

**HIV Drug Resistance Technical Cooperation
Network for Latin America and the Caribbean**

2013 Activity Report





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Introduction

The emergence and transmission of HIV drug resistance (HIVDR) in the context of Universal Access to antiretroviral therapy (ART) is a major challenge, not only from the point of view of effectiveness of treatment in individuals taking antiretroviral (ARV) medications, but also of the population-based effectiveness of National ART Programs and their sustainability. HIVDR surveillance and control strategies should be prioritized in countries scaling up universal access to ART in order to monitor the potential threat of resistance and timely act with evidence based public health actions to prevent the spread of resistant HIV strains at population level and preserve long-term effectiveness of treatment.

Since 2004, the World Health Organization (WHO) and HIV-ResNet¹ partners have been developing a public health strategy to prevent and assess HIV Drug Resistance in resource-limited countries and in the context of accelerated ART scale up.² In 2012 WHO published the first Global HIVDR report³ and the HIVDR strategy was revised and updated.⁴

Since the launch of the WHO HIVDR strategy, the implementation of WHO recommended surveys in Latin America and the Caribbean (LAC) has been limited. Nevertheless, recent systematic literature reviews show that in LAC about 7% of individuals with HIV infection and without previous exposure to ARV drugs harbor mutations which cause a certain degree of resistance to antiretroviral drugs (Frentz *et al*, 2012; Pineda-Peña *et al*, 2012).

¹ More information on the WHO HIV ResNet are available in the WHO web site:
<http://www.who.int/hiv/topics/drugresistance/hivresnet/en/>

² More information on the WHO HIVDR strategy are available in the WHO web site:
<http://www.who.int/hiv/topics/drugresistance/en/index.html>

³ WHO HIV drug resistance report 2012. Document available at:
<http://www.who.int/hiv/pub/drugresistance/report2012/en/index.html>

⁴ WHO global strategy for the surveillance and monitoring of HIV drug resistance 2012. Document available at:
http://www.who.int/hiv/pub/drugresistance/drug_resistance_strategy/en/index.html

In March of 2013, a group of experts from LAC, the United States and Canada came together in Brasilia, Brazil, for a three days Technical Consultation to discuss and advance key recommendations towards scale up of HIVDR surveillance based on quality controlled genotyping and harmonized methodology and with the ultimate goal of improving the Regional response to the HIV epidemic.⁵



Considering the technical capacity and expertise of human resources available in the Latin American and Caribbean Region, one of the overall recommendations from the Brasilia Consultation mentioned above was that horizontal technical cooperation should be promoted to assist countries with limited capacity and resources in the development of national protocols and implementation of HIVDR surveillance. In addition, the revised WHO strategy should be considered as a reference for harmonized methodology and surveillance of pre-treatment and acquired resistance surveillance were identified as a priority for the Region.

⁵ Technical Consultation on HIV Drug Resistance Surveillance in Latin America and the Caribbean Region. Meeting report available at: http://www.paho.org/hq/index.php?option=com_content&view=article&id=8761%3Aconsulta-tecnica-sobre-la-vigilancia-de-la-resistencia-del-vih-en-la-region-de-america-latina-y-el-caribe&catid=4738%3Afch-events&Itemid=39650&lang=en



It was in this context that the HIV Drug Resistance Technical Cooperation Network (TCN) for Latin America and the Caribbean, or HIVDR TCN LAC, was created with the main objective of supporting the implementation of HIVDR surveillance and strategic use of HIVDR data in the region.



Technical Cooperation Network

The Network is an international collaborative initiative that gathers technical expertise and mobilizes resources to support the implementation of HIVDR surveillance in Latin American and Caribbean countries.

Purpose

Improve the quality of life of people living with HIV in LAC prolonging effectiveness of treatment and minimizing emergence and transmission of resistance.

Main objective

Support the implementation of HIVDR surveillance and strategic use of HIVDR data for public health policies and actions in LAC.

Specific objectives

1. Discuss technical and methodological issues related to HIVDR surveillance from a regional perspective.
2. Share knowledge and information among partners to harmonize the methodological approach to HIVDR surveillance and data analysis in LAC, allowing comparisons and contributing to global HIVDR data.
3. Share experiences, technical challenges and their solution among partners for enhanced implementation of HIVDR surveillance in the region.
4. Provide technical support to countries in LAC for the development and strengthening of laboratory capacity for HIV genotyping, including quality assurance.
5. Provide technical support to countries in LAC for the adaptation of WHO HIVDR surveillance protocols and their implementation at country level.

