



Outcome-driven laboratory networks – The Eswatini experience of using key performance indicators to drive laboratory performance

*Presented by: Sindisiwe Dlamini (EHLS)
and Buyisile Simelane (EHLS/ICAP)*



Presentation Outline

- Brief background
- Define Key performance indicators
- Steps towards establishing and operationalising KPIs
- Key performance indicators
 - Strategic plan
 - Supplier performance
 - Facility
 - Monitoring and evaluation
- Performance enablers
 - Guiding documents
 - Tools
 - Supporting systems CMIS/LIS interface
 - Using teams to drive performance
- Results
- Conclusion

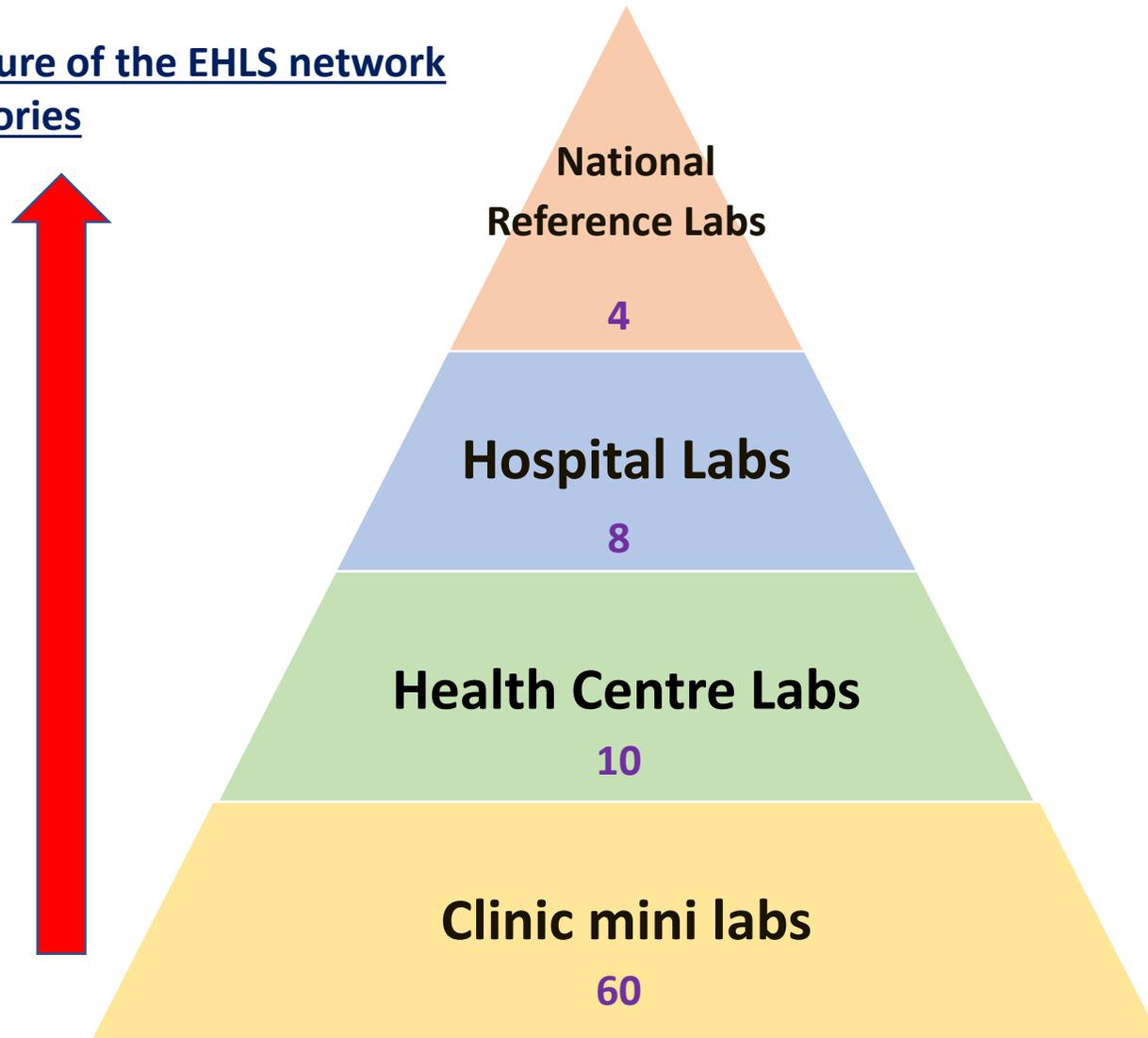
Background (1)



- Population – **1.3 M**
- Top 7 causes of death - HIV/AIDS, Lower respiratory infections, ischemic heart disease, Diabetes, Stroke, Diarrheal diseases & Tuberculosis (CDC 2018)
- According to SHIMS 3, 2021 the Adult HIV Prevalence is at **24.8%**
- Eswatini is one of the few countries to decrease HIV incidence among adults from **2.4%** in 2011 (SHIMS 1) to **0.62%** in 2021 (SHIMS 3)
- 0.62% Incidence >> 4,000 new cases of HIV per year among adults of ages 15 years and older.

Background (2)

The structure of the EHLS network of laboratories



The referral of samples from the lowest to the highest level is done through the government-owned National Sample Transportation Services (NSTS).

