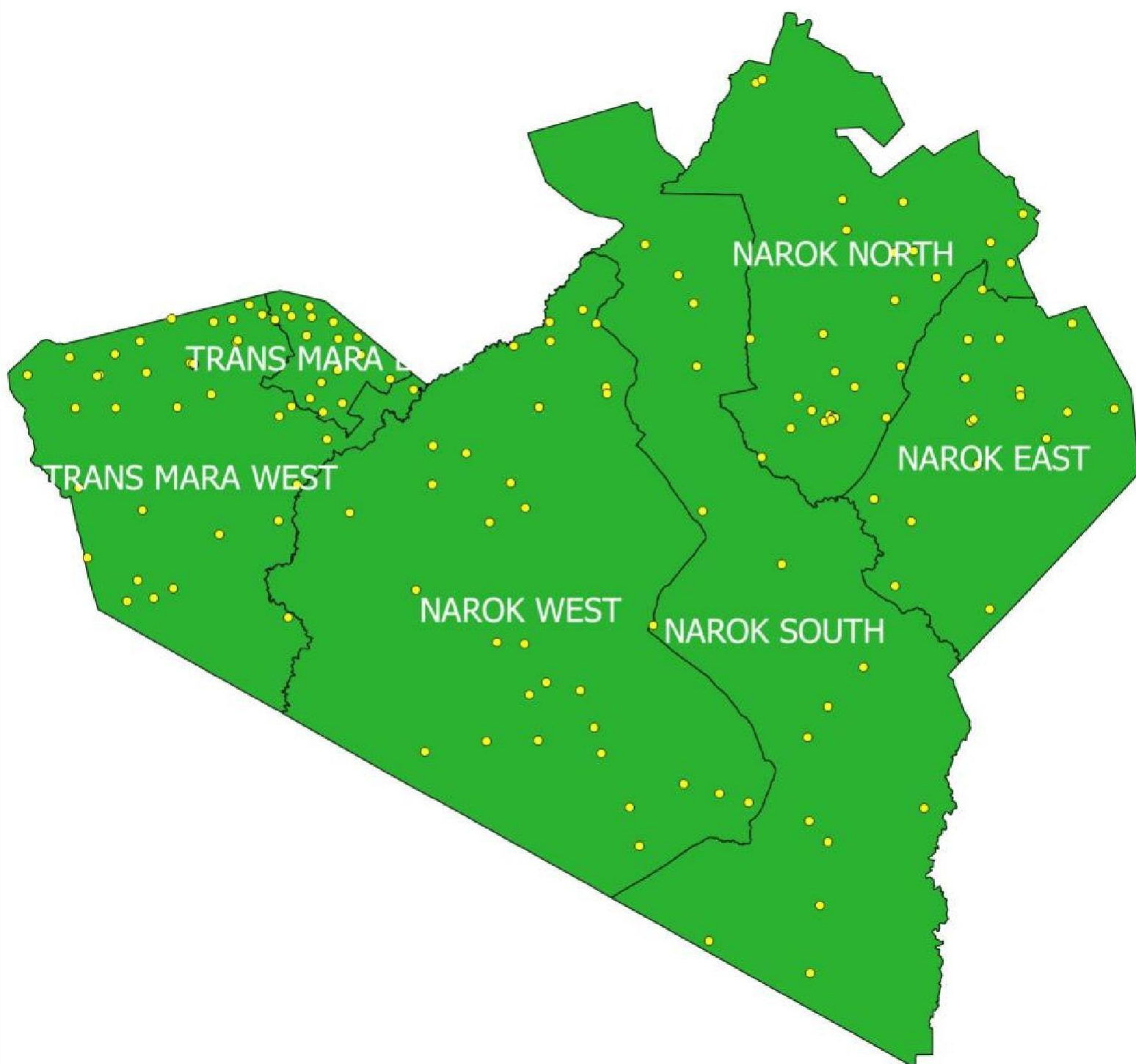**NAROK COUNTY GOVERNMENT**
DEPARTMENT OF HEALTH AND SANITATION

NAROK INTEGRATED SPECIMEN REFERRAL SYSTEM (ISRS)

NAROK COUNTY OPERATIONAL PLAN

2025 – 2027

1.1 Table of Content

Table of Contents

1.2 Foreword

Effective healthcare delivery relies heavily on timely, accurate diagnosis, which in turn depends on efficient specimen referral systems. In Narok County, where vast geographical distances and infrastructural challenges can impede access to quality diagnostic services, the need for a robust and integrated specimen referral system (ISRS) is more pressing than ever.

This Integrated Specimen Referral System represents a significant step forward in strengthening our county's health system. By ensuring that laboratory specimens — including those for HIV, TB, malaria, non-communicable diseases, and other critical conditions – are transported promptly and safely from peripheral health facilities to testing laboratories, we can accelerate diagnosis, treatment initiation, and patient management. Ultimately, this contributes to improved health outcomes and reduced disease burden across our communities.

This system has been developed through a collaborative, multi-stakeholder approach involving the County Department of Health, the Ministry of Health, implementing partners, and local health facilities. It is aligned with national laboratory policy guidelines and the Kenya Health Sector Strategic Plan, ensuring consistency with our broader healthcare goals.

We present this document as a guide for implementing, maintaining, and monitoring an effective, sustainable specimen referral network across Narok County. Its success depends on the collective commitment of all stakeholders — from health workers and transporters to laboratory personnel and policy-makers.

We remain committed to investing in and strengthening this system to ensure that no one in Narok County is left behind when it comes to accessing quality healthcare services.

Hon. Anthony Namunkuk

COUNTY EXECUTIVE COMMITTEE MEMBER - HEALTH & SANITATION

1.3 Acknowledgement

The development of the Narok County Integrated Specimen Referral Systems Operational Plan has been a collaborative effort, made possible through the dedication and expertise of numerous stakeholders.