6. Provide technical support to countries in LAC for training of human resources on interpretation and use of HIV genotyping for clinical monitoring.

Membership

- International health cooperation agencies;
- WHO Global HIV Genotyping Network accredited laboratories and other HIVDR Specialized Laboratories in LAC (not accredited or under accreditation);
- Universities and Research Centers specialized in HIVDR surveillance;
- HIV/Aids National Programs;
- Representatives of subregional/regional coordinating mechanisms;
- Other HIVDR Experts.

Structure

The Network has 3 specialized branches: Laboratory branch, Epidemiology branch, Clinical branch. Each branch is coordinated by a Network member institution, identified on a voluntary basis and with a 12 month rotation of duty.

1. **Laboratory branch** providing technical support for lab capacity building and HIV genotyping, including quality assurance (Branch coordinator in 2013: *Centre Hospitalier Universitaire – CHU - de Fort-de-France, Martinique*).

Specific activities of the Lab branch:

- HIV genotyping and viral load to support countries in the implementation of national HIVDR surveillance activities.
- Workshops/Laboratory based hands-on training on HIV genotyping for lab personnel from LAC countries.
- Technical cooperation missions to support the implementation of HIV genotyping at laboratory level.
- Transfer of laboratory technology/capacity among TCN laboratories.
- External Quality Assessment for national labs in the region.

2. **Epidemiology branch** providing technical support for HIVDR surveillance protocol development and implementation, epidemiological analysis and public health use of data (Branch coordinator in 2013: Pan-American Health Organization - PAHO).

Specific activities of the Epi branch:

- Dissemination of new WHO protocols with HIV National Programs in LAC
- Workshops/training on HIVDR surveillance methodology (based on new WHO protocols and Brasilia recommendations) for HIV National Program epidemiologists from LAC countries.
- Technical cooperation missions, or remote technical support, for protocol adaptation for national HIVDR surveillance and HIVDR data analysis.
- Economic analysis/evaluation of the implementation of HIV genotyping for clinical monitoring (pre ART and on ART) in LAC.

3. **Clinical branch** providing technical support for training of human resources on interpretation and use of HIV genotyping for clinical monitoring and support for discussion of difficult cases (Branch coordinator in 2013: Infectious Diseases Research Centre of the National Institute of Respiratory Diseases – CIENI/INER – of Mexico City, Mexico).

Specific activities of the Clinical branch:

- Workshops/training on HIV genotyping interpretation and use for clinical monitoring for health care professionals attending patients with HIV on antiretroviral treatment.
- Regional forum for discussion of difficult cases.
- Web based platform for continuing education

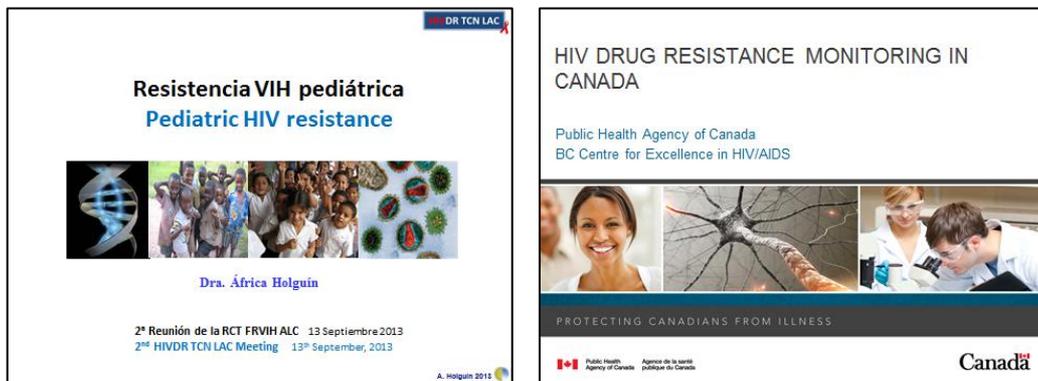
Activities in 2013

General activities

- Development of the terms of reference of the TCN.
- Virtual meetings:
 - 21st of August 2013. ⁶
 - 13th September 2013. ⁷
 - 28th November 2013. ⁸

As part of the meeting two special sessions on drug resistance were presented:

- *“Pediatric HIV resistance”* by Africa Holguin from the HIV-1 Molecular Epidemiology Laboratory at Ramón y Cajal Health Research Institute (IRYCIS) in Madrid, Spain.
- *“HIV Drug resistance Monitoring in Canada”* by Chris Archibald from the Public Health Agency of Canada in Ottawa, Canada.