Monday and Wednesday		Tuesday and Thursday	
Car 1	Car 2	Car1	Car 2
1. Mangcongco Clinic	1. Mphuluzi Clinic	1. Hukwini Clinic	1. Hhohho R. Police
2. Dwalile Clinic	2. Zondwako Clinic	2. Ezulwini Satellite	2. Salvation Army
3. Musi Clinic	3. Siphocosini Clinic	3. Manzana R. Clinic	3. FLAS Mbabane
4. Lushikishini Clinic	4. Mahwalala Clinic	4. St Mary's Clinic	4. National Baptist
5. Cana Clinic	5. FLAS Mbabane	5. Lobamba Clinic	5. Siphocosini Clinic
6. Mahlangatsha Clinic	6. Hhohho R. Police	6. Luyengo Clinic	6. Sigangeni Clinic
7. Mankayane Clinic	7. Salvation Army	7. Ncabaneni Clinic	7. Nkaba Clinic
8. Luyengo Clinic	8. Manzana R. Clinic	8. Mawelawela Prison	8. Motshane Clinic
	9. Lobamab Clinic	9. Bhunya (Sappi)	
		10. Mhlambanyatsi	
		11. Mahwalala	

Note: Cana and Mahlangatsha send to Mankayane Laboratory

Ekufikeni & Ngwenya send to Mbabane by DG Nurse

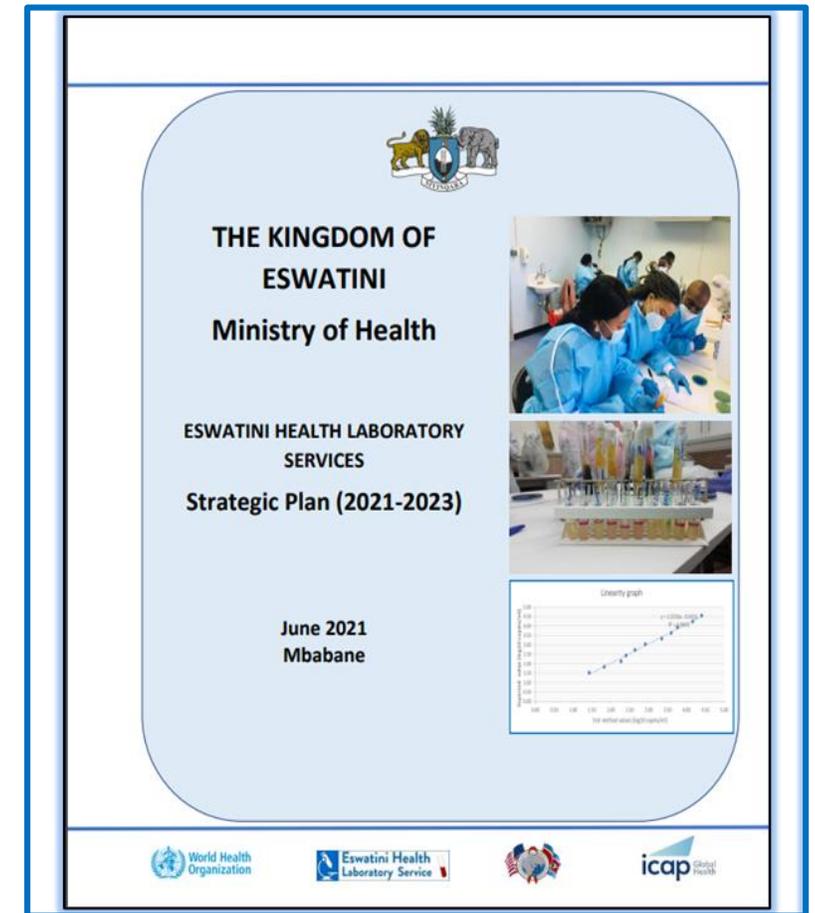
What are key performance indicators (KPI)?

- **Key:** The most important
- **Performance:** Directly related to the success of the lab
- **Indicators:** Shows direction and provides clear feedback around if current performance is aligned with the goals



What are key performance indicators?

- Eswatini Health Laboratory Services derived its strategic performance Measures from the 2021-2023 Strategic Plan.
- KPIs are high-level measures of performance towards a certain objective and are applied across departments.
- They are designed to provide insight and track progress toward the attainment of goals
- The KPIs are tracked at different levels (Weekly, monthly, quarterly and annually and end term evaluations)



Steps towards establishing and operationalising the KPIs

Approval of
2021 to 2023
Strategic plan

Each strategic
objective was
assigned key
performance
indicators

Routine
monitoring
system was
developed

Performance
evaluation of
strategic plan
is conducted
annually

Key
stakeholders
invited to
develop
annual
operational
plans

Teams were
formed and
assigned
responsibility
for each
objective

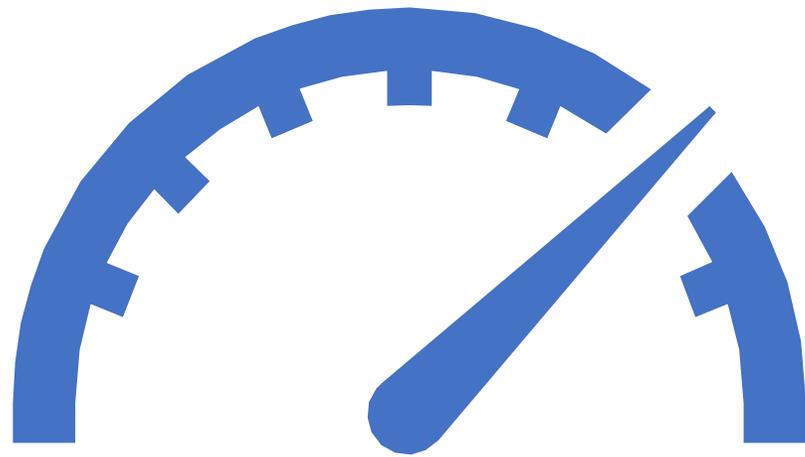
Established
the
monitoring
plan which
includes
reporting
frequency,
format, and
plan to
address
results

End term
evaluation is
planned for
the end of
2023

Steps towards establishing and operationalising the KPIs

Four key areas were selected to monitor KPIs for the laboratory network:

- Laboratory strategic objectives
- Facility performance
- Supplier performance
- Monitoring and evaluation (M&E)



Key performance
indicators (KPIs)

