

# ROLE OF LABORATORIES IN OUTBREAK ALERT AND DETECTION

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Laboratory diagnosis is an essential element of communicable disease surveillance, both for **routine confirmation of infections** and for the rapid identification of the **cause of outbreaks and epidemics**.

# Some Basic Underlining Concepts - 1

Surveillance is the ongoing, systematic collection, analysis, and interpretation of health data.

It includes:

- ✓ the timely dissemination of the resulting information to those who need it for action.
- ✓ is the primary strategy for tracking emerging drug resistance in the population, allowing for early and appropriate action.

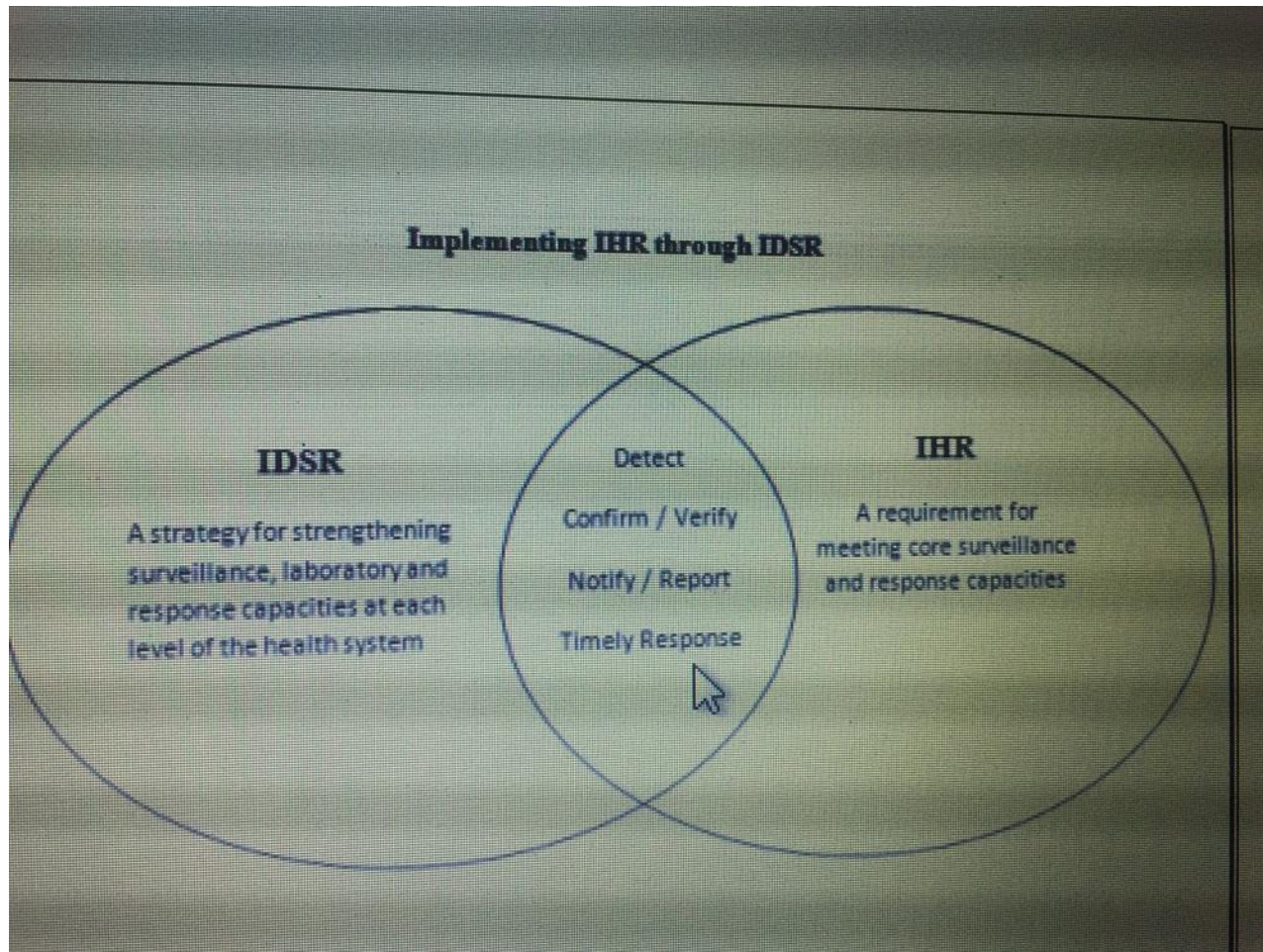
Countries should therefore strengthen their capacity for early detection and identification of organisms that cause diseases of public health importance.