We extend our sincere gratitude to the Division of National Laboratory Services under the Ministry of Health, which has provided invaluable leadership and guidance in shaping this Operational Plan. Their expertise in Integrated Specimen Referral Systems and national coordination has been instrumental in ensuring a cohesive, data-driven approach to addressing health challenges in Narok County.

We also acknowledge the leadership of Narok County, including the Governor, the County Executive Committee Member (CECM) for Health, the Chief Officers for Health Services, and the CHMT members whose unwavering support has strengthened this initiative.

Our appreciation goes to health professionals, development partners, technical experts, and community leaders for their contributions in refining and contextualizing the strategies presented in this plan. Their insights have enhanced our ability to deliver equitable, accessible, and effective healthcare solutions.

Lastly, we thank the community members who shared their experiences, ensuring that this operational plan remains responsive to local needs and improves diagnostic services in our communities.

This plan reflects the power of collaborative action, innovation, and shared responsibility, and we look forward to implementing its strategies to improve health outcomes across Narok County.

MS. LUCY KASHU
CHIEF OFFICER - PREVENTIVE AND PROMOTIVE HEALTH SERVICES
NAROK COUNTY GOVERNMENT

MS. JANE KIOK

CHIEF OFFICER- CLINICAL SERVICES
NAROK COUNTY GOVERNMENT

1.4 Executive Summary

The County Integrated Specimen Referral System (ISRS) is a strategic initiative designed to improve access to diagnostic testing services across Kenya's counties. This county operational plan outlines the structure, operations, and management of a county-level integrated specimen referral network that facilitates the movement of diagnostic specimens from primary healthcare facilities to specialized laboratories within each county. ISRS directly supports Kenya's access to laboratory diagnosis and surveillance for health priorities, including the fight against high-burden diseases like tuberculosis, HIV, non-communicable and infectious diseases.

The county health system has diverse levels of facilities, with many lacking advanced diagnostic testing capabilities. The ISRS adopts a hub-and-spoke model to bridge these gaps, where designated hospitals serve as hubs, supporting nearby primary health facilities (spokes). This system minimizes delays in testing, improves patient management, and enhances health outcomes, particularly in underserved and rural areas. The ISRS is aligned with the national and county health goals of universal health coverage (UHC) and supports response to public health challenges by ensuring equitable, efficient, and sustainable access to diagnostic services. A national digital platform to support the county ISRS in tracking and monitoring has been implemented, enabling real-time monitoring of operations, and data-driven decision-making within counties.

This operational plan provides a detailed framework for the implementation of ISRS in the county. It includes plans for all ISRS pillars (program design, ISRS design, transportation, Costing and finance, human resource and training, supply chain management and M&E. Additional success factors in ISRS (risk management, resource mobilization) have been included in this operational plan. This ISRS operational plan empowers all county health departments and stakeholders to contribute to county efforts to meet diagnostic needs of patients effectively, strengthening the overall healthcare system.

DR FRANCIS KIIO
COUNTY DIRECTOR OF HEALTH
NAROK COUNTY GOVERNMENT

1.5 List of Abbreviations

AHF	-	AIDS Healthcare Foundation
AST	-	Antimicrobial Susceptibility Testing
CCC	-	Comprehensive Care Center
CHMT	-	County Health Management Team
CHPs	-	Community Health Promoters
CHVs	-	Community Health Volunteers
CIDP	-	County Integrated Development Plan
CMLC	-	County Medical Laboratory Coordinator
CSF	-	Cerebrospinal Fluid
DBS	-	Dried Blood Spot
EDTA	-	Ethylenediaminetetraacetic Acid
EID	-	Early Infant Diagnosis
FBO	-	Faith-Based Organization
GHSA	-	Global Health Security Agenda
GOK	-	Government of Kenya
HIV	-	Human Immunodeficiency Virus
HR	-	Human Resources
KEMSA	-	Kenya Medical Supplies Authority
KPI	-	Key Performance Indicator
M&E	-	Monitoring and Evaluation
MoU	-	Memorandum of Understanding
SCMLCs	-	Sub-County Medical Laboratory Coordinators
SDPs	-	Service Delivery Points
SOPs	-	Standard Operating Procedures
SRS	-	Integrated Specimen Referral System
SRS	-	Specimen Referral System
TAT	-	Turnaround Time
TB	-	Tuberculosis
TOTs	-	Trainers of Trainers
TWG	-	Technical Working Group
UHC	-	Universal Health Coverage
US CDC	-	United States Centers for Disease Control and Prevention
USAID	-	United States Agency for International Development
VL	-	Viral Load

1.6 County Operational Plan for Integrated Specimen Referral Systems

1.61 Vision

An efficient county integrated specimen referral system that ensures timely and safe delivery of specimens and results return.

1.62 Mission

To provide equitable access to high-quality laboratory services through an integrated specimen referral system that ensures timely and accurate diagnostic testing for infectious and other priority diseases.

1.7 Background

Access to timely and accurate laboratory diagnostics is a cornerstone of effective healthcare delivery and disease surveillance systems. In Kenya, fragmented specimen referral systems have posed significant challenges in ensuring that diagnostic specimens from peripheral healthcare facilities reach testing laboratories efficiently. Delays, losses, and inefficiencies in specimen referral have adversely impacted patient care, disease surveillance, and outbreak response.

The Integrated Specimen Referral System (ISRS) is designed to address these challenges by streamlining specimen transport and optimizing tracking, coordination across referral pathways and health programs. This system integrates specimen referrals for multiple diseases, such as HIV, tuberculosis (TB), malaria, and other priority diseases, into a unified platform. The ISRS aims to eliminate duplication, reduce operational costs, and enhance the overall efficiency and quality of diagnostic services.

Key to the success of the ISRS is its alignment with the national health goals outlined in Kenya's Universal Health Coverage (UHC) agenda and Global Health Security Agenda (GHSA). By improving diagnostic logistics and reducing turnaround times, the ISRS will contribute to early disease detection, accurate patient management, and enhanced public health surveillance and response.