Strategic Plan KPIs (1)

Strategic Focus area	Indicator
Admin and structure	Strategic plan approved
	Management and technical structure with defined roles & responsibilities established
	Training department for lab established
	New positions created.
Quality management systems	# of Labs audited for all main and mini laboratories within the Network
	# of HCW trained on LQMS for lab personnel on each year
	Proportion of labs participating in EQA for the different tests
	Number of labs accredited
	# of HCW assessed for competency
	Waste management guideline reviewed
Equipment and Supply chain management	Diagnostic network optimization Guideline available and approved.
	Quantification of lab commodities Report
	Lab technologist placed at MRU
	Equipment mapping and network optimization activity reports.
	Report of supply planning and procurement

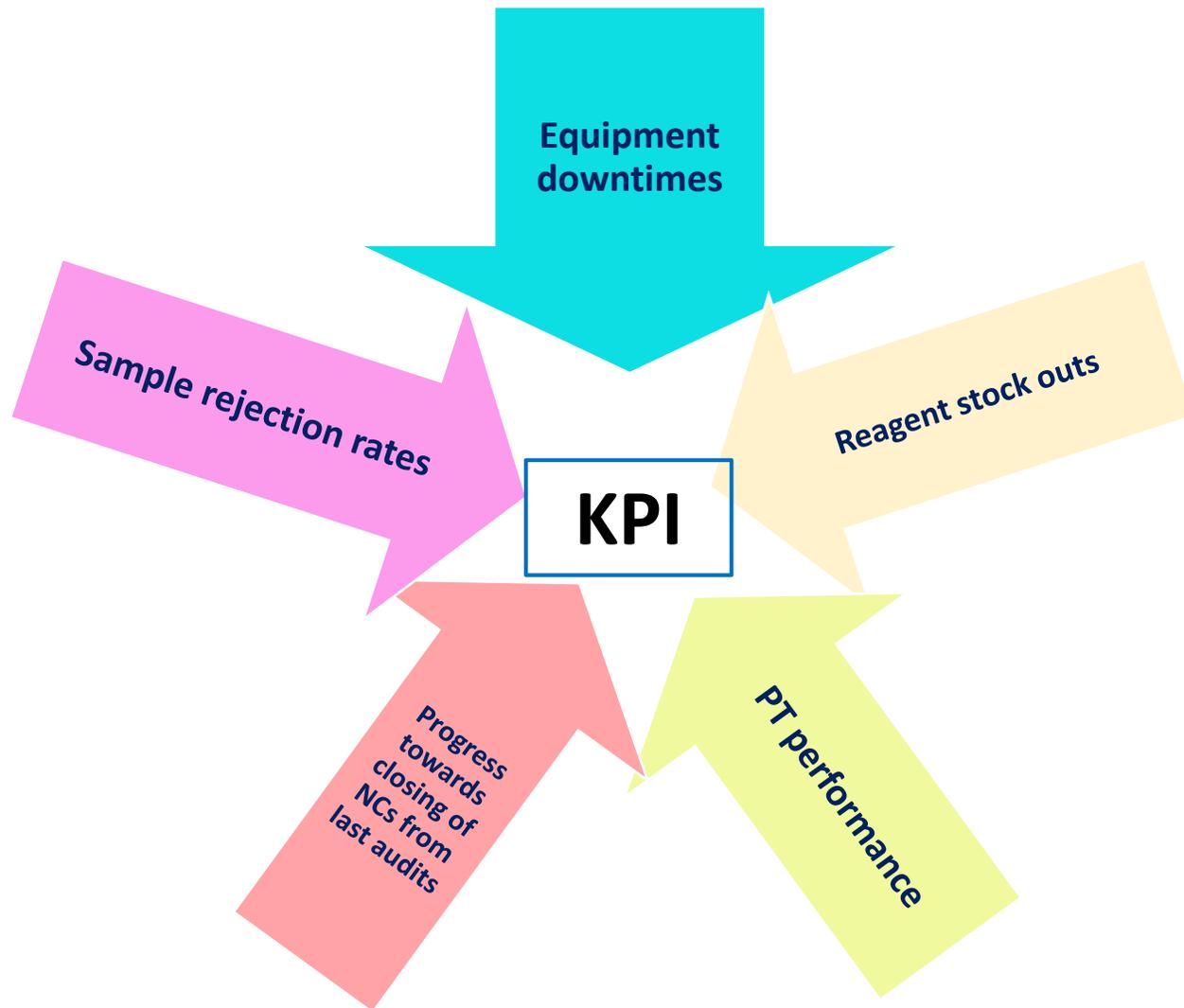
Strategic Plan KPIs (2)

Improving diagnosis and coverage	Number of mini labs established
	Number of specialised tests conducted annually
	NSTS maintenance plan in place
	Clinic-lab interface in place
	Number of facilities providing advanced HIV disease testing
Public Health Laboratory Response to emerging Public Health threats	Lab taskforce established
	Guidelines developed.
	PHLI approved
	IDSR training provided.
	Situational Analysis conducted
Strategic information	Proportion of Labs (main labs and mini labs) with LIS
	Number of obsolete hardware replaced
	Number of data collection tools updated
	Number of RDQA conducted
	Number of annual reports finalised

