



# Laboratory Networks for Diagnosis and Surveillance of Communicable Diseases

**Ray R. Arthur, Ph.D.**  
**Communicable Diseases Surveillance and Response**  
**World Health Organization, Geneva**

**ICEID - Atlanta, 24-27 March 2002**

# Communicable Disease Surveillance

## Strategy

### Global/Regional Laboratory Surveillance

#### Disease Specific networks

(ARM, Influenza, CJD, Rabies, VHF)

#### Sub-regional networks

Other networks (other CCs, military, Pasteur Institutes etc.)

### Global/Regional Epidemiological Surveillance

#### Regional Surveillance Strategies

Epidemic Intelligence (outbreak verification team, GPHIN)

International Health Regulations (IHR) (under revision, pilot test in 21 countries)

### National Surveillance Systems

National Surveillance assessments and action plans  
Surveillance Standards (Surveillance Kit)

Laboratory Strength. Lyon

Field Epidemiology (TEPHINET, INCLIN)

#### International Preparedness & Response

(HER teams, rapid lab confirm. ICG, Cholera Task Force)

Preparedness & Response to Epidemics



# **WHO Communicable Disease Collaborating Centres**

- **Are part of a global network of institutions and laboratories which are formally designated by WHO in recognition of their specific expertise**
- **Work with WHO on the basis of agreed terms of reference and work plan**
- **Support WHO in its programs and activities at country, regional and global levels**
- **Play an important role in the strengthening of capabilities in developing countries**
- **Designation process - renewable every four years**



# WHO Communicable Disease Collaborating Centres

- **Over 200 centres to monitor bacterial, viral, parasitic and zoonotic diseases, emerging infections and drug resistant pathogens**
- **Institutions**
  - Central public health labs
  - Centres for disease prevention and control
  - National institutes of health
  - Hospital and health care institutions
  - Universities research and academic institutions
  - Pasteur institutes
  - Military laboratories
  - Multi-centre networks
  - Departments and programmes in the institutions not whole institution