This operational plan outlines strategies and activities to establish an efficient specimen referral system. These include leveraging existing transport networks, introducing digital tracking tools, building the capacity of healthcare workers, and fostering partnerships with stakeholders such as government agencies, non-governmental organizations, and the private sector.

The operational plan serves as a roadmap to strengthen diagnostic infrastructure by ensuring that every specimen, regardless of origin, is transported, tested, and test results returned efficiently and reliably.

1.71 Purpose of the Operational Plan

To provide a structured framework for implementation of ISRS at the county in line with the national ISRS guidelines and policies.

1.72 ISRS Objectives

This County ISRS operational plan is instrumental in the development and strengthening of a County integrated specimen referral system to achieve six main objectives:

- Increase access to diagnostic testing
- Improve the quality of specimen delivered to testing laboratories and thus quality of diagnostic testing
- Meet timeliness requirements of diagnostic test results (i.e. turnaround time)
- Ensure biosafety and biosecurity of specimen handling, storage and transportation,
- Increase cost efficiency of diagnostic services through integration
- Improve laboratory-based surveillance and response to disease outbreaks

1.73 Scope

This ISRS operational plan defines priorities for all ISRS pillars, and key focus areas for implementing and sustaining an effective specimen referral system. Specifically, the plan defines how the county ISRS operations will be coordinated and managed, the ISRS design, specimen management and transportation mechanisms, route plans/schedules, human resources and capacity building initiatives, costing and finance, resources mobilization plan, how potential risks will be mitigated, and priority indicators for monitoring and evaluation. The operation plan also provides a detailed situational analysis on health facility mapping, laboratory diagnostic capacity, specimen referral systems in the county, and stakeholders analysis.

1.74 Situation analysis
County Profile

Narok County is located in the Rift Valley region of Kenya and covers approximately 17,921 squares Kilometers.

It has a projected population of 1,410,258. The county is characterized by its 9 sub-counties namely: Narok North, Narok central, Narok South, Transmara East, Transmara West, Transmara south, Narok West, Narok East and Narok Amalo. There are 30 administrative wards, 72 locations that are further subdivided into 178 sub-location. Main economic activities include; farming, livestock keeping, tourism and trade. The county borders Nakuru, Bomet, Kajiado, and Tanzania, and has a robust health facility network of 245, and a mix of a highway, few tarmac roads and mainly rural roads that are vital for accessibility and service delivery. Some areas within the county experience challenges in access due to

difficult terrain and inaccessible roads especially during rainy seasons. The county is also one of the vastest counties representing 3.1% of the total service area of Kenya and is also home to the 7th wonder of the land in the Maasai mara game reserve.

The 245 health facilities are distributed in the 9 sub counties to ensure equity and quality in the provision of effective and efficient health care in the county.

1.75 Situation analysis

Characteristic	Overall, N = 245	Hub /spoke N = 6	Spoke, N = 239
Facility level			
Level 2	179 (73%)	0 (0%)	179 (73%)
Level 3	50 (21%)	0 (0%)	39 (19%)
Level 4	16 (6.0%)	6 (100%)	10 (4.2%)
Owner Type			
Faith Based Organization	29 (11.8%)	0 (0%)	29 (11.8%)
Ministry of Health	137 (55.9%)	6 (100%)	131 (54.8%)
Non-Governmental Organizations	7 (2.8%)	0 (0%)	7 (2.9%)
Private Practice	72 (29.3%)	0 (0%)	72 (29.3%)
Molecular Tests Performed	4(9.8%)	4(36.4%)	0 (0%)
Histology Tests Performed	0 (0%)	0(0%)	0 (0%)
Microbiology Tests Performed	45 (18%)	6(90%)	34 (75%)
Parasitology Tests Performed	88 (36%)	6(100%)	82 (34%)
Biochemistry Tests Performed	13 (5%)	4(4%)	9 (4%)
Hematology Tests Performed	25 (10%)	6 (100%)	19 (8%)
Biochemistry Results < 12hrs	13(100%)	4 (100%)	9 (100%)

Haematology Results < 12hrs	25 (100)	11 (100)	14(100)
Molecular Results < 12hrs	4 (100%)	4 (100%)	0 (13%)
Microbiology Results < 12hrs	38(84%)	9 (81%)	36 (15%)
Parasitology Results < 12hrs	88 (100%)	6 (100%)	82 (96%)
Facility Refers Samples	130 (53%)	5 (45%)	119 (50%)
Refers to Regional Lab	130 (53%)	6(100%)	124 (52%)
Refers Within County	130 (53%)	6 (100%)	124(52%)
GeneXpert Tests (Referred)	51(21%)	6(100%)	45 (88%)
Culture Tests (Referred)	22(9.%)	6 (100%)	16(7%)
Liver Function Tests (Referred)	10(4%)	1 (9%)	9(4%)
Renal Function Tests (Referred)	18 (7%)	2 (33%)	16 (7%)
Viral Load Tests (Referred)	65 (27%)	6 (100%)	59 (25%)
Early Infant Diagnosis Tests (Referred)	97 (40%)	6(100%)	91 (38%)
CD4 Tests (Referred)	44(18%)	2(33%)	42(17%)
TB Microscopy Tests (Referred)	10 (4%)	0 (0%)	10(4%)
FHG Tests (Referred)	36(15%)	0 (0%)	36 (15%)
Histology Tests (Referred)	6(2%)	2 (33%)	0(0%)
GeneXpert Tests (Received)	49(20%)	4(100%)	45 (19%)
Culture Tests (Received)	18 (7%)	5 (83%)	13 (6%)