⁶ The link to the recording of the session is:
<https://sas.elluminate.com/site/external/jwsdetect/nativeplayback.jnlp?sid=1110&psid=2013-08-20.0736.M.5EF4F28E38DAD698F77865E1534A4F.vcr>

⁷ The link to the recording of the session is:
<https://sas.elluminate.com/site/external/jwsdetect/nativeplayback.jnlp?sid=1110&psid=2013-09-13.0543.M.1BC839C524B0BA4B8BF53A3EC0770F.vcr>

⁸ The link to the recording of the session is:
<https://sas.elluminate.com/site/external/installinfo/playback?sid=1110&psid=2013-11-28.1014.M.1BC839C524B0BA4B8BF53A3EC0770F.vcr>

- TCN Coordinators meeting: 27-28th November 2013 in Mexico City, Mexico with participation of PAHO (Epi branch coordinator), WHO, CDC/Guatemala, CIENI/INER (clinical branch coordinator) and CHU (lab branch coordinator).
- Definition of the structure of the TCN web page to be hosted in the PAHO web site in 2014.

Laboratory branch

- In the second semester of 2013 a capacity/needs assessment was performed collecting detailed information from network member laboratories to support the definition of the 2014 technical cooperation plan (page 16).
- Strengthening of DBS-based HIV genotyping capacity through transfer of technology between network member labs. Two professionals from the Laboratory of AIDS and Molecular Immunology of the Oswaldo Cruz Foundation-FIOCRUZ in Rio de Janeiro, Brazil, were trained on DBS-based HIV genotyping in August 2013 at the International Laboratory Branch of the Division of Global HIV/AIDS of the Centers for Diseases Control and Prevention (CDC) of the United States in Atlanta. Two professionals from the CIENI/INER Laboratory received the same training in Atlanta in December 2013.

Epidemiological branch

- The following technical documents on the WHO HIVDR surveillance strategy are being translated to Spanish for dissemination in Latin America and the Caribbean:
 - WHO HIV drug resistance report 2012 ⁹
 - WHO global strategy for the surveillance and monitoring of HIV drug resistance 2012 ¹⁰
 - Using early warning indicators to prevent HIV drug resistance. Meeting report: Assessment of WHO HIV drug resistance early warning indicators,

⁹ English version already available at:
<http://www.who.int/hiv/pub/drugresistance/report2012/en/>

¹⁰ English version already available at:
http://www.who.int/hiv/pub/drugresistance/drug_resistance_strategy/en/

report of the Early Advisory Indicator Panel meeting (11-12 August 2011)

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These documents will be available in Spanish in 2014.

- Dissemination of WHO documents at key regional events involving HIV program managers:
 - Regional launch for Latin America and the Caribbean of WHO Consolidated Guidelines for antiretroviral treatment and prevention of HIV infection from a public health perspective in Buenos Aires, Argentina (26-28th of August 2013). On the occasion of this regional meeting, the revised WHO HIVDR surveillance strategy and Brasilia recommendations for HIVDR surveillance in the region were presented to the Horizontal Technical Cooperation Group (GCTH).
 - PANCAP meeting in Guadalupe November 2013.

In the second semester of 2013, two subregional workshops were held:

- ***“Workshop on HIVDR surveillance methodology for South American Countries”*** on 28-30th of October, 2013, in Lima, Peru.
 Organization and technical support: PAHO/WHO, Oswaldo Cruz Foundation-FIOCRUZ, Federal University of Rio de Janeiro, National HIV Program and Ministry of Health of Peru.
 Twenty-one participants from national HIV programs and Ministries of Health of South American countries attended the workshop: Brazil, Argentina, Uruguay, Paraguay, Chile, Colombia, Peru and Bolivia.
- ***“Workshop on HIVDR surveillance methodology for Central American Countries and Mexico”*** on 25-27th of November, 2013, in Mexico City, Mexico. Organization and technical support: PAHO/WHO, CIENI/INER, CHU Fort-de-France.

