

Vision and Perspective of a Country Without a BSL4 in Africa - Mozambique

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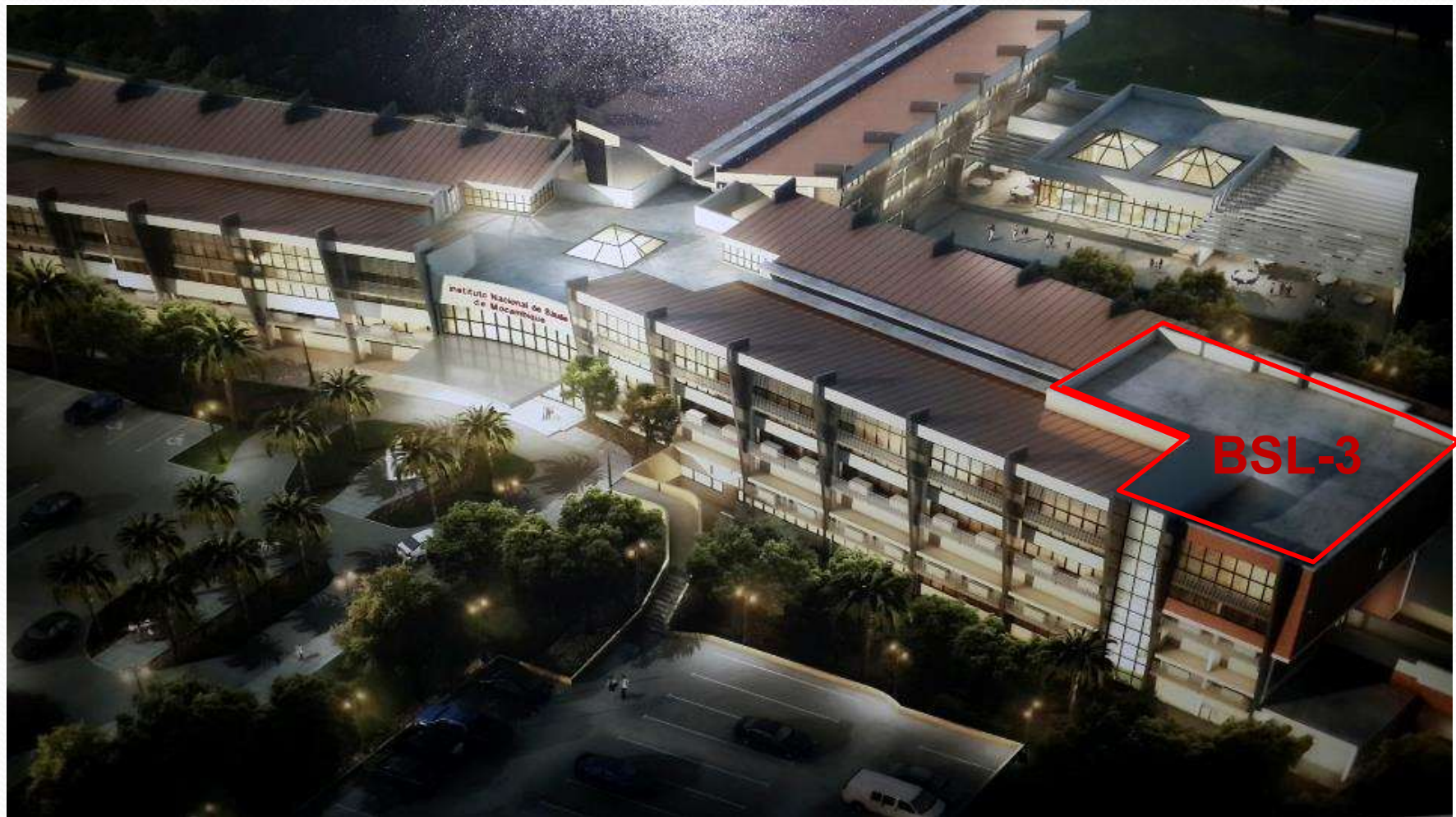
- The *Instituto Nacional de Saúde* (INS) is the entity that manages, regulates and supervises activities related to the generation of scientific evidence to guarantee better health and well-being of the Mozambican population. The INS has legal personality with administrative and technical-scientific autonomy:
 - Research
 - Reference Laboratory Services
 - Survey and Surveillance
 - Training, Education and Communication

INS building is a key to catalyze further institutional transformation

- Official opening in June 2018.
- Constructed area of 5,100 m² and can house 250 technicians/ scientists.
- Lower storey with administrative spaces in 34 rooms.
- Upper storey with laboratories in 42 rooms.
- Includes a BLS-3 laboratory, with an area of 220,0 m². The first in country.
- 3 TB reference labs (Maputo City, Beira and Nampula)



BSL-3 laboratory with one room for virus culture



BSL-3 laboratory (220 m²) with one room for virus culture



While there is no BSL4 capacity...