Liver Function Tests (Received)	10(100%)	1 (100%)	9(100%)
Renal Function Tests (Received)	18 (7%)	2 (33%)	16 (7%)
Viral Load Tests (Received)	59 (63%)	3 (50%)	56 (64%)
Early Infant Diagnosis Tests (Received)	90 (93%)	6 (7%)	84 (93%)
CD4 Tests (Received)	40(91%)	2 (100%)	36(90%)
TB Microscopy Tests (Received)	10 (100%)	0 (NA%)	10 (100%)
FHG Tests (Received)	36(15%)	0 (0%)	36 (15%)
Truenat Tests (Received)	2(5%)	0 (NA%)	2(100%)
Histology Tests (Received)	6(2%)	2 (33%)	0(0%)
Other Tests (Received)	0(0%)	0 (0%)	0 (0%)
LPA Tests (Received)	0 (0%)	0 (0%)	0 (0%)
Tumor Marker Tests (Received)	0 (0%)	0 (0%)	0 (0%)
Distance in Kilometers	90 (15, 105)	75 (10, 161)	60 (25, 95)
Received Samples	10 (9.7%)	4 (67%)	6 (6.2%)
Number of Facility Referrals	130	6	124
Motor Vehicles Used	0 (0%)	0 (0%)	0 (0%)
Motorbikes Used	18 (75%)	10 (56%)	8(44%)
Courier Services Used	66(27%)	6(100%)	60(26%)
Other Transport Modes	6 (5%)	0 (0%)	6(5%)

Cycles per week	18(1,2,3)	10 (1,2,3)	8 (1,2)
Electricity Availability	123 (50%)	6 (100%)	71 (30%)
Generator Availability	57 (23%)	6(100%)	51(22%)
Solar Power Availability	27 (26%)	2 (33%)	25 (26%)
Laboratory Personnel Available	51	41	10
Laboratory Officers Available	15	15	0
Support Staff Available	6 (7 %)	6(55%)	0(0%)
Facility Operates 24 Hours	11 (13%)	6 (100%)	8 (9%)
ISRS Risk Assessment Plan Verified	0(0%)	0 (0%)	0 (0%)
ISRS Crisis Response Plan Verified	0 (0%)	0 (0%)	0 (0%)
Risk Register Available	0 (0%)	0 (0%)	0 (0%)
Cadre of Person Filling Form			
Laboratory Officer	103 (100%)	6 (100%)	97 (100%)
Referral distance	90 (15, 105)	75 (10, 161)	60 (25, 95)
Sample Referral System Integrated for All Specimens?	130 (100%)	11(100%)	119 (100%)
Standardized Procedures in Place for ISRS?	130 (53%)	11 (8%)	119 (92%)
ISRS Tools - Logbooks	130 (53%)	11 (8%)	119 (92%)
ISRS Tools - Sample Manifest	130 (53%)	11 (8%)	119 (92%)
ISRS Tools - Sample Tracking Logs	130 (53%)	11 (8%)	119 (92%)

ISRS Tools - Electronic Tool	0 (0%)	0 (0%)	0 (0%)
ISRS Tools - Others	17 (17%)	0 (0%)	17 (18%)
Monthly ISRS Data Analysis to Track Progress and Identify Gaps	11 (11%)	2 (33%)	9 (9.3%)
distance bike	90 (15, 105)	75 (10, 161)	60 (25, 95)
Transport Mode			
Motor bike	18 (75%)	10 (56%)	8(44%)
Vehicle	0 (0%)	0 (0%)	0 (0%)

1.76 Assessment findings of Health Facilities Offering Laboratory Services
Summary on specific analysis

Area	Hub Situation Analysis	Spoke Situation Analysis	Recommendation	Justification
Facility Level	Currently, there are 6 existing HUBs (all Level 4s). 5 additional hubs have been added for ISRS implementation plan (All Level 3s)	Most spokes are Level 2 facilities (184) and level 3 (50) both GOK, FBOs and private	Upgrade the 5 new level 3 facilities proposed as hubs to fully become hubs. Upgrade high volume level 2 facilities to Level 3	• Higher-level facilities can provide more specialized services and improve patient outcomes. • Being a vast county, this will improve efficiency &

				coverage for ISRS
Tests Performed	Wide range of tests available, including specialized tests.	Limited tests, primarily basic services for facilities with laboratories. Most other facilities do not have laboratories (only 88 out 245 facilities have laboratories in the County- 36%))	Equip spokes with necessary tools and training for advanced testing.	Expanding test capabilities at spokes reduces the need for referrals and enhances local diagnostics.
Test Results (Under 12hrs)	Faster result turnaround, especially for critical tests.	Slower results, often exceeding 12 hours.	Improve workflows and invest in faster diagnostic equipment at spokes. Open more hubs in high volume lower facilities	Timely results are crucial for effective patient management and treatment decisions. Most mortalities will be averted with timely results
Sample Referrals	High referral rates to regional labs for specialized tests.	Lower referral rates, primarily within the county.	Increase capacity for spokes to refer to regional labs for complex tests.	Capacity of spokes to refer complex tests to regional labs will ensure timely receipt of results that will ensure timely decision making & patient management.

Transport /Logistic s	Established transport systems, including motorbikes and couriers.	Limited transport options, mainly motorbikes and HCWs delivery.	Invest in diverse transport options and logistics for timely sample transport.	Reliable transport ensures samples reach labs quickly, reducing processing delays.
Power Availability	Reliable power sources, including backup generators.	Frequent power shortages, relying on basic power sources. Some facilities are not connected to the national power grid.	Ensure power connectivity to facilities without. Improve power reliability at spokes with backup generators and renewable options.	Power availability is critical for most lab equipment functionality
Staff Availability	More laboratory personnel and specialized staff.	Mostly 1 labtech in lower level facilities with labs. This is inadequate especially in high volume facilities.	Increase staffing levels at spokes, focusing on laboratory officers. More labtechs to be employed to open up labs in facilities without	Adequate staffing increases operational capacity and improves service delivery at spoke facilities.
Facility Operation s	Operate 24/7, ensuring continuous service.	Many operate only during business hours. Level 2 facilities do not operate on weekends	Upgrade high volume level 2 facilities to level 3. Extend	Upgrading level 2 facilities will ensure more operational hours including weekends. Extended hours allow

			operational hours at high volume spokes to include evenings and weekends.	for more tests to be processed, improving patient care and access to services.
ISRS Tools	Extensive use of ISRS tools for sample tracking and management.	Limited use of ISRS tools, relying on manual processes.	Implement ISRS tools at spokes for better sample tracking and reporting.	Effective tracking reduces errors and enhances workflow efficiency in laboratory operations.
Coverage	Full regional coverage for all services.	Limited coverage, leading to frequent referrals.	Expand spoke coverage to handle more cases locally without referrals.	Increased coverage allows spokes to manage more cases independently, reducing the burden on hubs.
Referral Distance	Longer referral distances are managed effectively.	Shorter referral distances, primarily local.	Enable spokes to refer to regional labs more effectively for specialized tests.	Reducing reliance on nearby hubs can decrease delays in diagnosis and treatment, improving patient outcomes.