¹¹ English version already available at:
http://www.who.int/hiv/pub/meetingreports/ewi_meeting_report/en/

Fifteen participants from national HIV programs and Ministries of Health of Mexico, Central American countries and Spanish speaking Caribbean attended the workshop: Panama, El Salvador, Guatemala, Honduras, Costa Rica, Cuba, Dominican Republic, and Belize.



The workshops had the following objectives:

- Support the development of harmonized protocols for pre-treatment drug resistance (PDR) and acquired drug resistance (ADR) surveillance according to WHO recommendations.
- Share challenges and coping strategies among countries for protocol adaptation and HIVDR surveillance implementation.
- Discuss a harmonized analytical framework for the analysis of drug resistance data and use of data for public health actions.
- Discuss methods of analysis of programmatic data to assess PDR and ADR (HIV genotyping and viral load data).

Participating countries recognized the priority of implementing PDR surveillance and ADR surveillance, which includes both ARV naïve and ARV pre-exposed¹² first-line initiators.

These workshops gave the opportunity to present the new WHO HIVDR protocols for PDR and ADR surveillance and for countries to assess and discuss their feasibility in the national context. In addition, countries performed a practical exercise of definition of a nationally representative sampling frame, HIVDR surveillance site selection and sample size calculation. WHO developed a user friendly Excel-based sample size calculator that is available to support study design at country level. The most recent version of this tool includes a special calculator for countries with a small population of ART initiators (finite population adjustment) and few ART sites.

Almost all countries succeeded in completing the nationally representative sampling frame/site selection/sample size exercise, which confirmed the methodological feasibility of these new HIVDR surveillance protocols in the Latin American region. Only few countries which could not provide national data on people starting ART per year and their distribution among ART site during the workshop, could not finalize the exercise.

Common technical cooperation needs for HIVDR surveillance:

- Financial support for HIV-genotyping at country level, or HIV genotyping performed by labs accredited to the Global WHO HIVDR Lab Network.
- Access to an External Quality Assurance program for HIV genotyping for national laboratories not accredited to the Global WHO HIVDR Lab Network.
- Establish technical support (ex. twinning) between national laboratories and laboratories accredited to the Global WHO HIVDR Lab Network to strengthen lab capacity for HIV genotyping in countries (DBS based genotyping; In-House technology; etc.).
- Define Standard Operating Procedures (SOPs) for Quality Assurance/Quality Control to be shared and used by national laboratories.

¹² ARV pre-exposed individuals who re-start first-line treatment after a treatment interruption of more than 30 days. These individuals have a higher risk of harboring HIVDR mutations because of previous and possibly irregular exposure to ARV drugs.

Based on the practical exercise and country working groups performed during these two workshops, a tentative HIVDR surveillance implementation plan was defined for 2014.

Pre-treatment Drug resistance Surveillance Plan 2014.

Subregion	Country	Year	Genotyping Lab (tentative)
Southern Cone	Brazil	2014	RENAGENO Network
	Argentina	2014	National lab
	Paraguay	nd (2014)	British Columbia Centre of Excellence
	Uruguay	nd (2014)	British Columbia Centre of Excellence
	Chile	2014	national Lab (ISP)
Andean	Ecuador*	nd (2014)	INH
	Venezuela*	nd	nd
	Colombia	2013/2014	National lab
	Peru	2014	National lab
	Bolivia	2014	Mesoamericano (CIENI)
Central America	Guatemala	2014	Mesoamericano (CIENI)
	Honduras	2014	Mesoamericano (CIENI)
	El Salvador	2014	Mesoamericano (CIENI)
	Panama	2014	Mesoamericano (CIENI)/Gorgas
	Costa Rica	nd (2014)	Mesoamericano (CIENI)
	Nicaragua*	nd (2014)	Mesoamericano (CIENI)
	Mexico	nd	nd
Caribbean	Belize	2014	Mesoamericano (CIENI)
	Dominican Republic	nd (2014)	nd (Mesoamericano/CIENI)
	Cuba	2013/2014	National Lab

* The country did not participate in the workshop.

