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Performance of animal laboratories in rabies diagnosis in selected African countries

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Joint presentation- National, Regional and HQ Laboratory Specialists, FAO ECTAD

Introduction

- Rabies remains a neglected disease in most African countries
- Significant progress and efforts towards rabies control made
- Rabies diagnosis and surveillance slowly adapting to the progress made by SARE
- Several assays are available for diagnosis
- Each has strong and weak points determined by:
  - Sample type
  - Shipment
  - Personnel and the environment (equipment, maintenance)

LMT results in selected countries in relation to rabies diagnosis

	CVL (K)			TVLA (T)			NADDEC (U)		
LMT Category	20/08/2016 - Assessment A	30/09/2018 - Assessment B	30/08/2022 Current assessment C	02/08/2016 - Assessment A	01/09/2018 - Assessment B	02/08/2021 - Current assessment C	09/04/2016 - Assessment A	14/12/2018 - Assessment B	01/05/2021 - Current assessment C
Geographic location	77.8	100.0	100.0	77.8	100.0	100.0	55.6	100.0	77.8
Laboratory Budget	22.2	33.3	55.6	33.3	44.4	55.6	11.1	44.4	33.3
Basic supply	44.4	66.7	88.9	33.3	66.7	88.9	22.2	77.8	77.8
Organization	33.3	66.7	100.0	33.3	66.7	66.7	66.7	100.0	100.0
Infrastructure	44.4	63.0	66.7	29.6	59.3	77.8	37.5	59.3	59.3
Equipment	37.5	83.3	95.8	41.7	66.7	91.7	22.2	66.7	72.2
Reagent supply	48.1	63.0	66.7	33.3	40.7	74.1	20.8	70.4	76.2
Staff skills + availability	52.4	85.7	76.2	38.1	61.9	71.4	26.7	61.9	91.7
Sample accession	33.3	41.7	58.3	29.2	54.2	87.5	46.7	33.3	38.9
Available technology	47.2	52.8	58.3	22.2	38.9	55.6	25.0	51.5	63.3
Training	23.8	52.4	71.4	4.8	33.3	71.4	13.3	28.6	33.3
Quality Assurance	45.5	57.6	78.8	18.2	57.6	97.0	36.7	53.3	69.7
Biosafety/Biosecurity	50.0	70.8	62.5	12.5	45.8	83.3	42.9	70.8	66.7
Staff Security/Health	22.2	55.6	55.6	11.1	33.3	100.0	44.4	66.7	22.2
Communication means	25.0	41.7	50.0	0.0	25.0	75.0	66.7	25.0	0.0
National lab networking	11.1	44.4	66.7	22.2	55.6	88.9	N/A	66.7	55.6
Laboratory collaboration	29.6	37.0	51.9	11.1	40.7	77.8	N/A	63.0	59.3
Overall level of CVL functionality (%)	**40.1**	**59.3**	**68.5**	**24.7**	**50.3**	**79.3**	**32.0**	**58.0**	**60.6**

- Evolution in targeted laboratories showcasing results of sustained efforts and priority areas
- Positive trend due to:
  - Increase in volumes of samples collected and analysed over time
  - Maintenance and calibration
  - Regional QA programme
  - Training

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SUSTAINABLE DEVELOPMENT GOALS

Participating countries in PTs for rabies diagnosis

Countries	Name of the Laboratory
Burkina Faso	Laboratoire National d'Élevage (LNE)
Cameroon (1)	Laboratoire National Vétérinaire (LANAVET) Garoua
Cameroon (2)	LANAVET Annexe Yaoundé
Chad	Institut de Recherche en Elevage pour le Développement (IRED)
DRC	Laboratoire Vétérinaire (Labovet) de Kinshasa
Ethiopia	Ethiopian Public Health Institute
Ghana	Accra Veterinary Laboratory
Guinea (1)	Laboratoire Central de Diagnostic Vétérinaire (LCVD) Conakry
Guinea (2)	Laboratoire Régional Vétérinaire de Kankan
Guinea (3)	Laboratoire Régional Vétérinaire de Labé
Ivory Coast	Laboratoire central vétérinaire de Bingerville (LCVB)
Kenya	Central Veterinary Laboratories- Kabete
Liberia	Leon Quist Ledlum Central Veterinary diagnostic Laboratory (CVDL)
Mali	Laboratoire Central Vétérinaire du Mali, Bamako
Senegal	Laboratoire National de l'Elevage et de Recherches Vétérinaires (LNERV)
Sierra Leone	Central Veterinary Laboratory Teko, Freetown
Tanzania	Tanzania Veterinary Laboratory Agency, Temeke
Uganda	National Animal Disease Diagnostics and Epidemiology Centre (NADDEC)