1.77 Diagnostic Capacities and Hubs- Present it in a table that includes Diagnostic services, Hubs (name of facilities), Description of services, Equipment available that supports that service. Include a brief narrative to introduce the table

Hubs (Name of facilities)	Description of service	Equipment

1. Narok county referral hospital 2. Ololulunga Sub county Hospital 3. Transmara West Sub county Hospital 4. Nairegia Enkare Sub County Hospital 5. Emurua Dikirr Sub county 6. Lolgorian Sub county Hospital	**Hematology** ● PTT ● HB electrophoresis **Parasitology/Entomology** ● Stool microscopy ● Blood slide for malaria microscopy **Clinical chemistry** ● Blood glucose ● Liver function tests ● Renal function tests ● Hb A_1C ● Lipid profile ● Phosphorous ● Calcium ● CSF and other body fluids **Blood transfusion services** ● ABO grouping ● Rh typing ● Compatibility testing ● Coombs test **Microbiology** ● Bacteriology and mycology **Immunology** ● CD4, ● VL, ● EID,	Hematology analyzer Waterbath Microscopes Motor and pestle Automated biochemistry machine

• CD4/CD8 Tumor markers • CEA, • CA125, • CA15-3, • CA19-9 • ALPHA-feto proteins • Hormonal tests ○ Beta HCG • PSA quantitative immune assay Immunohistochemistry	

1.78 Human resource capacity and distribution per level (Technical and Riders)- Present it in a table that includes Hubs and spokes, Facility level and number of Human resources. Include a brief narrative to introduce the table

Characteristics	Facility level	No. of Technical	No. of Riders
Hubs	Level 5	Lab tech-14 GOK supported-12 Partner supported- 2	Riders-10 GOK supported-0 Partner supported- 10
	Level 4	Lab tech-26 GOK supported-22 Partner supported- 4	Riders -7 GOK supported- 0 Partner supported- 7
Spokes	Level 3	Lab tech-27 GOK supported-27 Partner supported- 1	Riders -8 GOK supported- 0 Partner supported- 8

	Level 2	Lab tech-1 GOK supported- 1 Partner supported- 0	Riders -9 GOK supported- 0 Partner supported-9

1.79 CURRENT STATUS OF COUNTY SRS SITUATIONAL ANALYSIS

Program Management Areas	Status	Gaps
Specimen Referral Systems coordination	County SRS coordinator in place within the CHMT and also at the sub county level but different programs coordinate specimen referral differently. No ISRS committee in place	Inadequate coordination structure due to parallel/vertical programs
Specimen Referral systems Integration	No integrated SRS, each program i.e surveillance, Food safety & water quality control, HIV/TB all manage their SRS parallel	No integrated SRS due to a parallel and vertical nature of program implementation
Specimen referral systems coverage	Low Coverage	Lack of an integrated SRS that incorporates all specimen for all diseases
Availability of ISRS guidelines, policies, SOPs	Not in place	Not availed, trainings not done
Communication management	Program coordinators receive communication support from IPs. Communication is coordinated from facility & community level to the Sub county and then county.	There is no integrated SRS communication mechanism as each program communicates separately

	Communication in view of feedback and dissemination such as for policies and guidelines the same applies per program area	
Financing	Only partner support for TB/HIV specimen & surveillance samples	No sustainability assurance due to lack of a structured county support
Specimen Referral Design	**Status**	**Gaps**
SRS Design	Available but not structured	Not well structured due to lack of resources
Specimen Pick-up and Drop Off Frequency	Twice weekly	Not well structured due to lack of resources
SRS has defined route plans	Simple design only for HIV/TB services supported by the Implementation partner	No county in current and previous FYs to support full county coverage
Average route distances	80KM	Inadequate number of riders/vastness
Transportation	**Status**	**Gaps**
Specimen modes of transportation	Mostly contracted motorcycle for level 3 and 2 facilities while courier services are available for level 4 facilities	Lack of county motorcycles to cover entire county
Human Resources	**Status**	**Gaps**
SRS training programs	None.	No training guidelines, no allocated resources
HR roles and responsibilities clearly defined	None	No clear guidance
HR adequate to run SRS operations	Not adequate. Only 18 riders are contracted for SRS in the entire county.	Gap analysis report not in place

Equipment and supply chain management	Status	Gaps
Core diagnostic equipment on service contract	Only 4 Molecular machines at NCRH, Ololulunga, Nairagie-Enkare and Transmara WSC have service contracts	Lack of resources
County has steady supply of key SRS supplies	No. regular stock outs	Erratic supply, low fill rates
County has adequate system for inventory management	Available but not adequate inventory systems in place- not digitized	No digitization
Monitoring & Evaluation	Status	Gaps
M&E indicators monitored	Indicators for monitoring are available and are program specific	Not fully digitized
System for results return	Systems for results feedback are available	Occasional lack of resource to support bundles & airtimes, tablets, EMR etc.

