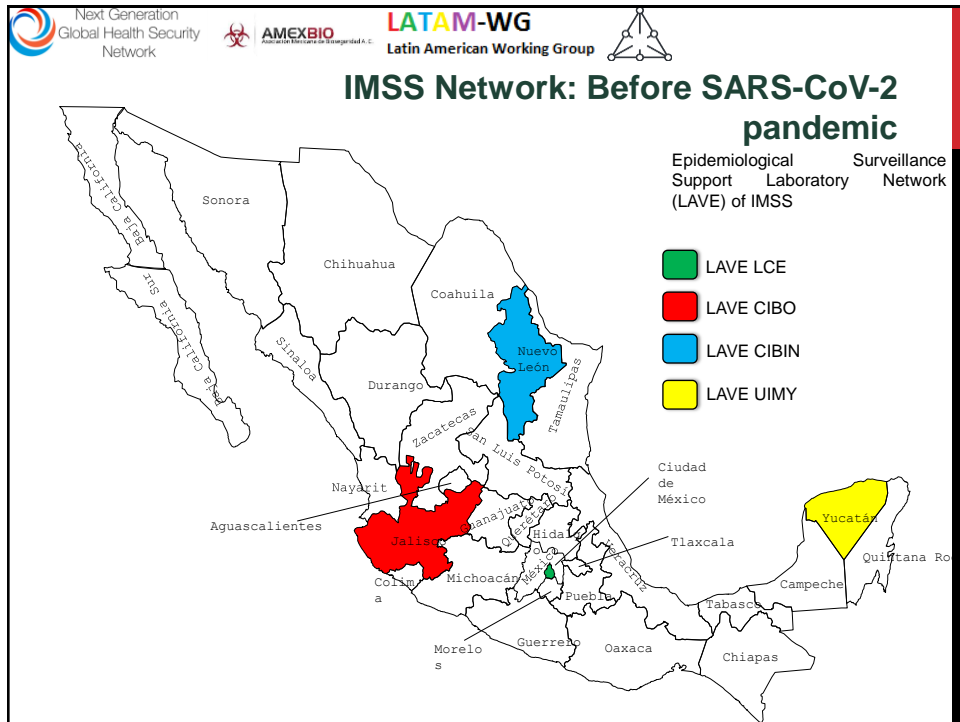
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Commitments acquired in the RNLSP about Biological Risk Management Implementation Plan in the RNLSP:

Actions/Strategies	Date
Communication of the workshop objectives to the local and appropriate authorities	July 2011
Creation of the Biological Risk Management Policy	July 2011
Training of the staff in the Public Health Laboratories	August 2011
Elaboration of biological safety data sheet (HDSB) and update of the biological inventories by institution	October 2011
Internal audits and formal supervisions	October 2011
Creation of biosafety and biosecurity manuals	December 2011 y May 2012 respectively
Risk Assessment Evaluation (BioRAM)	December 2011
Implementation of actions for risk mitigation (documented procedures)	December 2011
Promotion of the responsibilities of the biosafety responsables	December 2011
Creation of the figure of the "biosafety responsible" with sufficient authority to carry out the engaged actions	December 2011
Re-evaluation of the bio-risk	January 2012


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<h2>How big is the challenge?</h2>													
<p>A <u>normal day</u> at IMSS"</p>													
<ul style="list-style-type: none"> ~ 758,657 clinical analysis* ~ 50,335 emergency interventions* ~ 56,319 radiodiagnosis studies* 													
<p><input type="checkbox"/> 54 blood bank labs.</p>													
<p><input type="checkbox"/> 1,504 1st Level Medical Units (MU), 246 2nd Level MU, and 36 3rd Level MU.</p>													
<p><input type="checkbox"/> More than 400,000 workers!</p>													
<p><small>*Source: Dirección de Prestaciones Médicas (DPM), IMSS</small></p>													



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Obtained results.....