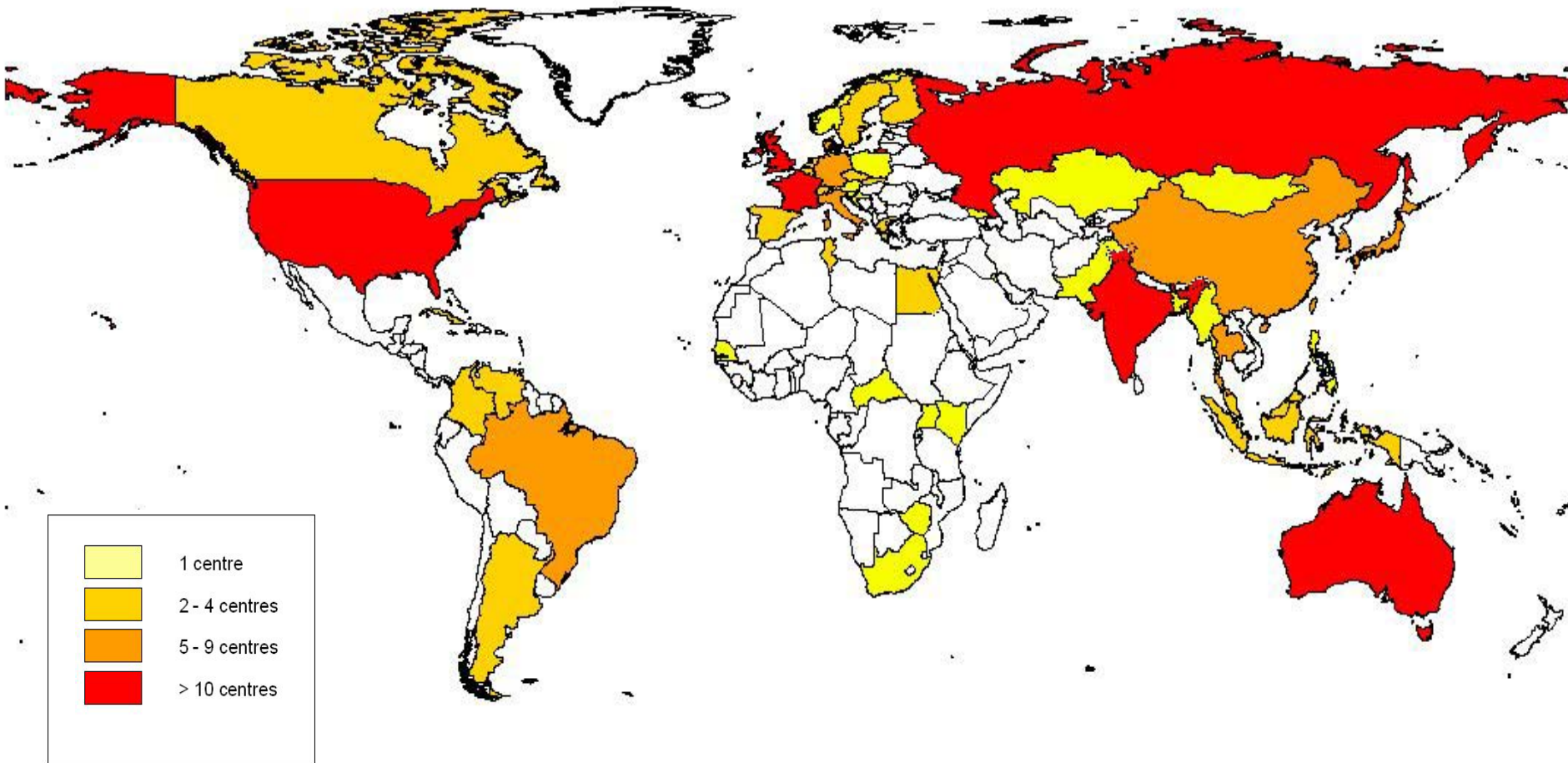


# WHO Communicable Disease Collaborating Centres

- Investigation, confirmation and control communicable diseases, surveillance, research, expert advice
- Laboratory diagnosis and characterization of strains/isolates (influenza network)
- Develop, improve and evaluate diagnostic assays
- Produce and supply diagnostic and reference reagents/strains other laboratories (arbovirus and VHF lab networks)
- Quality assurance (AMR and Drug resistance TB networks)
- Provide specialized training, develop training materials, and assist countries to build capacity and transfer technology

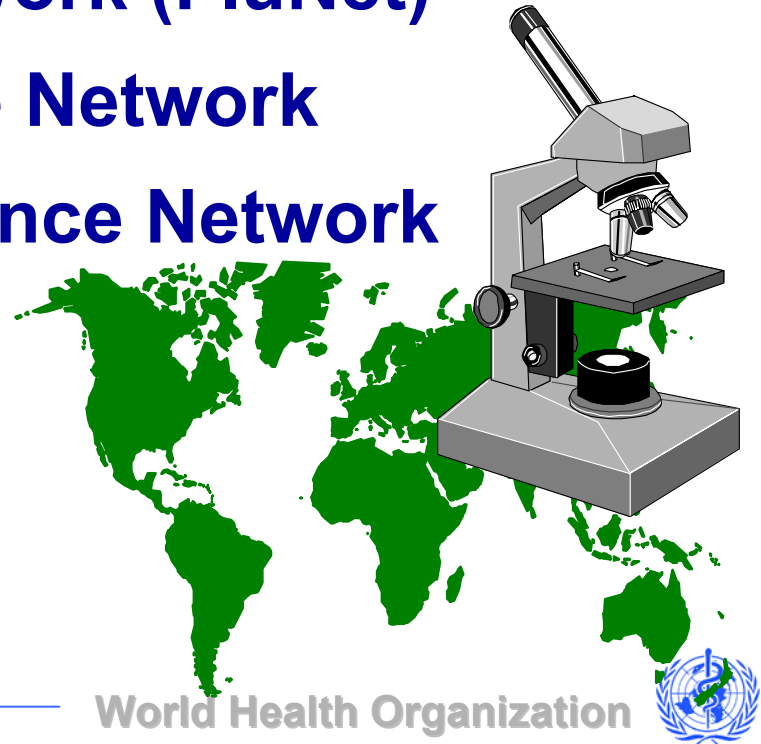


# Global network of WHO collaborating centres for viral, bacterial, parasitic and zoonotic diseases, emerging infections and drug resistant pathogens