1.80 SWOT Analysis

Strengths	Weaknesses
• Existing Hubs- 6 • Existing health infrastructure • Available coordination structures- Executive, CHMT, SCHMTs, HFs, CUs • Narok county referral is ISO 15189 certified • QMS is being implemented in tier 4 facilities	• ISRS is only supported by implementing partners • Inadequate allocation of resources • All labs and blood satellites have inadequate and poor infrastructure • Lack of service contract for all equipment. • Limited capacity of facilities laboratories to

	meet the increased demand for lab services
● Skilled & committed lab personnel ● Most staff are trained on biosafety & biosecurity	
Opportunities	**Threats**
● Three laboratories are being supported in the process of accreditation by the implementing partner ● Developing CHSSP ● Power connectivity to most facilities ● Partners support and coordination ● Established blood satellite in the county	● Private and FBO taking lead in providing laboratory services ● Lack of new employment may lead to serious staff shortage at all tiers ● Reduction of partner support due to budget cuts ● Low investment in health ● Fast changing technology costs ● Human wildlife conflict ● Vastness, bad terrains & poor road network

1.81 ISRS Operational Plan

1. Program Management

Effective governance is critical for the successful implementation of the ISRS at the county level. The county will establish an ISRS committee/secretariat comprising representatives from the County Health Management Team (CHMT), laboratory managers, logisticians, public health officers, partners representatives and any other member the ISRS committee/secretariat may decide to co-opt. This task force will oversee planning, resource allocation, and adherence to ISRS protocols. This structure is aligned with county Integrated Development Plans (CIDPs) to ensure strategic integration into broader healthcare initiatives. The county medical laboratory coordinator (CMLC) has been designated as the overall ISRS coordinator for the county. The positions, roles and responsibilities are defined under the HR section of this operational plan and in appendix II. Regular progress reviews will be conducted to

monitor implementation and make necessary adjustments. Key contacts for streamlined communication within the system will be provided to all facilities. The program design has also taken into consideration ethical, safety, biosafety and biosecurity requirements in ISRS, all addressed in subsequent sections of this operational plan.

NAROK COUNTY ISRS ORGANOGRAM

```
                    ┌──────────────────┐
                    │    CECM          │
                    └──────┬───────────┘
                           │
                           ▼
        ┌──────────────────┴──────────────────┐
        │                                      │
   ┌────┴─────────┐              ┌─────────────┴─────────┐
   │ Chief Officer│              │ Chief Officer Preventive│
   │ Medical      │              │ and Promotive Services │
   │ Services     │              │                        │
   └──────┬───────┘              └──────────┬─────────────┘
          │                                 │
          └────────────────┬────────────────┘
                           │
                           ▼
                 ┌──────────────────┐
                 │ County Director of│
                 │ Health (CDOH)    │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │ CHMT - ISRS      │
                 │ Coordinator      │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │    TWG           │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │    SCHMT          │
                 └────────┬─────────┘
                          │
                          ▼
                 ┌──────────────────┐
                 │    Facility       │
                 └──────────────────┘
```
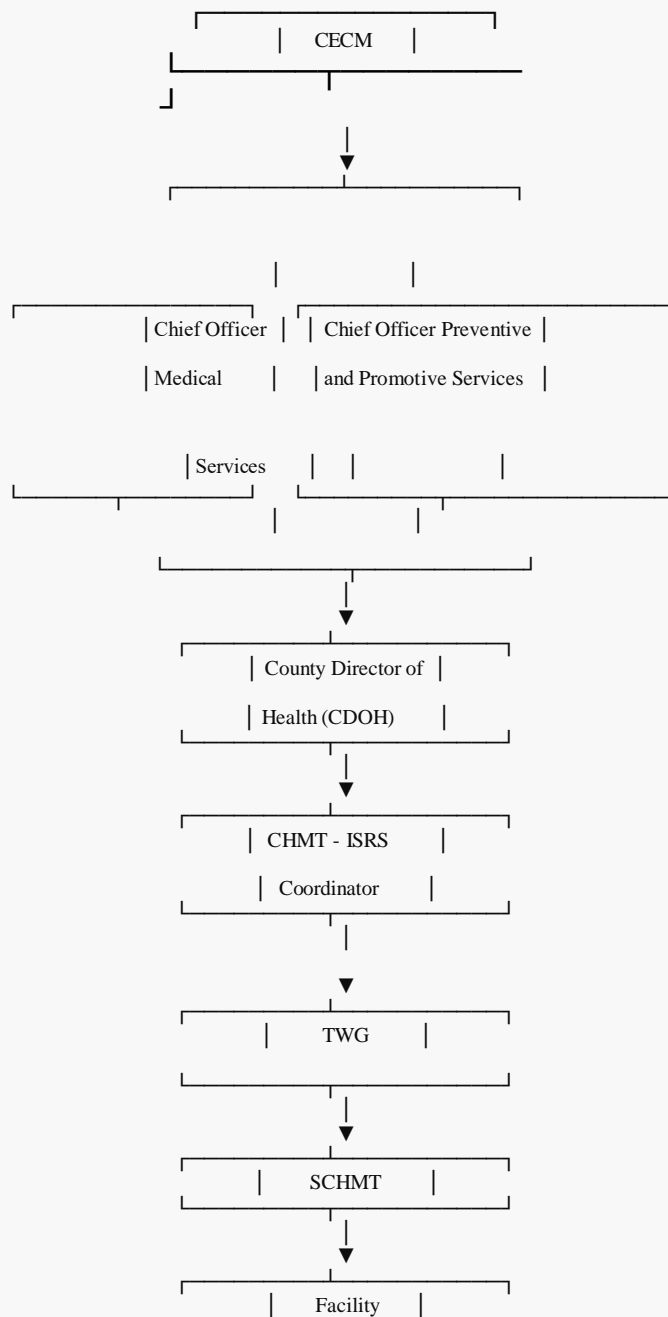
2. System Design

A comprehensive mapping of facilities with support of the national ISRS secretariat and partners has been conducted. The hub and spoke model of ISRS design has been adopted. Spokes have been mapped to hubs based on testing capacities and distances between the hubs and spokes. Building capacity of core cadres in specimen management has been prioritized under HR capacity building.