# International Health Regulations (2005) - 2

- The IHR (2005) is not a separate surveillance system.
- Among the several requirements in the IHR (2005) is a call for strengthening of national capacity for surveillance and control of public health events of national and international concern.
- Member States in the African Region recommended that IHR (2005) be implemented within the IDSR framework.

# Role of the Laboratory in IDSR

The Regional Committee suggested that member countries take into account the development of laboratory services while strengthening disease surveillance systems.



# THE ROLE OF THE LABORATORY (PUBLIC HEALTH)

The role of the laboratory is to:

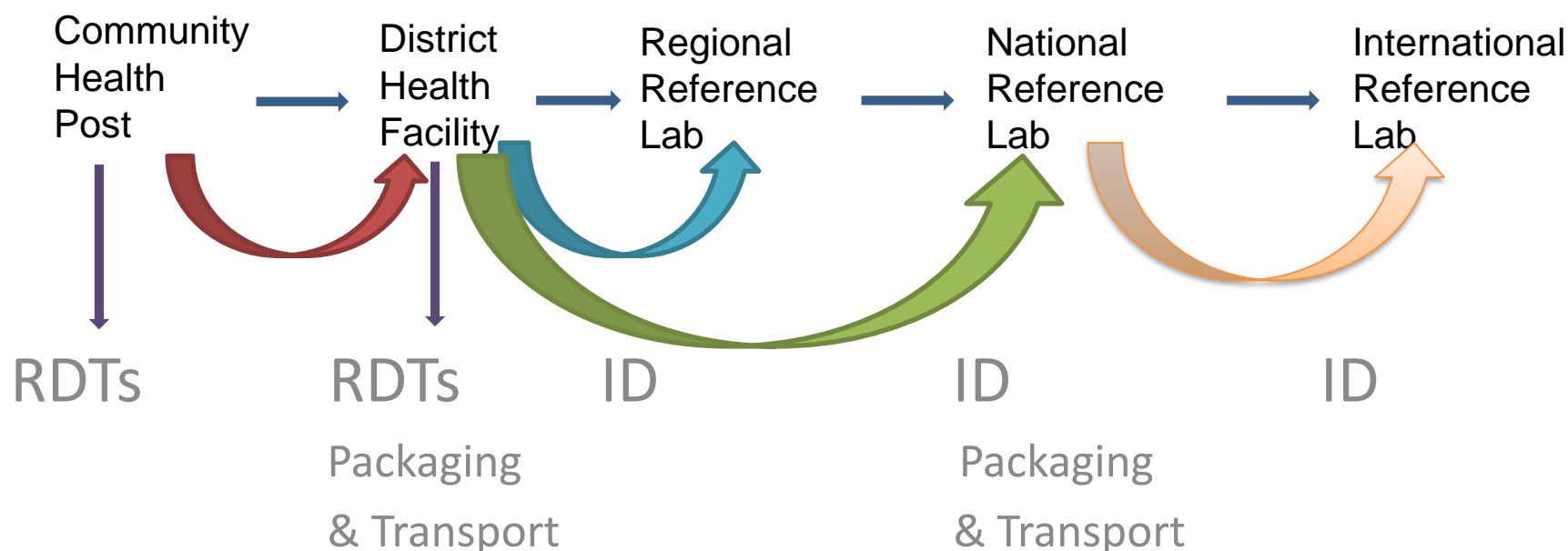
- **Monitor** causal bacteria
- **Identify trends** of causative disease pathogens
- Ensure effective **monitoring** of programmes (elimination/eradication programmes)
- Detect **new or re-emerging** pathogens
- Monitor **bacterial resistance** to antimicrobials

## Laboratory requirements

- Laboratory facility with adequate utilities
- Equipment, media & supplies
- Human resource (trained)
- Quality of service (IQC/EQA)
- Supervision

## ***Minimum requirements in the laboratory***

There should be at least one laboratory in each country with capacity to identify the most common causes of outbreaks in that country (e.g. cholera, meningitis, VHFs).