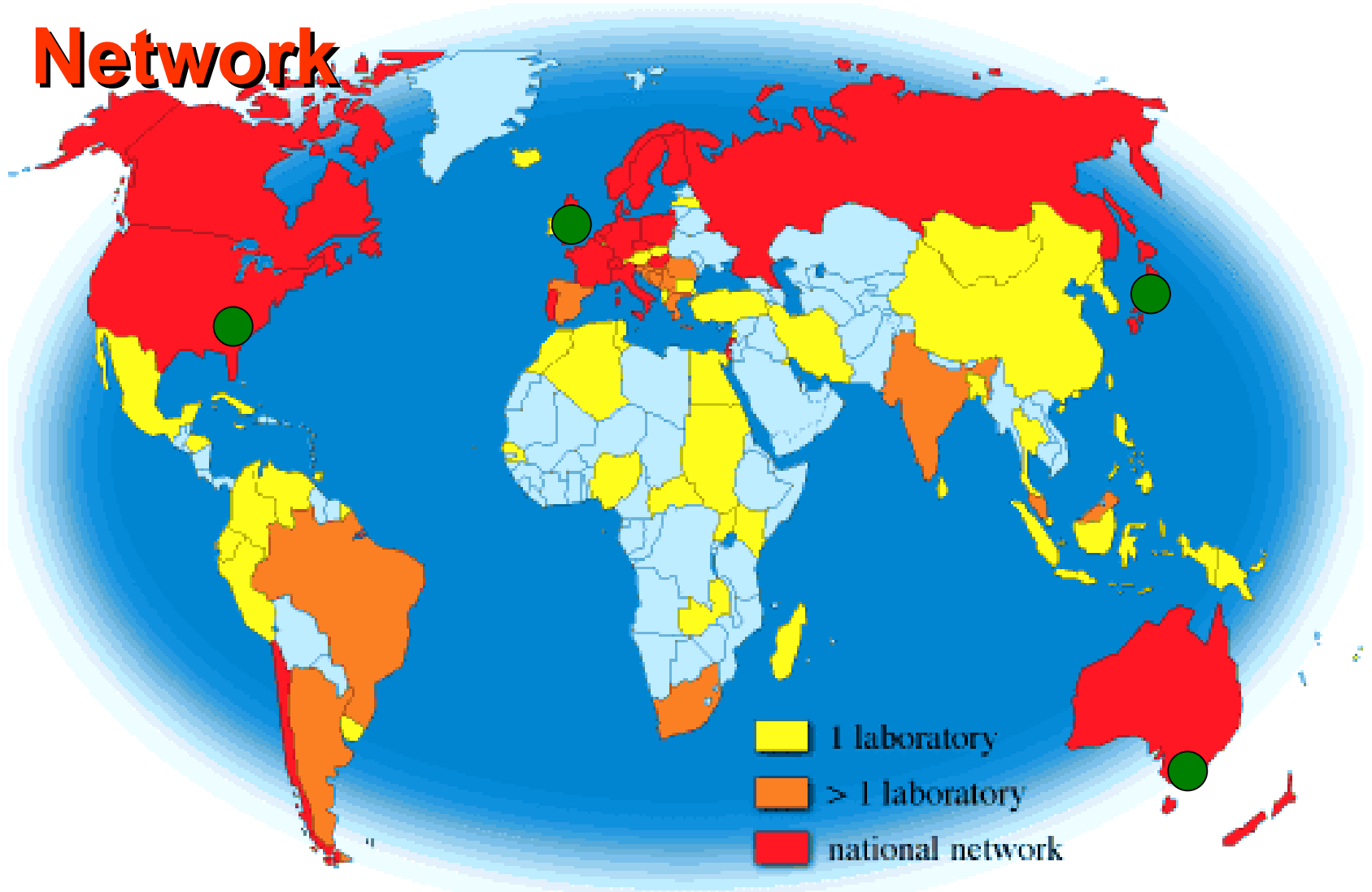


# WHO Collaborating Centre Specialized Networks

- Polio network
- Influenza laboratory network (FluNet)
- Antimicrobial Resistance Network
- TB Antimicrobial Resistance Network
- Salmonella Surveillance (Salm-Surv)



