Laboratory networks

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RESAOLAB
Presentation Outline

- Definition of a laboratory network
- The Goal of a laboratory network
- Mechanisms for strengthening laboratory networks
- Types of laboratory networks
- Guide to developing laboratory networks
- Example of National Laboratory Network of Burkina Faso
- Example of West Africa Laboratory Network (Resaolab)
Definition of a laboratory network

1. A national public health laboratory network is composed of laboratories at each level of the health system (health center, district, regional/provincial, national, private labs) committed to the proper diagnosis of priority diseases for public health decision making.
Definition of a laboratory network

2. The laboratories in a functional laboratory network have established communication channels for routine communication, exchange of information, and interaction in specified ways with each other, and with epidemiology departments.

3. The national laboratory network may also communicate and interact as necessary with sub-regional, regional and international networks.
Laboratory Network = Solidarity between labs
The Goal

Provide strategic advice and share expertise to strengthen the performance of laboratories
Mechanisms for strengthening laboratory networks

- improved quality assurance through accreditation & proficiency testing programs, implementation of validated standard laboratory procedures

- provision of training for laboratory personnel
Mechanisms for strengthening laboratory networks

- provision of supplies and equipment
- linking of laboratory data and activities to surveillance
- promotion of national self-sufficiency and sustainability of laboratory services
Types of Lab Networks

1. GEOGRAPHIC NETWORKS

- National Lab Networks
- Sub regional Lab Networks
- Regional Lab Networks
- Global Lab Networks
Types of Lab Networks

2. NETWORKS OF SPECIFIC ACTIVITIES

- Networks for all Lab activities (Transversal Networks)
- Specialized Networks (Vertical Networks)
  - Vaccine preventable disease Networks
  - Specific disease Networks
  - Animal Health Laboratory Networks
  - Chemical threats Networks
The Seven Steps to Building a Statewide Laboratory Network

1. Identify the team who will lead the development of the laboratory network
2. Define the purpose, preliminary short-term goals, long-term vision, and potential benefits of the network
3. Develop a broad proposal for your administration
The Seven Steps to Building a Statewide Laboratory Network

4. Plot your course (You should begin by defining the membership and making the initial laboratory contacts)

5. Identify the potential needs and resources for the development of the laboratory network
The Seven Steps to Building a Statewide Laboratory Network

6. Make contact with your potential partner laboratories

7. Select and conduct your network development activities
Example: National Laboratory Network of Burkina Faso

- 160 public and private laboratories
Laboratory Network Coordination

- Laboratory Directorate (MoH)
Policy (National Strategic Plan, 2007)
Objective of the National Strategic Plan

- To strengthen the laboratory sector of Burkina Faso though 3 keys elements:
  - Training for laboratory personnel
  - Quality management
  - Linking of laboratory data and activities to surveillance
Activities of the lab Network of Burkina Faso
1-Training for laboratory personnel
Development of a national continuing training plan
Training of trainers

- Identification and joint development of training modules
Renovation of a national and 3 regional centers for continuing training
Training of laboratory personnel

Regional training Center of Bobo-Dioulasso
2-Quality management
Development of a Laboratory Quality Plan
Development of National Lab standards

Handbook for Good Lab Practices

Standards for lab infrastructures, equipment and activities by level

Maintenance guidelines
Implementation of a National External Quality Assessment (NEQA) Program

Carried out through the following steps:

- **Preparation and validation of proficiency testing panels** (identify correctly the status of samples, assess the reproducibility of the sample production)

- **Distribution of NEQA panels** (adequate conditions of storage (cooler, ice-box, slide box), transport (MoH vehicles, postal, private transport companies))
Implementation of a National External Quality Assessment (NEQA) Program

- Collection of the participating laboratories results (private transport companies, e-mails, or fax, MoH missions) in a time frame of 2 weeks

- Analysis of results (training of data managers)
Implementation of a National External Quality Assessment (NEQA) Program