## Must have:

- An **adequate supply** of appropriate media, equipment and other materials

Issued : 5 needles / strip (20 strips)

5) Disposable Hypodermic needle (21G x 1½")  
 Lot # : 7N21205  
 Exp. date: 2022-12  
 Qty : 3 boxes x 100 needles

Date	Qty Received	Qty Issued	Balance
13-11-18	60 strips	3	57
13-11-18	—	1	56
13-11-18	20 strips	0	76

  
**Government of Sierra Leone**  
**Ministry of Health and Sanitation**  
**INVENTORY CONTROL CARD**

Item Code:		Item Description: <u>EDIA TUBES</u>			Location: <u>Kabala General Hospital, Calabar</u>			
Unit of Supply: <u>PACK</u>		Maximum Stock: <u>1 MONTH</u>		Minimum Stock:		EOP Stock:		
Date	Received From or Issued To	Quantity Received A	Quantity Issued B	Losses/Adjustments C	Quantity on Hand D = (A + C) - B	Quantity on Order E	Expiry Date	Remarks/In
22/10/18	Hosp. Stores	100	100	0	0		2022/10	
01/11/18	Hosp. Stores	800						











## Must have:

- **Staff trained** in laboratory investigations of the common causes of outbreaks in the country and able to produce reliable results (negative results; e.g. 'it is not cholera' are as important as positive).





	2033	mrs	Not seen	Sam
	2039	mrs	Not seen	Sam
	2037	mrs	\$2,480 / Early	Sam
2/08/18	2041	Sickling	Positive	Vandy
	2047	Sickling	Negative	Vandy
	2042	Sickling	Negative	Vandy
	2045	Sickling	Negative	Vandy
	2046	Sickling	Positive	Vandy
	2050	Sickling	Negative	Vandy
	2053	Sickling	Negative	Vandy
	2054	Sickling	Negative	Vandy
3/08/18	2059	mrs	Not seen	James
	2058	mrs	Negative Not seen	James
	2061	mrs	Not seen	James
	2061	Sickling	Positive	James
	2062	Sickling	Negative	Vandy
4/8/18	2048	Sickling	Negative	Sam
	20			
6/8/18	2065	Sickling	Negative	James
	2066	Sickling	Negative	James
	2069	Sickling	Positive	James
	2070	Sickling	Negative	James

23/08/18

Sickling - Vande

Positive Control - Positive

Negative Control - Negative

2230 Sickling Negative

2232 Sickling Positive

2228 Sickling Negative

2233 Sickling Negative

2236 Sickling Negative

2234 Sickling Negative

2237 Sickling Negative - Same

24/08/18 Vande

Positive Control - Positive

Negative Control - Negative

2241 Sickling - Negative

2244 Sickling - Negative

2246 Sickling - Negative

2250 Sickling Negative - Same

## SICKLING TEST - QC

\* Always ensure a POSITIVE sickling blood sample is available before the sickling reagent is prepared.

\* Prepare the sickling reagent according to SOP.

\* Perform the sickling test on two samples according to SOP:

- 1) Positive sample
- 2) Negative sample

\* Result:

POSITIVE sample - Sickled cells seen = POSITIVE

NEGATIVE sample - No sickled cells seen = NEGATIVE

Date	Positive Sample	Negative Sample	Result	Sign
21-11-2018	POSITIVE	NEGATIVE	PASSED	✓
22-11-2018	NEGATIVE	NEGATIVE	FAILED	✓ DISCON REAGENT
22-11-2018	POSITIVE	NEGATIVE	PASSED	✓

## Must have:

- Regular quality assurance.