# WHO Influenza Surveillance Network

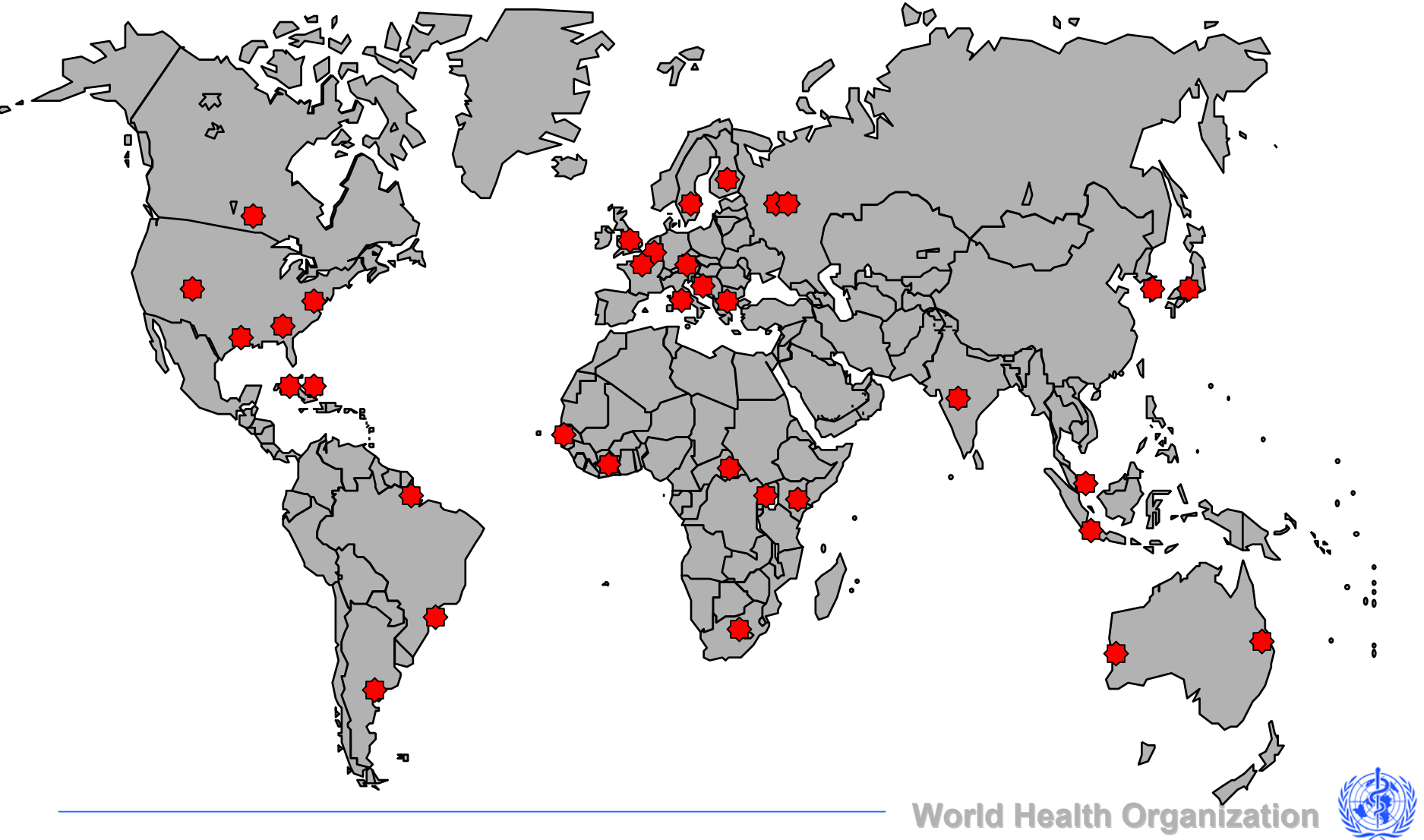


110 National Centres (83 countries)

● 4 WHO Collaborating Centres (for reference and research on influenza)



# WHO Collaborating Centres for Haemorrhagic Fevers and/or Arboviruses



# Global network of WHO collaborating centres and laboratories for communicable diseases working with CDS/CSR

## WHOCC NET

Global Network of WHO collaborating centres and laboratories for diagnosis and surveillance of communicable diseases

[Search](#)

[Data entry](#)

[WHO staff](#)

[Links](#)

[Info, Documents](#)

[WHO web site](#)



WHO CC Net was developed in collaboration with the Institut National de Santé et Recherche Médicale (INSERM Unit 444), Paris, France.

Comments or questions about WHOCCNET  
[dayaldragerr@who.int](mailto:dayaldragerr@who.int)

The World Health Organization links WHO's communicable diseases collaborating centres and laboratories working with CDS through WHOCCNet.