3. Transportation and Logistics

Reliable transportation systems are critical to the success of ISRS. The main mode of specimen transportation will continue to be through motorbikes. Each sub-county should assign motorbikes and riders accordingly. Other modes of specimen transportation such as use of county vehicles, use of drones will be adopted to fill transport needs that arise especially in emergency situations. It is worth noting that besides specimen referral, the system should be designed to be flexible enough to support the realization of broader healthcare goals for the county. Referral of specimens to national testing hubs or other hubs outside the county should be through commercial couriers or using designated vehicles. Specimen transporters will be responsible for shipping specimens under recommended biosafety and biosecurity conditions. Supplies to support this and tracking will be procured for all the defined routes. Maintenance and contingency plans will be established to address potential breakdowns or delays. Selection and contracting of transport logistics providers will be anchored on national ISRS guidelines.

4. Supplies and equipment

Ensuring an uninterrupted supply of consumables such as specimen containers, cool boxes, and biohazard bags is vital. Specimen packaging supplies and reliable inventory management systems to track stock levels and minimize shortages should be established. Collaboration with national procurement agencies like KEMSA will ensure availability and timely delivery of supplies.

5.   Human Resources and Training

Adequate numbers of well-trained workforce is integral to the success of the ISRS. A cascade training model, where county TOTs train and mentor personnel in sub-counties and facility level. All training will be conducted using the national ISRS training package that has defined content for target cadres. Complementary materials will be adopted on a need basis. Initial training will be comprehensive, while subsequent annual training will be tailored based on training assessment needs findings. **Appendix I**. provides roles and responsibilities of all personnel to be engaged in the county ISRS. ISRS training materials hosted on MOH virtual academy will supplement in-person training programs.

6.   Monitoring and Evaluation Plan

Monitoring and evaluation framework is anchored on the national ISRS guidelines, to track the effectiveness of the ISRS. The national electronic specimen referral tracking system has established dashboards to monitor key indicators, at all tiers of the healthcare system in Kenya. All personnel in the ISRS will be provided access level appropriate for their tier and functions. Quarterly review meetings will be convened to assess progress, identify bottlenecks, and implement corrective measures. Data analytics will play a critical role in informing decision-making and ensuring continuous improvement. **Appendix II** provides a list of indicators selected for routine ISRS monitoring and evaluation.

1.82 ISRS Implementation Matrix

Table 3: Narok County ISRS Implementation Matrix (2025-2027)

ISRS Pillar	Activities	Indicators	Target	Deliverables	Costs	Timelines	Responsible Persons	Status
Program Management	Formally appoint county ISRS coordinator	County ISRS coordinator appointed	1	Appointment Letters	**0**	**1 Month**	**CHIEF OFFICER**	**Pending**
	Formally appoint sub-county ISRS coordinators	Sub-county ISRS coordinators appointed	9	Appointment Letters	**0**	**1 month**	**CDH**	**Pending**
	Map county ISRS stakeholders and conduct sensitization	Number of stakeholders mapped	50	Report	**276000**	**Q 1**	**CISRSC**	**Pending**
	Constitute county ISRS committee	County ISRS committee constituted	1	Appointment Letters	**0**	**Q1**	**CDH**	**Pending**
	Hold quarterly county ISRS committee review meetings	Number of ISRS committee meetings held	4	Minutes/meeting g report	**891600**	**Quarterly**		**Pending**
	Cost and budget for county ISRS operations	Availability of a Costed budget plan	1	Costed budget plan		**Q1**	**CISRSC**	**Pending**
	Establish channels to streamline communications	Number of ISRS communication channels in		County ISRS Communication	**0**	**Q1**	**CISRSC**	**Pending**

		in the county ISRS	place		channels				
ISRS Design	Conduct health facilities mapping	Mapped health facilities	245	Mapped facilities	**0**	**July 2025**	**Select CHMT**	**Ongoing**
	Develop ISRS route plans based on mapping data	Number of ISRS route plan	1	County ISRS route map	**0**	**July 2025**	**Select CHMT**	**Ongoing**
	Increase specimen pick-up and drop off frequencies	Number of ISRS pick up & drop-off points		Specimen pick up & drop-off points	**0**	**July 2025**	**Select CHMT**	**Ongoing**
	Review and adopt national specimen management guidelines	Availability of national/county specimen management guidelines	1	Adopted county specific specimen management guideline	**0**	**July 2025**	**Select CHMT**	**Ongoing**
	Develop contingency plans for ISRS operations	Number of contingency ISRS plans	1	A contingency plan for ISRS	**0**	**July 2025**	**Select CHMT**	**Ongoing**
Transport	Procurement of Motor cycles with protective gear, servicing and repairs	Number of motorcycles procured	14 motor Rikers 1 vehicle	Motorbikes procured	**8508200**	**Q2**	**Chief Officer**	**Pending**
	Procure motor vehicle insurance cover	Number of motor vehicles insured	15	Insured bikes & vehicle	**352800**	**Q2**	**CHAO**	**Pending**
	Procure and Install GPS trackers for specimen	Number of motorbikes/vehicles with	15	Functional GPS trackers	**7000**	**Q2**	**CHAI**	**Pending**

	transportation vehicles and motorbikes	GPS trackers		on motorcycles/ve hicle				
	Vet and contract providers of equipment maintenance and repair services	Number of machines/equipment with service contracts		Timely servicing & repair of machines/equip ment		**Need based**	**CMLC**	**Ongoing**
Human Resources and Training	Recruit riders to support ISRS	Number of riders recruited	14	Increased human capacity to support ISRS	**2520000**	**Q1**	**Narok PSB & CO**	**Pending**
	Undertake a Training Needs Assessment (TNA) for ISRS	Training needs based done	1	Training needs based report	**35000**	**August 2025**	**CDH**	**Pending**
	Train/sensitize CHMT on ISRS operations, guidelines and policies	Number of CHMT members sensitized on ISRS operations	20	Sensitization report	**10000**	**August 2025**	**CDH**	**Pending**
	Train county TOTs on ISRS	Number of ISRS county TOTs	6	Trained county TOTs/TOTs training report	**432500**	**Q1**	**DNLS**	**Pending**
	Conduct training of HCWs on ISRS	Number of HCWs trained on ISRS	245	Improved capacity of HCWs on	**2726000**	**Q1&2**	**CDH**	**Pending**