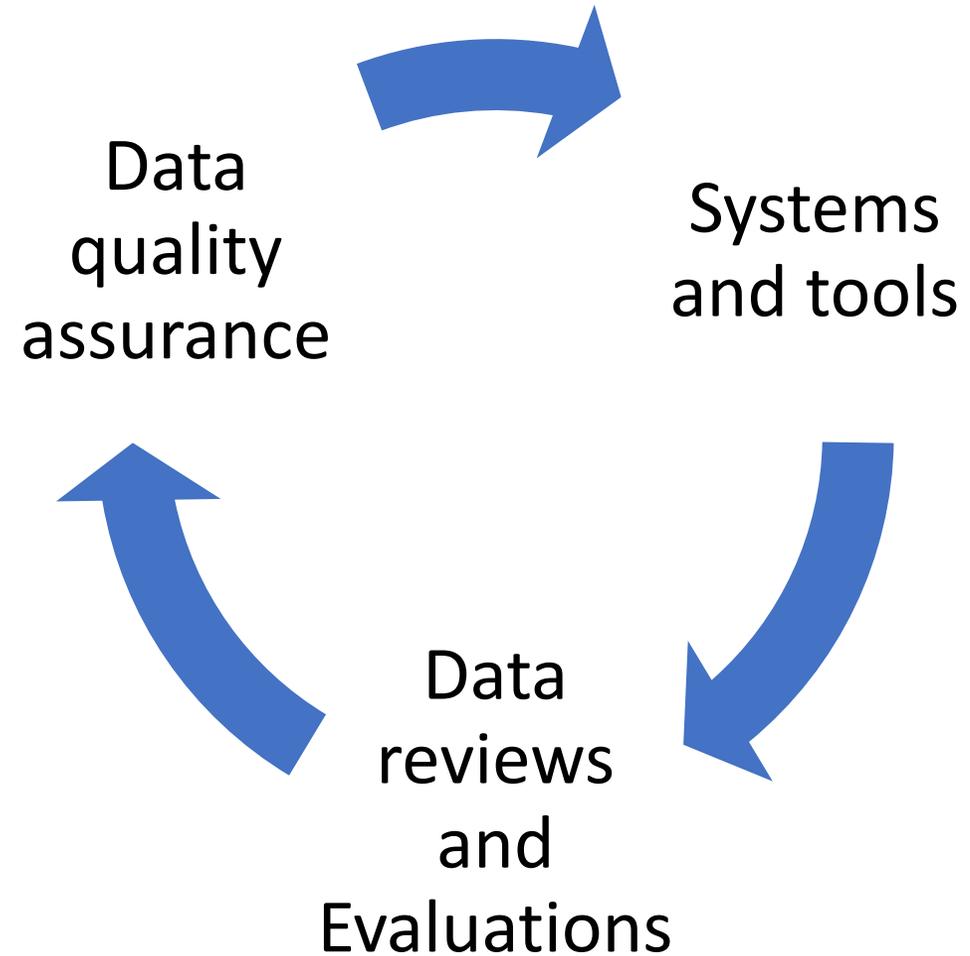
Supplier-related performance KPIs

	Key Performance Indicator (KPI)	Target
Service And Maintenance	1. Percentage of planned maintenance cells performed on schedule	100%
	2. Average # of hours lapsed from initial support call to service providers on-site visit (mean time to response)	< 24 hours
	3. Average # of hours lapsed from initial service call to job completion (mean time to repair)	< 48 Hours
	4. Number of instrument outages which occur less than 3 months after any scheduled or unscheduled maintenance or repair work	< 2 per instrument per year
	5. Total percentage instrument uptime	> 95%
Reporting & Management	6. Percentage of quarterly reports submitted within 30 days of previous quarter-end	100%
	7. Number of meetings held between service provider customer Representative and Government Representative (MOH Convened)	one per quarter
Supply Chain Management	8. Number of stockout of any reagents or consumables for which the service provider is responsible leading to interruptions in testing services	0

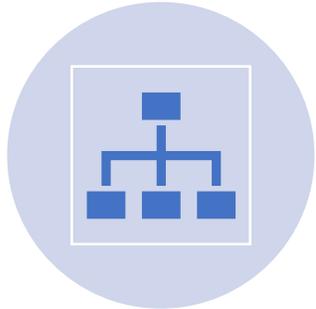
Facility KPIs



M&E KPIs



Performance enablers (1)



Guiding documents
(strategic plan, SOPs,
Manuals, Operational plans,
CPD guideline etc.)



Tools (request forms, log
sheets)



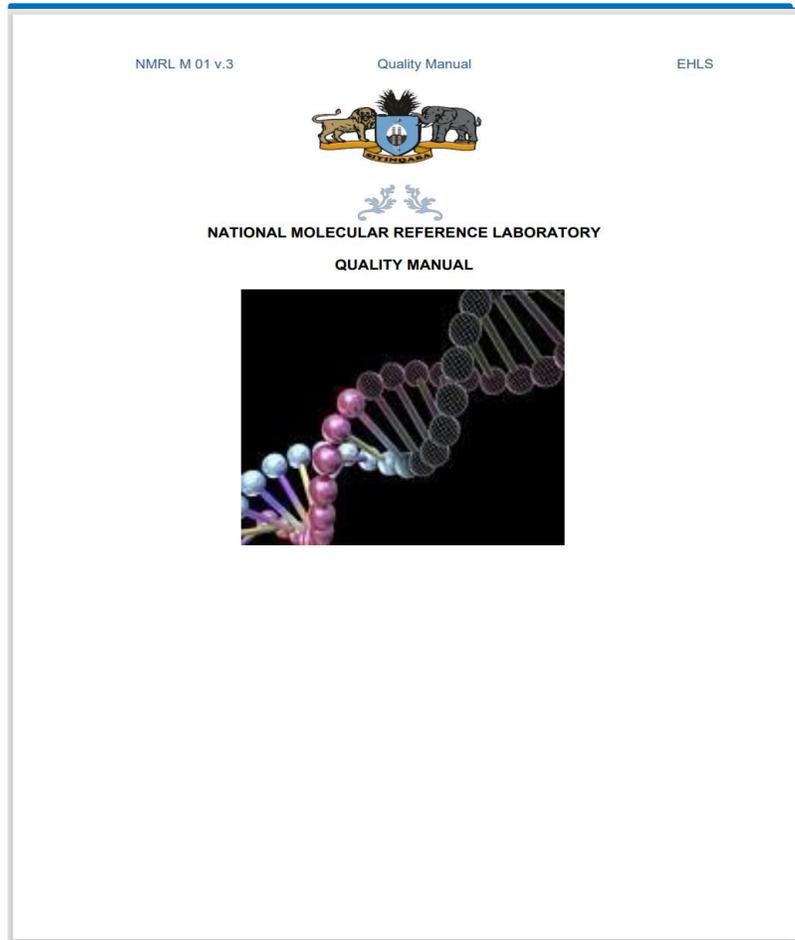
Supporting data systems
(Laboratory Information
System, Client Management
Information System, Aspect).