Acquired Drug resistance Surveillance Plan 2014.

Subregion	Country	Year	Genotyping Lab (tentative)
Central America	Guatemala	2014	Mesoamericano (CIENI)
	Panama	2014	program data
	Costa Rica	2014	program data
	Honduras	2014	Mesoamericano (CIENI)
	El Salvador	2014	Mesoamericano (CIENI)
	Nicaragua*	nd (2014)	Mesoamericano (CIENI)
Caribbean	Belize	2014	Mesoamericano (CIENI)
	Cuba	2014	program data
	Dominican Republic	nd (2014)	nd (Mesoamericano/CIENI)

* The country did not participate in the workshop.

Clinical branch

In the second semester of 2013 a capacity/needs assessment was performed collecting detailed information from network member institutions to support the definition of the 2014 technical cooperation plan (page 16).

Proposed activities in 2014

The activities proposed in this chapter are based on the capacity/needs assessment performed in 2013, as well as technical cooperation needs expressed during the two subregional HIVDR surveillance workshops mentioned in the previous chapter. The activities listed below do not necessarily have a defined source of funding at the moment. In 2014, technical and financial resources for each specific activity will be identified among partner institutions from the Network.

General activities

- Virtual meetings: every 2 months with technical-scientific sessions (rotation of responsibility):
 - Feb/Aug (Lab branch)
 - Apr/Oct (Epi branch)
 - Jun/Dec (Clinical branch)
- Annual face-to-face meeting of branch coordinators (Nov/Dec 2014).
- Elaboration of Network Activity Report 2013 (e-publication)
- Development and launch of Network web-page (hosted within the PAHO web-site)
- Proposed scientific production (2014)
 - Update of literature review on pre-ART resistance (PAHO)
 - Molecular epidemiology of HIV (based on results from new studies in 2014)
 - Association of resistance with possible socio-demographic and epidemiological determinants (based on results from new studies in 2014)

Epidemiology branch

- Workshop on HIVDR Surveillance Methodology for Caribbean countries (Port-of-Spain, Trinidad and Tobago, date to be defined). Organized by PAHO/WHO with support of partner institution and Network members, such

as CDC/PEPFAR; PANCAP; Public Health Agency of Canada, CHU Fort-de-France, etc.

- Translation of WHO documents into Spanish and their dissemination, including new WHO protocols to be launched at CROI (March 2014).
- Document “Tool-kit for HIVDR surveillance for national program managers”. This document will summarize the 2012 WHO HIVDR strategy, the new 2013 HIVDR surveillance protocols, the Brasilia recommendations and will provide guidance for program managers about prioritization, planning, implementation, analysis and use of HIVDR data from a public health perspective.
- Development of a project proposal for a Regional HIVDR Observatory (to be submitted for funding in 2014).

Laboratory branch

- Provide HIV Genotyping for HIVDR surveillance (see Table on page 14 and 15).
- Support national labs, not accredited to WHO Global HIVDR Lab network, with External Quality Control for HIV genotyping. EQC project to be developed in 2014 on a regional/subregional basis.
- Support national labs seeking WHO accreditation for HIV genotyping: lab assessment and support for capacity building and quality improvement of HIV genotyping capacity (ex. Chile, Panama, El Salvador, Costa Rica, etc.).
- Training/transfer of technology among Network labs (ex. DBS genotyping; in House genotyping).

Clinical branch

- Access to training material on HIV developed by Network member institutions focusing treatment failure and HIV genotyping for patient monitoring (technical documents, power-point presentations, pod-casts, etc.) available on the Network web-page.
- CIENI/INER activities available for external participants:



- Multidisciplinary workshop on HIV (5 days duration) in México (financial resources for external participants to be identified).
- Workshop pod-casts available.
- Availability of specialized professionals for in-country training on specific topics.
- Virtual session/Webinars.
- Monthly case discussion forum via webinar. For other countries, interested in implementing this activity at national level, external participants will initially participate as observers; at a second stage meetings on specific country cases will be organized; and finally the activity will be transferred to each country.
- Rotation in CIENI on specific topics.

Annex – List of members in 2013

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