**NHLS Blood Parasites PT Scheme**  
**SURVEY RESPONSE FORM 0218**

PTS LAB NO: 008      LABORATORY NAME: MAKENI REGIONAL HOSPITAL

CHALLENGE:	ANSWER CODE/S:	PARASITEMIA** (%):	CLINICAL HISTORY:	INSTRUCTIONS:
PB06/18 (Thick and Thin films)	<u>00</u>	<u>0</u>	Immunocompromised patient with fever and general malaise.	You have been provided with a thick and thin blood film. Please examine both films for parasites. <b>Do not record separate answers for thick and thin films. If appropriate, perform a parasite count on your thin film and express your count as a percentage, to one decimal place.</b>
PB07/18 (Paper challenge)	<u>SLIDE NOT AVAILABLE</u>		Mining engineer, returning from work contract in Papua New Guinea, with fever.	You have been provided with an image of a thin blood film. Please identify the parasites.
PB08/18 (Thick and Thin films)	<u>44</u>	<u>79960/μl</u>	A pregnant woman with fever in Barberton, Mpumalanga Province.	You have been provided with a thick and thin blood film. Please examine both films for parasites. <b>Do not record separate answers for thick and thin films. If appropriate, perform a parasite count on your thin film and express your count as a percentage, to one decimal place.</b>
PB09/18 (using PB08/18)	<u>SLIDE NOT AVAILABLE</u>		A pregnant woman with fever in Barberton, Mpumalanga Province.	If appropriate, perform a <b>thick</b> parasite count on PB08/18 and report results in parasites/μl.
PB10/18 (Thick and Thin films)	<u>00</u>	<u>0</u>	Blood transfusion recipient with fever and headache.	You have been provided with a thick and thin blood film. Please examine both films for parasites. <b>Do not record separate answers for thick and thin films. If appropriate, perform a parasite count on your thin film and express your count as a percentage, to one decimal place.</b>

**IMPORTANT INFORMATION**

- Please read the accompanying **instruction booklet** for detailed instructions.
- Codes for completion of the response form can be found in the **instruction booklet** (page 111).
- The closing date for Survey 02 2018 is **07 Sept 2018**.
- Submit results and queries to [parapts@nhls.ac.za](mailto:parapts@nhls.ac.za) or 086 225 2460.

**TEACHING SERIES:** You are provided with a teaching series on Trypanosomes.

## ***Minimum requirements in the laboratory cont....***

- Mechanisms established for sending to specialized international laboratories specimens for investigation and microbial isolates for further characterization.

✓ IATA training

✓ Airlines

❖ WAHO

- A functional data management system



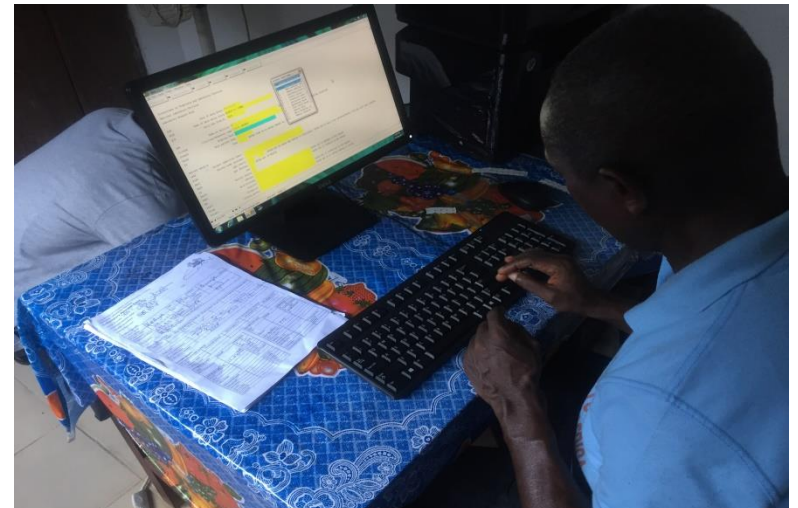
Surveillance & Laboratory collect sample(s)