Financial support was provided by the Government of Japan and the Department of International Development of the United Kingdom.



# WHOCC NET

for diagnosis, surveillance, reagents, training of communicable diseases

- Search centres
- WHOCC Net Home
- Info, Documents
- Links
- WHO staff
- WHO Home
- Data entry
- CSR Home



Contact Information

Contact information:  
Address, contact persons, website

Centre Information

Terms of reference, annual report, scientific interests, publications

Diseases Pathogens

Diseases/pathogens/subjects areas, studied at centre

Technical Capabilities

- Technical Capabilities by disease/pathogen/subject
1. Laboratory diagnostic capability;
  2. Reagent production/supply capability;
  3. Surveillance/response capability;
  4. Training capability

QAQC

Quality Assurance and internal quality control

Back

**Searched centre:** Database Id: SENA181 Registry file: A18/286/2-SEN Region: AFRO

**Head:** Dr Christian Mathiot  
**WHO CCTitle:** WHO Collaborating Centre for Arbovirus Reference and Research  
**Institution:** Unité d'Arbovirologie Institut Pasteur de Dakar  
**Country:** Senegal  
**Email:** [mathiot@pasteur.sn](mailto:mathiot@pasteur.sn) **WebSite:** [in preparation](#)  
**Telephone:** 221 839 9220 / 00 **Fax:** 221 839 9210

Disease Pathogen Name	Technical capabilities	Nb
Arboviruses	Diagnostic Capability	14
Arboviruses	Reagent Capability	3
Arboviruses	Training Capability	1
Arboviruses causing haemorrhagic fevers	Surveillance Capability	1
Centre capability	Diagnostic Capability	10
Centre capability	Surveillance Capability	4
Centre capability	Training Capability	1
Dengue viruses	Diagnostic Capability	15
Dengue viruses	Reagent Capability	1
Dengue viruses	Surveillance Capability	1
Rift Valley fever virus	Diagnostic Capability	12
Rift Valley fever virus	Reagent Capability	1

# WHOCC NET

for diagnosis, surveillance, reagents, training of communicable diseases

- [Search centres](#)
- [WHOCC Net Home](#)
- [Info, Documents](#)
- [Links](#)
- [WHO staff](#)
- [WHO Home](#)
- [Data entry](#)
- [CSR Home](#)



### 1. Institutional Information

- [Disease Pathogen Subject](#)
- [Diagnostic Capability](#)
- [Surveillance Capability](#)
- [Reagents capability](#)

## Data Entry

Password protected remote data entry facility for each centre/laboratory to update/edit its own data

Login :

Password :

### 2. Technical Capability

- [Technical Capability](#)

### 3. Quality Assurance

- [QAQC](#)

To prevent unauthorized use of your WHOCC Net account **EXIT/QUIT ALL** of your Web browser sessions and windows when you finish.

# Next Steps

- **Assessment of technical and geographic gaps**
- **Identify possible additional centres and facilitate links**
- **Promote use of WHOCC Net (WHO staff, WHO CCs, Ministries of Health, Other public health workers)**
- **Link or add other networks and centres for communicable diseases to WHOCC Net**



# **Situation of Public Health Laboratories in Many Developing Countries**

- **Lack of capability to diagnose the identified priority diseases**
- **Lack of trained staff, funding, equipment, reagents, supplies**
- **Poor use of laboratory services**
- **Absence of standard procedures, quality control and supervision**
- **Absence of national reference laboratory in certain countries**
- **Weak link to epidemiological services**



**How can collaborating centres  
and other specialized laboratory  
networks strengthen and support  
diagnosis and surveillance of  
communicable diseases at national  
level?**





# **Suggested Work Process**

- **Select states/countries and regions**
- **List priority diseases for surveillance**
- **Conduct/review assessment data of national/state capabilities**
- **Develop detailed process algorithm for each level of health care, disease/syndrome, and laboratory**
- **Identify gaps**
- **Develop implementation plan to fill gaps**



# **Guidelines for establishing a network of nominated national laboratories**

- **Selection criteria for members**
- **Selection process**
- **Benefits of participation**
- **Leadership**
- **Technical partners**
- **Establish Standards**
- **Equipment Reagents Supplies**
- **Establish code of conduct for members based on standards**
- **Coordination between epidemiologists and laboratory staff**