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Current Status of the Public Health Laboratories Network

80%	• Evidence of a biosafety manual, the implementation and documented in the Quality System of the lab
91%	• Biological safety datasheets • Biological inventories updated
89%	• Evidence of a "biosafety responsible in the lab with formal authority" • Institutional Biosafety Committee
90%	• Defined biosafety objectives and biological risk management policy (documented and communicated)
85%	• Presence of Biosafety Guidelines and its communication to the lab staff
75%	• Evidence of the "risk communication" (signals and hazard identification)
75%	• Biosafety inspections
85%	• Risk assessment using Bio-RAM software or any other methodology
92%	• Biological Risk Management Audits included in the Q.S. inspections
89%	• Risk mitigation based on hazard identification

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Participation of strategic areas in Mexican Government



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AMEXBIO perspective

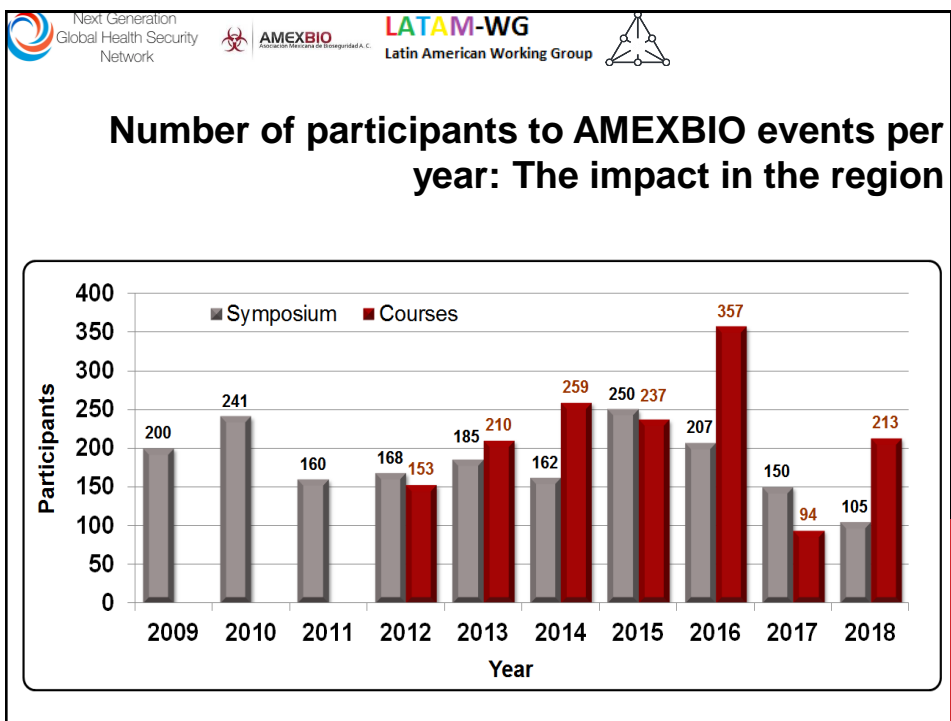
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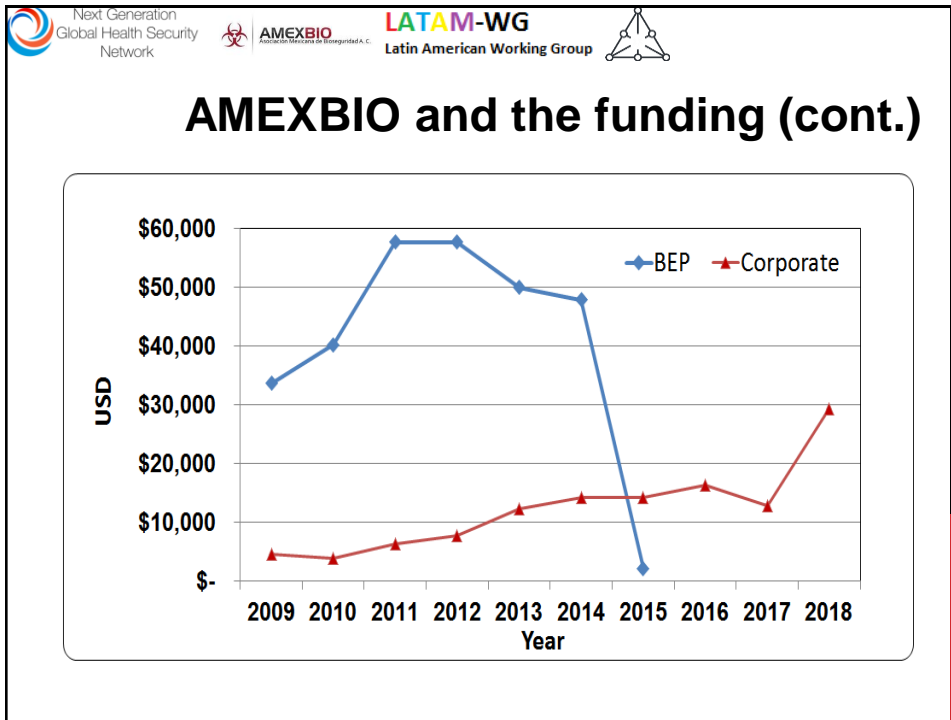
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AMEXBIO accomplishments