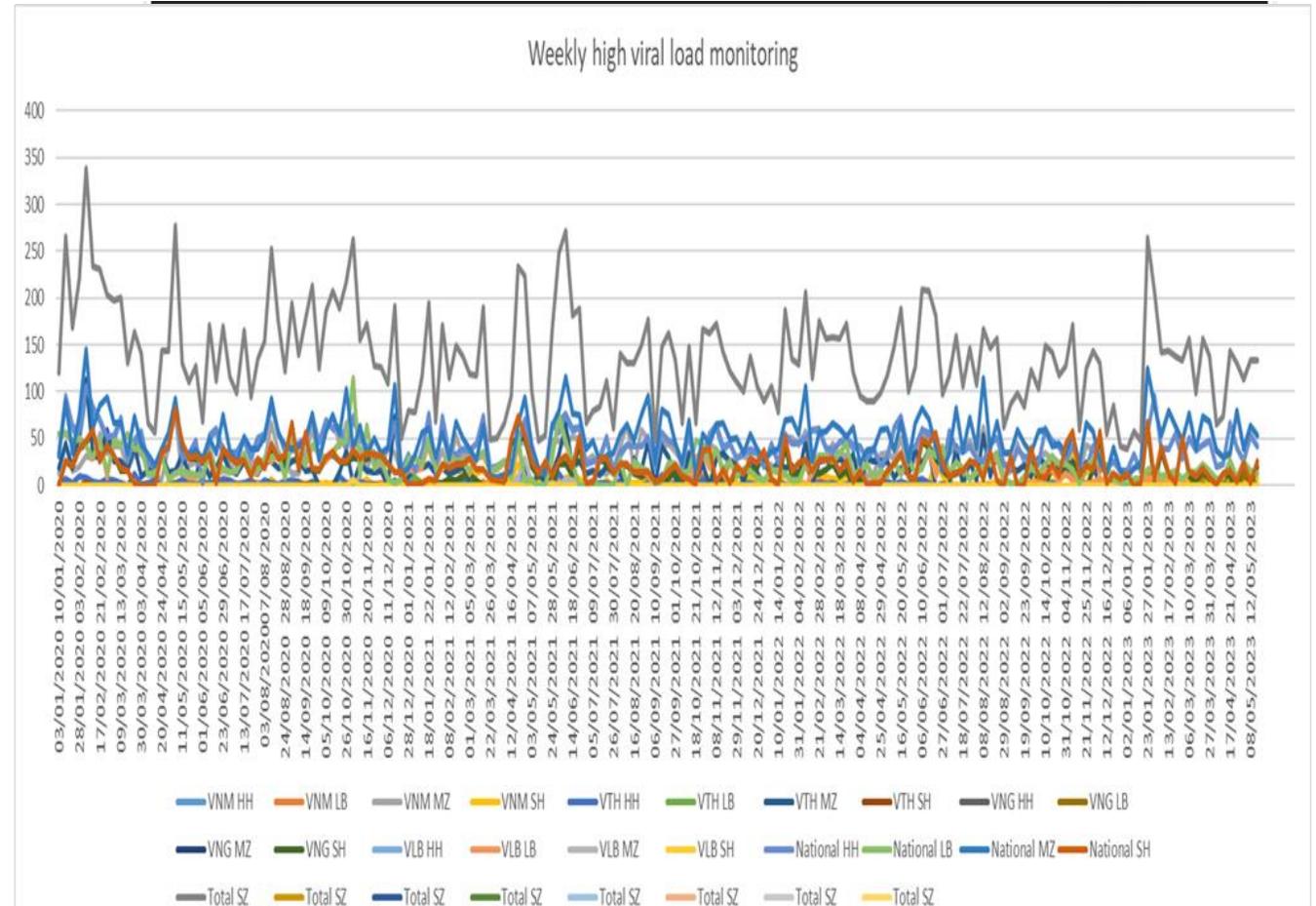
Team engagement to drive
performance using existing
platforms (Lab TWG, Lab
managers meeting)

Performance enablers (2)