- Example of the Ebola preparation in 2019, when the WHO declared public health emergency of Ebola after more than 3000 cases were reported in DRC and there were a suspect case in Tanzania. Mozambique were in the list of countries at risk to be affected due to frequent travel of individuals from the affected countries.
- Ebola Outbreak Response National Plan was created (Basis for the initial Covid-19 response plan), with the aim of evaluating the level of institutional preparedness for collection, reception, testing and reporting lab results from suspected cases of Ebola.

Activities conducted during the preparation for the Ebola outbreak

- **Training and SOPs on:**
 - Safe handling of blood specimens (collection, packaging, transport and storage).
 - Sample preparation and testing (virus inactivation. workflow, processing and instrumentation).
 - Biosafety (proper use of PPE, safe disposal).
 - Sample workflow and lab workflow.
 - Lab testing using the GeneXpert equipment
 - Rapid response (alert and deployment)
 - **Simulation script.**

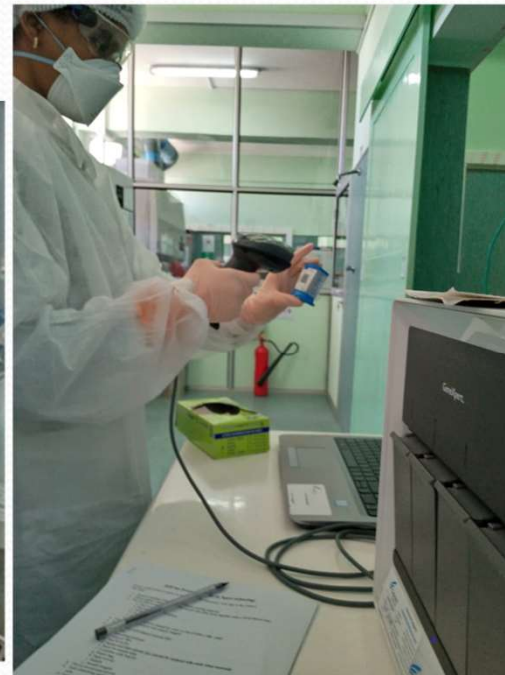
Simulation Script

	Activity	Place	Responsible
1	Sample collection	CISPOC	Vanessa Monteiro
2	Identification and sample packiging	CISPOC	Argentina
3	Lab communication	CISPOC	Argentina Muianga
4	Pick up CISPOC	CISPOC	Mulungo
5	Arrive in HCM	HCM	Mulungo
6	Reception and registration at LNRT	HCM	Justina Cambuie
7	Team get ready to samples processing (done PPE, autoclave start)	LNRT	Cheila Hamido & Diosdelio
8	Samples inactivation, at BSL2+. And pipette to GeneXpert Cartridge.	LNRT	Cheila Hamido & Diosdelio
9	Introduce to GeneXpert machine	LNRT	Cheila Hamido & Diosdelio
10	Disposal of contaminated material and preparation for sending the aliquot to the NICD	LNRT	Cheila Hamido & Diosdelio
11	Reading the result	LNRT	Cheila Hamido & Diosdelio
12	Result validation	LNRT	Carla madeira
13	Notification Dr. Nédio e/ou Dra. Sofia	LNRT	Carla Madeira
14	Notification Dr. Eduardo e/ou Dr. Ilesh		Dr. Nédio e/ou Dra. Sofia
15	Sample shipment to the NICD for confirmation	LNRT	Sadia, Ângelo e Almiro