- Mexican Guidelines for the Biological Risk Management based on the CWA:15793 Standard
- Strategic partnerships with AnBIO, ABSA International, EBSA, IFBA and more....
- Participation in Conferences of Biosafety/Biosecurity worldwide



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AMEXBIO SIBB AND THE PARTICIPANTS

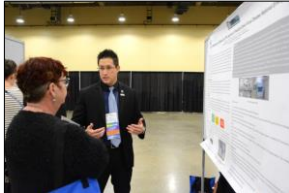

Multidisciplinary group from health sciences with impact in national or international trayectory.

- *National*
- *International*

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AMEXBIO accomplishments (cont.)

- Participation with the ISO Technical Committees
- Participation with Sandia National Laboratories
- Strategic collaboration with the Mexican Space Agency
- Partnership with ASU for strengthening the biosafety and biosecurity in the border.

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Biosafety and Astronautics

Luis Alberto Ochoa Carrera

2nd. Space Medicine Congress
September 24, 2016
Guadalajara, Jalisco, Mexico.

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IFBA/AMEXBIO accomplishments (cont.)





 Biorisk Management	 Biosecurity	 Biological Waste Management	 Biosafety Cabinet Selection, Installation and Safe Use	 Biocontainment Facility Design, Operations & Maintenance
6				1


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ASU/AMEXBIO accomplishments (cont.)





<https://mexico.asu.edu>



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Other Mexican Strategies

Here are the winners of a free IFBA professional certification exam:



Carolina Becerril Esquivel, Mexico
 (Safe handling of SARS-CoV-2 samples, Molecular
 Diagnostic Laboratory, Mexican Social Security
 Institute)

Other Mexican Strategies



«Harley Protocol» Canine therapy for healthcare staff in the middle of COVID



Future biosafety and biosecurity challenges in Mexico and in the region

- Continue identifying and categorizing vulnerabilities
- Evaluation of technical competences
- Strengthen existing biosafety and biosecurity measures at institutions

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Future challenges of biosecurity in Mexico and in the LA region (cont.)


- Continue core mission and vision
- Create strategic alliances among “experienced biosafety professionals” for strengthening the strategic planning in the region



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Conclusions

- ☐ We have done a lot...
- ☐ We need to do more...
- ☐ We need to do it better...



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“Facing the problem in our labs”

COVID-19

Visible (Above Water):

- Politics
- Changing environment

Hidden (Below Water):

- Climate change
- Regulations
- Social determinants
- Healthcare infrastructure Hospitals, Clinics & Existing Labs
- Emerging technologies
- Social media
- Training and experience
- Sustainability
- Supplies
- Operations and maintenance
- Lessons learned & past events
- Other epidemiological surveillance of transmissible and non-transmissible diseases

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