DMO/MS

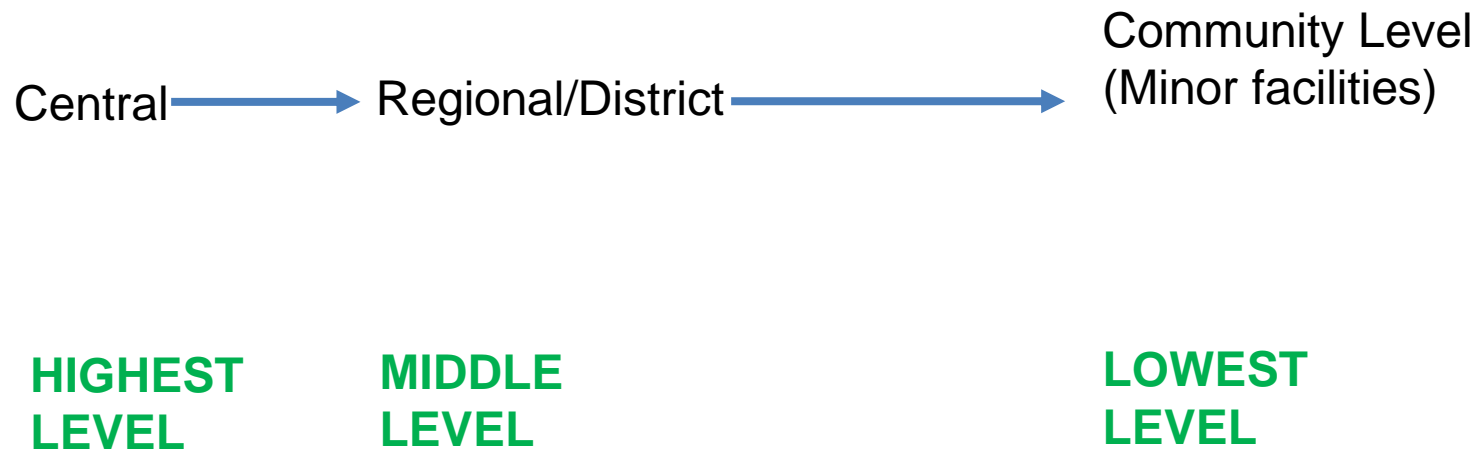
LABORATORY

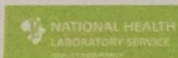
Reference Lab  
(National/External)

RESULT



- Supervision (supportive) – weak at all levels





NHLS Blood Parasites PT Scheme  
SURVEY RESPONSE FORM 0218

PTS LAB NO: 008

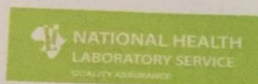
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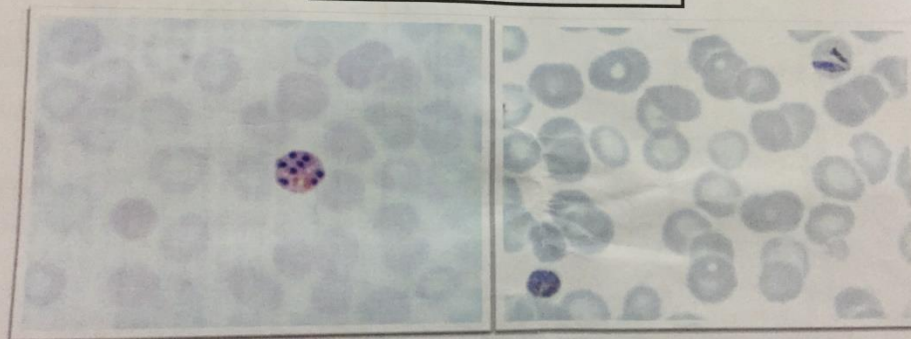
TEACHING SERIES: You are provided with a teaching series of



PT Scheme: NHLS Blood PTS

Challenge number: PB 07/2018

PAPER CHALLENGE



Micrographs of Giemsa-stained blood films (100x), for challenge: PB 07/2018.

[Micrographs taken at Quality Assurance Department, NHLS; not to be used for any purpose except in connection with this survey.]



## Review documents





## Provide trainings



# Role of Players

- Laboratorians
- Clinicians
- Surveillance
- International Partners
- Government

## **ACKNOWLEDGEMENTS:**

**Fondation Mérieux**

**The Government and People of Sierra Leone  
Ministry of Health and Sanitation, Sierra  
Leone**

# **THANK YOU**