- Guiding documents

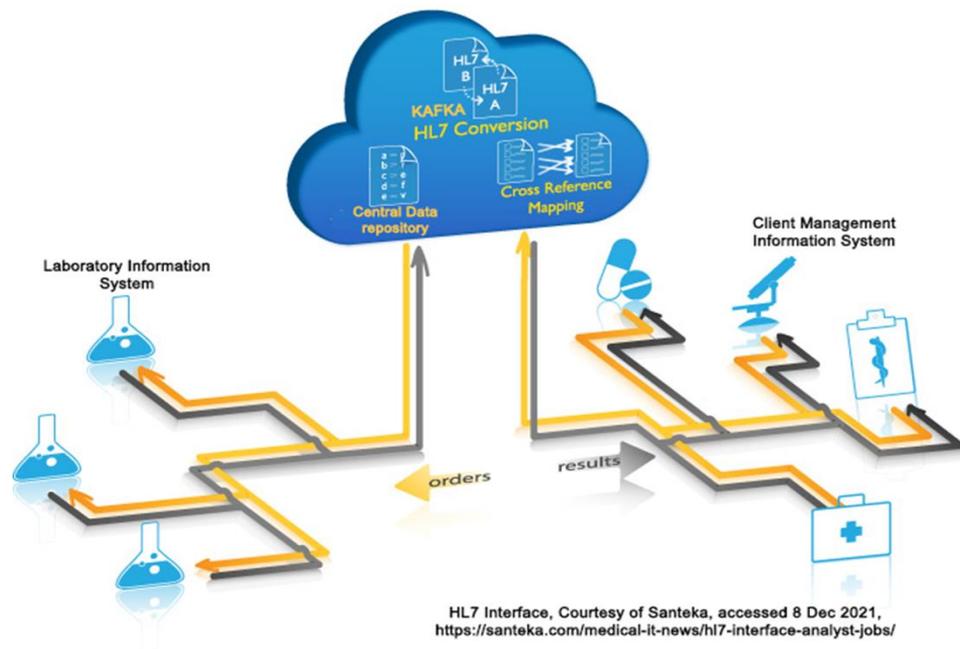


- Tools



Performance enablers (3)

Supporting data systems



The CMIS-LIS interface allows for tests to be requested electronically at facilities in the country and results are transmitted back to sites through the same platform once they have been authorized in the laboratory. This significantly reduces the turn-around time.

Using teams to drive performance

Lab strategic and implementation plan development team



Engagement of programs, civil society and lab to improve laboratory services

Results

Strategic Plan (1)

			Strategic plan- core indicators monitoring													
Objective	Core indicator	Category	2021				2022				2023				Total 3 years target	
			Status	Target	Results	Progress to target	Status	Target	Results	Progress to target	Status	Target	Results	Progress to target		
Admin and structure	Strategic plan approved		Achieved	1	1	100%									1	
	Operation plans approved		Achieved	1	0	0%	Achieved	1	1	100%	Achieved	1	1	100%	3	
	Management and technical structure with defined roles & responsibilities established		Pending	1	0	0%	Pending	1	0	0%	Pending	1	0	0%	1	
	Training department for lab established		Partially achieved	1	0.50	50%	Partially achieved	1	0.5	50%	Partially achieved	1	0.5	50%	1	
	New positions created		Pending	1	0	0%	Pending	1	1	100%	Pending	1	0	0%	1	
Quality management systems	# of Labs audited for all main and mini laboratories within the Networ		Achieved	82	78	95%	Achieved	82	75	91%	Pending	82		0%	82	
	# of HCW trained on LQMS for lab personnel on each year		Partially achieved	60		0%	Partially achieved	60		0%	Partially achieved	60		0%	180	
	Proportion of labs participating in EQA for the different test	EID		Achieved	1	1	100%	Achieved	1	1	100%	Achieved	1	1	100%	1
		HIV diagnostics		Achieved	350	328	94%	Achieved	350	327	93%	Achieved	350	312	89%	350
		Viral load		Achieved	4	4	100%	Achieved	4	4	100%	Achieved	4	4	100%	4
		TB culture		Achieved	1	1	100%	Achieved	1	1	100%	Achieved	1	1	100%	1
		Genexpert		Achieved	31	31	100%	Achieved	31	31	100%	Achieved	31	31	100%	31
		AFB microscopy		Achieved	28	28	100%	Achieved	28	28	100%	Achieved	28	28	100%	28
		HIV recency		Achieved	174	174	100%	Achieved	174	174	100%	Achieved	174	174	100%	174
	CD4		Achieved	82	54	66%	Achieved	82	54	66%	Achieved	82	82	100%	82	
Number of labs accredited		Partially achieved	5	2	40%	Partially achieved	5	2	40%	Partially achieved	5	2	40%	5		
# of HCW assessed for competence		Achieved	40	0	0%	Achieved	40	0	0%	Achieved	40		0%	120		
Waste management guideline reviewed		Partially achieved	1	0	0%	Partially achieved	1	0	0%	Partially achieved	1	0.5	50%	1		
Equipment and Supply chain management	Diagnostic network optimization Guideline available and approved.		Partially achieved	1	0.5	50%	Partially achieved	1	0.5	50%	Partially achieved	1	0.5	50%	1	
	Quantification of lab commodities Report		Achieved	1	1	100%	Achieved	1	1	100%	Achieved	1	1	100%	1	
	Lab technologist placed at MRU		Pending	2	0	0%	Pending	2	0	0%	Pending	2	0	0%	2	
	Equipment mapping and network optimization activity reports.		Achieved	1	1	100%	Achieved	1	1	100%	Achieved	1	1	100%	3	
	Report of supply planning and procurement		Pending	1		0%	Achieved	1	1	100%	Pending	1		0%	3	
	Number of mini labs established		Not achieved	5	0	0%	Not achieved	5	0	0%	Pending	10		0%	10	
	COVID19		Achieved			0	Achieved		0	Pending			0			

Performance measures achieved		
Achieved	14	67%
Partially achieved	4	19%
Pending	1	5%
Not achieved	1	5%
Total	21	

Strategic Plan (2)

Supporting documents for activities in the lab strategic plan

Strategic plan review

Reference documents

Objective	Activity No	Type of document	Document name	Appended document
5.1	5.1.1	Concept note	Concept note for establishment of PH lab	 Concept note on Establishing Eswatini
	5.1.2	Lab taskforce established	Partially achieved	Dormant needs revival
	5.1.3	Uganda CDC TA visit report. PH Framework	Public Health Framework for Eswatini	 Framework for the Eswatini National Pub
	5.1.4	Benchmarking visit itinerary Benchmarking visit report	Benchmarking visit itinerary Benchmarking visit report	 Eswatini Visit Draft Programme 8th Sept
				 Summary report on the Benchmarking vis
	5.1.5	ID Physical site for construction	Communication emails	 EXTERNAL Fwd AFMS Contractmsg
	5.1.6	Budgeted implementation plan	Quote Lubombo	 LUBOMBO REFERRAL HOSPITAL QUOTE # 6
5.1.7	Request Letter List of potential candidates Shortlisting of	Covid-19 Technologist and Data Clerks Lab	 COVID-19 Lab Technologist and Data	
			 Lab.pdf	