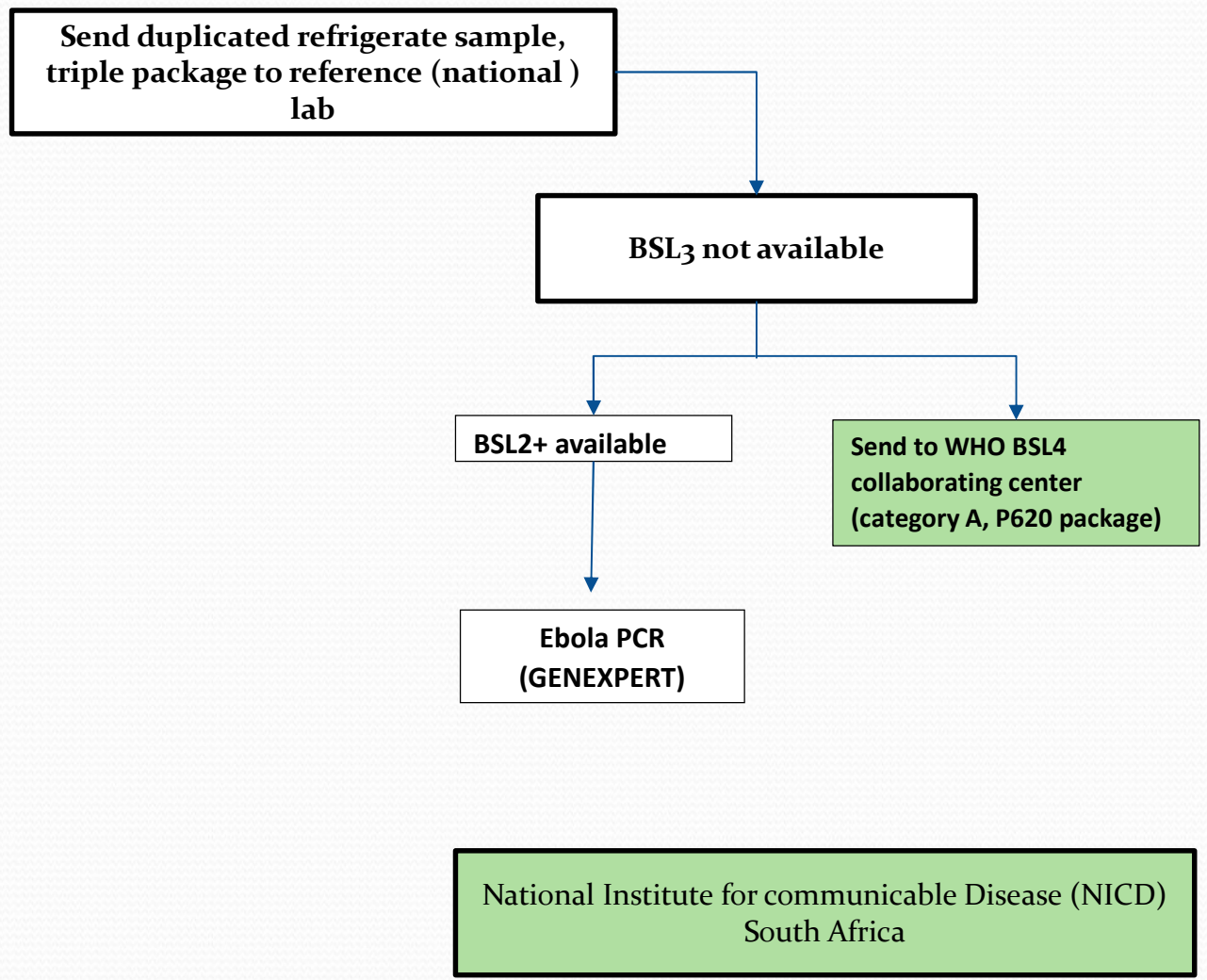
**Meeting with
Directorate**

Lab testing

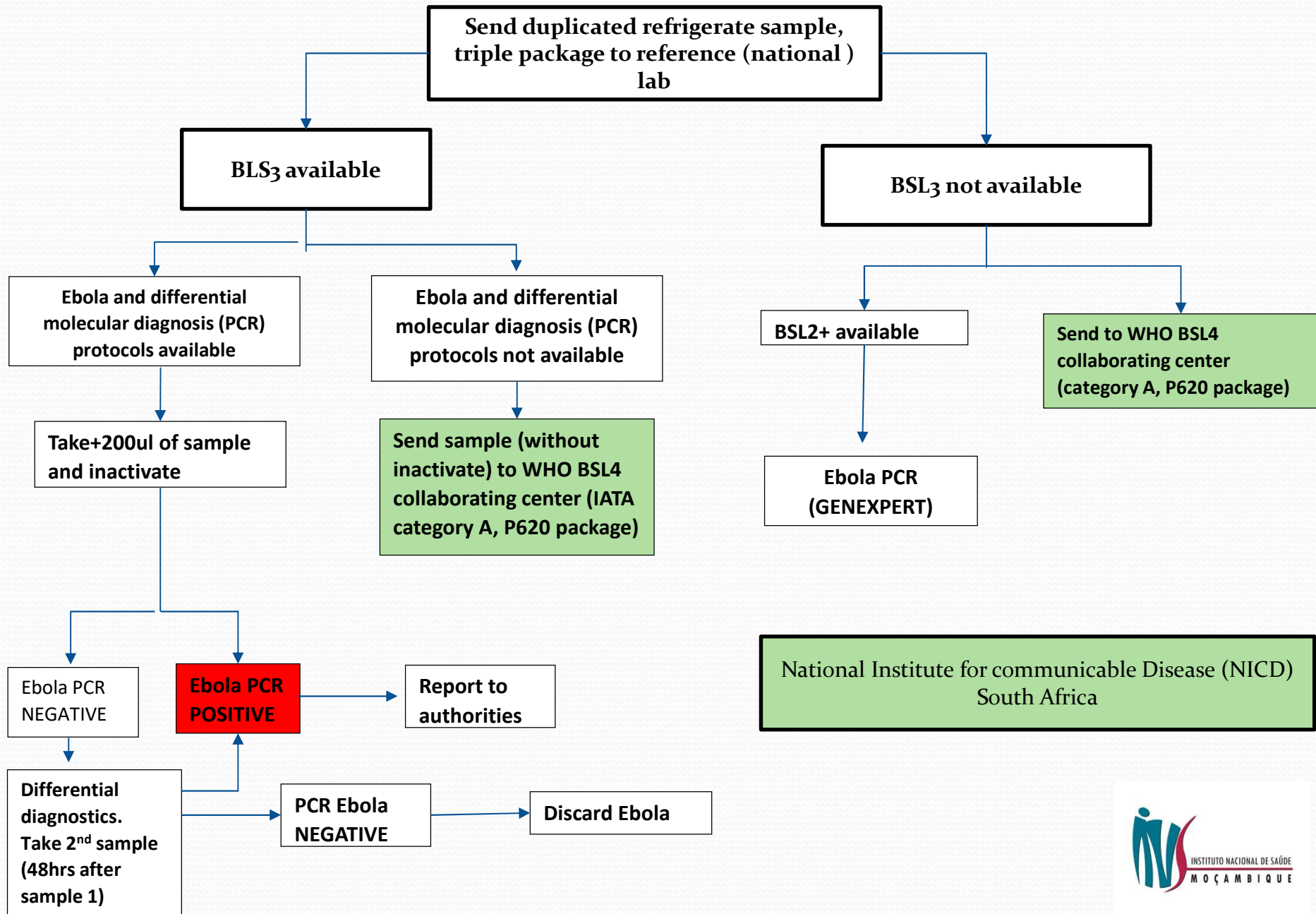


Ebola flow chart

EVD suspect sample



EVD suspect sample



BSL-3 chronogram of activities 2021-2022

ACTIVITIES	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Lab Rehabilitation	█	█	█	█	█	█				
Installation of the negative pressure system							█			
Autoclave training and testing								█		
Biosafety and Biosecurity training and SOPs							█	█		
Transport of lab equipment to Marracuene								█		
Equipment callibration								█	█	
LIS instalation								█	█	
TB lab and virus culture lab ready to start										█



Gaps and challenges

- Lack of standardized guidelines to detect extremely dangerous agents within the country.
- Guidelines and operational plans are only put in place when the emergency is imminent, not allowing for proper preparation.
- Inadequate lab facilities to manipulate extremely dangerous agents. Depending on regional reference labs.
- Lab staff not well trained and with limited knowledge on how to react an emergency caused by extremely dangerous agents.
- Response operations center being established.

Way Forward and Next Steps

- Operationalize the BSL3 laboratory, in particular the virus isolation room.
- Standardize procedures do work in the BSL3/4 labs.
- Train lab technicians to manipulate, inactivate, extremely dangerous agents .
- Standardize general guidelines to detect extremely dangerous agents within the country.
- BSL 4 is a long-term plan due to costs associated with its implementation and maintenance.

Thank you! Obrigada!