- **Report and feedback to participating labs**
  Each individual report displayed a participating laboratory’s results, expected results and score/appreciation given by the expert committee, performance of all the other participating laboratories (without identifiers), commentary on wrong results, description of the problems encountered by the laboratory and corrective actions to be taken. Each individual laboratory report is confidential.
Implementation of a National External Quality Assessment (NEQA) Program

- Publication of an anonymous general report

Illustration 1: Laboratories' performances by area from 2006 to 2010

Areas of the EQA:
- Biochemistry
- Bacteriology
- Parasitology
- Hematology
- Immunology

Percentage of satisfactory results

- 2006
- 2007
- 2008
- 2009
- 2010
Implementing Stepwise Laboratory Improvement Process Towards Accreditation (SLIPTA):

- Graduated process to improve Quality

- Common initiative of:
  - WHO
  - US centers for disease control (CDC)
  - and African society of laboratory medicine (ASLM)
Sharing SLIPTA tools

SLIPTA Technical Guidelines

WHO SLIPTA Guidance
- Laboratory quality improvement process & implementation
- Framework for countries to improve national laboratory services towards ISO 15189 standard

WHO SLIPTA Checklist
- Aligned with ISO15189 and CLSI Standards
- 12 sections of QSEs directly applicable to all laboratory settings
- Stars measure overall improvement - not linked to individual elements or section
Sharing SLIPTA tools
Laboratory accreditation

- Training of 20 lab assessors
- Training of 122 lab personnel (Quality management)
- Evaluation of Labs using WHO/Afro check-list
Evaluation of Labs using WHO/Afro check-list

- 6 National labs
- 9 Regional labs
- 18 District labs

Top score 1 Star
Evalution supported by WHO
3-Maintenance
Standards for lab infrastructures, equipment and activities by level
Maintenance Guidelines
Equipment standardization

ADVANTAGES

- Stock of tool kits (joint purchasing)
- Supply chain for reagents (central purchasing bodies or joint purchasing)
- Training
- Sharing between network members
4-Linking of laboratory data and activities to surveillance
Linking of laboratory data and activities to surveillance

- Joint definition of a common grid for laboratory data collection
- Rapid sample collection, confirmation and feedback to laboratories
Improvement of epidemiological data collection by using the LIMS to send data
Connecting lab personnel through meetings and workshops
Regional Networks
Example of RESAOLAB
- RESAOLAB is a West African laboratory network
- Covered 3 countries: Burkina Faso, Mali and Senegal from June 2009 – July 2012
- 4 more countries integrated from 2013: Benin, Guinea-Conakry, Niger, Togo
- First phase funded by Fondation Mérieux and the French Development Agency (in total 4 millions Euros), second phase additional funding from Stavros Niarchos Foundation, International Cooperation of Monaco and Islamic Development Bank
FIRST OUTCOMES OF RESAOLAB
1. Lab personnel Training

- Development of a continuing training plan for each country
- Development of 8 training modules
- Renovation of 12 national and regional continuing training centers
- Training of 31 trainers
- Training of at least 300 laboratory personnel per module
- Development of an e-learning platform
2. Quality Management

- Development of harmonized national Quality Plans in each member country
- Establishment of 3 EQA units
- Development and installation of LIMS “LAB-BOOK” in 45 laboratories
- Supervision of laboratory staff
- Performing of EQA surveys
3. Strengthening of the epidemiological surveillance system

- Joint definition of laboratory data to be collected and shared
- Improvement of epidemiological data collection by using the LIMS for data transmission
- Training of laboratory staff on epidemic-prone disease surveillance
4. Structuring a sub-regional laboratory network

- Through inter-country workshops,
- Meetings,
- Sharing of technical documents,
- Web portal (GLOBE), etc.
References


- Josette Najjar-Pellet, Jean-Louis Machuron, Flabou Bougoudogo, Jean Sakande, Iyane Sow, Christophe Paquet and Christophe Longuet
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