	5.1.8	Equipment procurement list	Equip and Reagent Procurement lists	 Genomic Sequencing Strategic Plan (1).doco  Genomic Sequencing Implementation Plan  Specification GF support for strengthen
	5.1.9	Strengthen cross boarder collaboration for control and prevention of emerging public health.	Pending	Custodian to EDCU and there is no lab specific collaborations
5.2	5.2.1	Framework for EPH establishment	Framework for EPH establishment	 Framework for the Eswatini National Pub
	5.2.2	Strengthening collaboration with SADC Supra reference labs	Though there is no formal document like an MOU but there is active communication and collaborative work with NICD	 NICD DR 0066-14-SS.pdf
	5.2.3	Conduct situational analysis of existing surveillance activities	Pending	
	5.2.4	Strengthen integration of surveillance activities across MoH programs		Done every Friday 10-12pm for 2hrs.
	5.2.5	Ensure the	Pending	

Supplier performance

Results of review
with Hologic Panther

Key Performance Indicators CY23 Q1



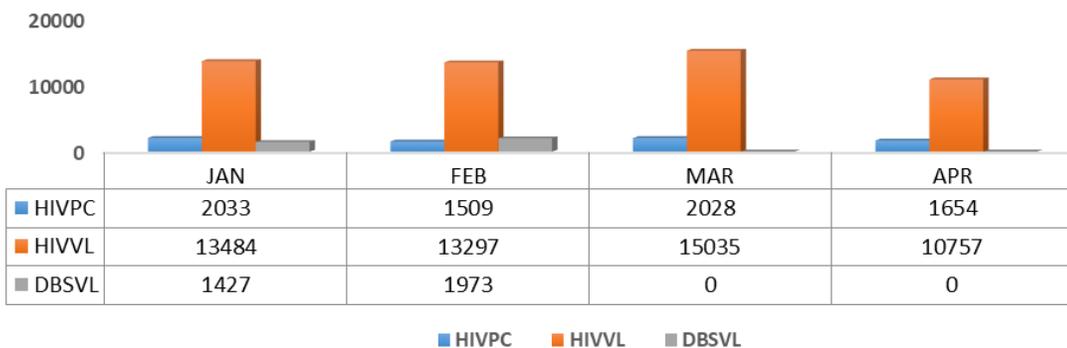
No.	Description	Target	Mbabane	Nhlagano	Average performance
1	Percentage of instruments that receive at least 1 (one) PM visit per year from the date of installation	100%	100%	100%	100%
2	Mean time to response for equipment breakdown: time lapsed from time issue first reported to the time a follow-up plan is communicated to the customer	24 hours	0.00	0.00	0.00
3	Mean time to repair: average # of calendar days lapsed from time issue first reported to job completion	≤ 4 days	0.0	0.0	0.0
4	Percentage of instruments that have ≤2 instrument outages per quarter. An outage is defined as instrument breakdown* that 1) prevents the release of patient results for more than two (2) hours and 2) occurs less than 3 months after a preventative maintenance visit or total service call for the same issue that was previously repaired.	100%	100%	100%	100%
5	Average percentage "uptime" per quarter	>85%	100%	100%	100%
6	Average percentage of failed tests due to machine or human error	<5%	1%	0%	1%
7	Percentage of Quarterly Reports submitted ontime per the terms of the subcontract	100%	100%	100%	100%
8	Average percentage "uptime" of automated reporting system	>95%	NA	NA	NA
9	Percentage of batches that are delivered to the customer with a 12month shelf-life	100%	100%	100%	100%
10	Percentage of line items delivered in full and on time. Infull is measured against agreed ordered quantities. On-time is defined as 14 days prior/7 days after the current committed goods available date	>90%	100%	100%	100%

Facility performance

Monthly, facilities report during the Laboratory Managers Meeting on the progress of LQMS implementation and tracking of quality indicators. Reports are also shared with the EHLS management to follow-up on activities and action plans.

Tracking of monthly testing statistics at the NMRL

NMRL April 2023



Laboratory quality indicators

Indicator	Target	Achievement	Progress to target (%)	Comment
Equipment down-time	0 days (per month)	Not achieved		ACT 5,Presto
Rejection Rate	<3%	Not Achieved	4%	Rate increased by stock-outs
Days out of stock	No interruption due to stock-outs	Not achieved	There were stock-outs for the month of April	FBC,TBIL,CO2,ALPAL T,UNIGLOD,RPR,Gen eXpert cartridges
EQA Performance	80%	Achieved	100%	HIV,TB Microscopy