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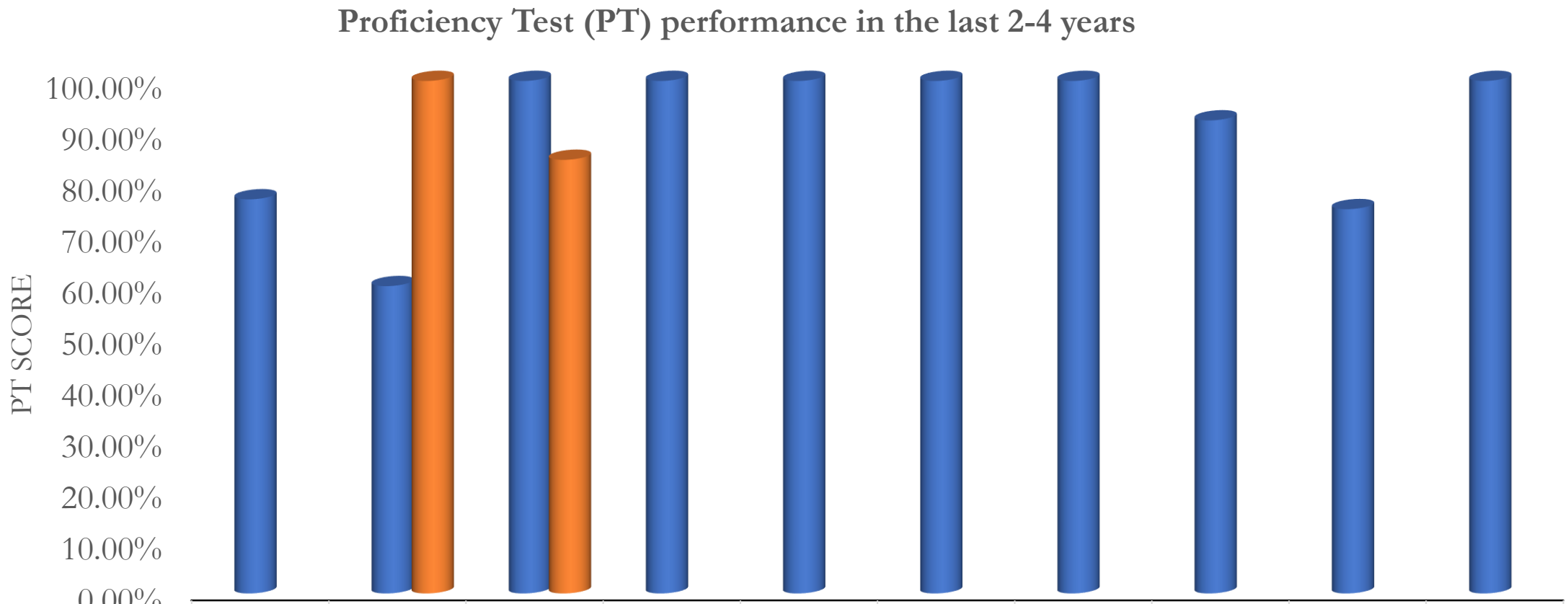
SUSTAINABLE DEVELOPMENT GOALS

PROFICIENCY TEST (PT) PERFORMANCE



	2021/2022	2019/2020	2021/2022	2017/2018	2020/2021	2018/2019	2020/2021	2021/2022	2020/2021	2021/2022
DFA	76.92%	60%	100%	100%	100%	100%	100%	92.31%	75%	100%
CONVENTIONAL RT-PCR		100%	84.62%							

Challenges

Shipment & Logistics	Operational	Practical Issues
• Field personnel are not provided with logistical support • Absence of a comprehensive sample referral and transport network	• Lack of equipment to carry out PCR Test • Operationalization of some molecular labs has started recently • Constant availability of reagents including Primers and Probes to start using RT-PCR is needed • Cost of RT-PCR is prohibitive however performs better when testing degraded samples	• Lack of awareness • Lack of animal health background training for field personnel charged with collection of samples • Minimal number of field personnel vaccinated against rabies • Technique to obtain brain sample

Where do we go from here?

- Conclusion:
  - Rabies diagnosis is imperative for public health response or individual case management
  - Laboratory testing still limited in several countries
  - Molecular biology tests would be ideal for advising administration of PEP
- Way forward:
- Building capacity for rabies diagnosis:
  - 1st Line-dRIT
  - 2nd Line- DFAT, Real time RT PCR
  - Training- technique, diagnosis, technology transfer
  - Vaccination of laboratory personnel
- Strengthening sample referral system-linkage with Public Health

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FROM THE AMERICAN PEOPLE

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Thank you!