CURRENT STATUS OF LABORATORY



Number of NCs as per last report/audit – **43**



Number of NCs closed in last month – **10**



Number of points gained on SLIPTA checklist – **14**



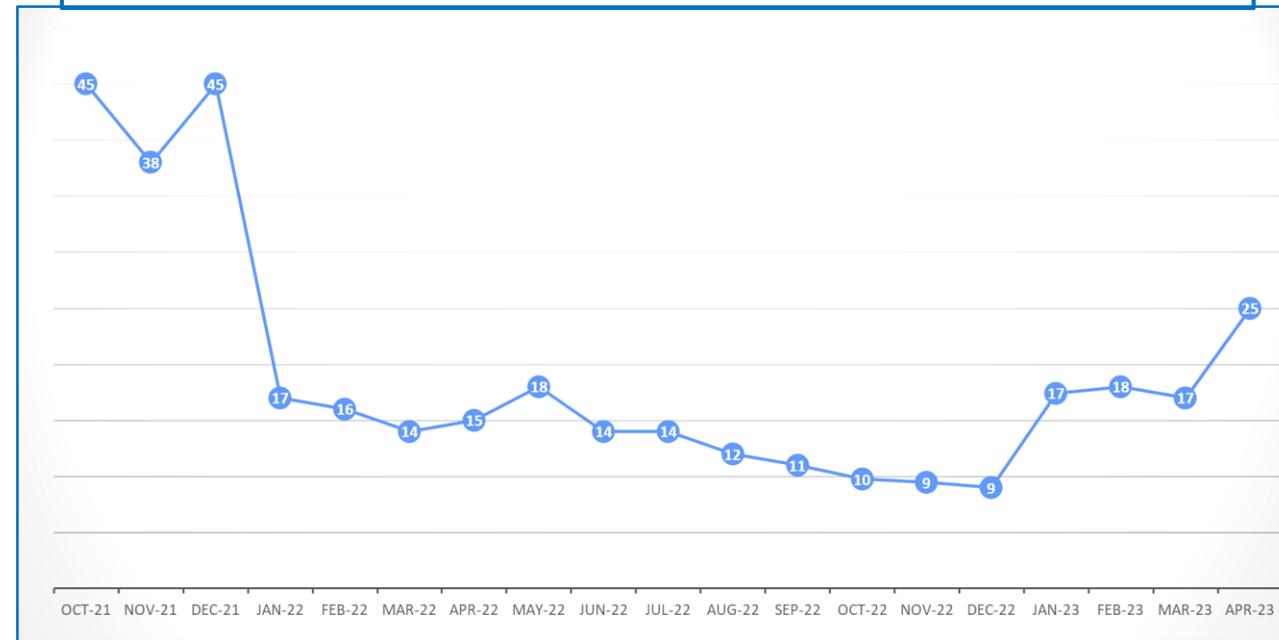
Percentage gained on SLIPTA audit- **5%**

Monitoring and evaluation (M&E)

Data verification of reported test volumes
Oct '22 – March '23

Type of tests	No Verified	No Reported	Verification factors
CD4	572	629	110%
EID PCR	263	268	102%
HB	92	92	100%
Hep B	6163	5536	90%
HIV	10557	9412	89%
Malaria	7245	6209	86%
RPR	540	528	98%
Urine Chem	5345	5295	99%

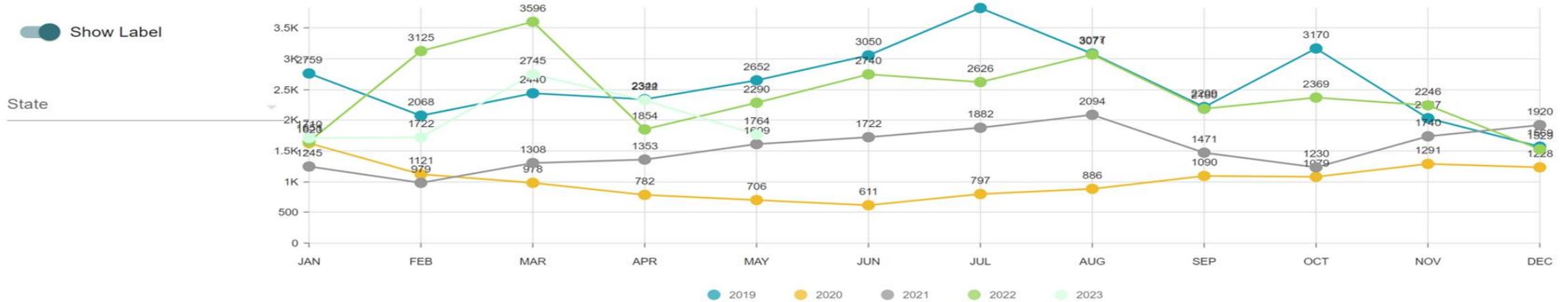
Viral load TAT monitoring (from collection to results return)



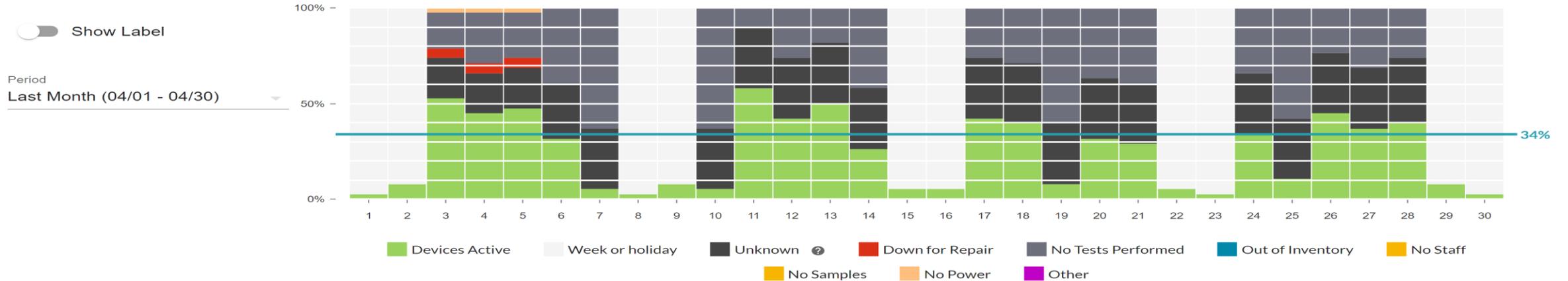
Monitoring and evaluation (M&E) 2

Countrywide Gene Xpert testing data

Testing Trends In Year



Overall Activity Rate



Conclusion

- Monitoring of KPIs has ensured that the EHLS is able to have real-time information on what is happening within the network.
- KPIs are an important tool in providing feedback to stakeholders and ensuring that challenges are identified early and resolved timely.
- Regular review meetings with suppliers help improve their performance
- Data quality assessments are important in evaluating and validating information to inform decision making.

- “You can’t even recognise the traps for mistakes that you have made before if you don’t self evaluate” Unknown

Thank you.