				ISRS/HCWs training report				
	Sensitize specimen transporters on ISRS	Number of specimen transporters sensitized	15	Improved capacity of specimen transporters on ISRS/sensitization report	**75400**	**Q1**	**CISRSC**	**Pending**
	Conduct annual performance appraisal for ISRS personnel	Number of ISRS personnel appraised	15	Appraisal reports	**28900**	**Q4**	**CISRSC**	**Pending**
Supplies and Equipment	Develop ISRS supplies and equipment procurement plan	Availability of ISRS supplies & equipment procurement plan	1	ISRS supplies & equipment procurement plan in place	**15600**	**Q1**	**CISRSC**	**Pending**
	Conduct training on forecasting and quantification	F&Q plan done	1	F&Q report	**1062000**	**Q1**	**CP/CISRSC**	**Pending**
	Implement digital inventory monitoring tools	Availability of digital monitoring tools		Improved digital monitoring	**0**	**Q1**	**CHRIO**	**Pending**
	Quantify and procure cold chain supplies	Availability of cold chain supplies (20 cool boxes/ 6 fridges)	26	Quality & safe specimen storage and management	**1890000**	**Q1**	**CP/CISRSC**	**Pending**

	Procure PPEs & packaging material (masks, cool boxes, gloves, bags)	Number of PPEs & packaging materials	14	Improved IPC	**81000**	**Q1**	**CP**	**Pending**
Monitoring and Evaluation	Develop/adopt M&E data collection tools	Number of ISRS data tools available	245	Optimal ISRS data capture	**0**	**Q1**	**CHRIO**	**Pending**
	Train ISRS personnel on M&E tools and reporting requirements	Number of ISRS personnel trained on M&E tools & reporting	25	Training report	**410600**	**Q1**	**CHRIO**	**Pending**
	Conduct periodic support supervision visits riding on other health department activities	Number of supervisory visits	4	Supervision reports	**210000**	**Quarterly**	**CISRSC**	**Pending**
	Develop and share ISRS reports periodically	Number of Monthly ISRS reports	12	Reports	**40000**	**Monthly**	**CISRSC**	**Pending**

1.83 Resource Mobilization and Sustainability

Narok County have a realization that estimating ISRS operational costs is invaluable for resource mobilization, sustainability and the long-term effectiveness and efficiency of the ISRS. Financial resources required to support all the components (human, and material resources including funding for infrastructure, training, equipment, and technology) of ISRS have been estimated and captured in the implementation matrix. These will be instrumental in actively mobilizing resources within the county government budgets, not for profit donor organizations, and private sector partners to fund implementation activities. Sustainability efforts will be initiated to create a system that will function independently over time.

The county government will take lead in the mobilization and allocation of resources as detailed in the CSOP.

Relevant stakeholders including implementing partners will also play a great role in supporting a successful ISRS implementation in Narok.

Some of the strategies for resource mobilization will include reaching out to corporate bodies for CSR, tourism sector including the Tourism Fund, Implementing partners (HJF-MRI, Resok, ADS, KRCS, CHAK, ONYX, and AMREF), SHA among others.

Narok county ISRS operations have been cost based on the county situation, for planning and resources mobilization purposes. Table 4 below provides a summary of ISRS costs per pillar. Detailed costs are provided per activity in the implementation matrix

Table 4: Narok county ISRS costing estimates

Budget Category	Description	Estimated Cost (KES)
Personnel	Hiring, Training for HCWs and couriers	7300400
Transportation	Courier contracts, fuel, and maintenance	8931000

Stakeholders	Mapping & sensitization	276000
Supplies	PPE, packaging materials	96600
Equipment	Motorbikes, Temperature-controlled storage units	1890000
Monitoring and Evaluation	Data collection, analysis	1141600
Miscellaneous	Contingency-fuels, motorbikes, repairs, airtimes, attrition	200000
Total Estimated Cost		**19835600**

1.84 Risks Management Plan

Risk management in specimen referral systems will involve identifying, evaluating, and mitigating potential risks to ensure the safe, efficient, and reliable transport of diagnostic specimens. Table xx provides a summary of potential risks in implementation of ISRS and strategies to mitigate them for an efficient national ISRS.

Table 5: ISRS Risk Management Plan

Risk	Risk Level	Mitigation Strategy
Specimen degradation after collection and/or cold chain failure during transportation	High	Implement digital temperature monitoring during transportation and storage
Specimen cross contamination during transportation	Low	Proper packaging and sealing of specimens.
		Train personnel on correct handling procedures.
		Implement quality control checks during transport.
Specimen loss	Low	Maintain a centralized tracking system for all specimen referred
Compliance to requirements for specimen packaging and transportation	Medium	Implement regular audits and quality checks.
		Consistent supply of packaging materials
Supplies Stock-out	Medium	Implement robust inventory management system

		Budgetary allocation towards procurement of supplies
Testing equipment break down	High	Service level agreements with vendors
Transportation equipment breakdown	Medium	Regular servicing and maintenance
Long turn around-times that could delay diagnosis	Medium	Implement a logistics management system for coordination and communication.
		Adopt reliable transport methods based on local situation
		Establish clear communication channels within the network and system
Security and Confidentiality Risks	High	Implement confidentiality agreements with all ISRS personnel
		Use encrypted systems for patient data management.
		Implement electronic reporting system with controlled access levels
		Use sealed envelope for paper-based results return
Infectious disease spread	Medium	Ensure proper biosafety protocols are in place and implemented
		Train staff on infection control practices.
Poor road networks that could limit access to and from facilities	Medium	Adopt alternative reliable transport methods suited to the local situation
Cost and Resource Constraints	High	Allocate budgets towards ISRS operations
		Lobby with counties to include ISRS costs into integrated development plans
		Prioritization of core ISRS activities
		Seek external funding or partnerships for system improvements.
Inadequate ISRS personnel (transporters) training on ISRS protocol	Median	Allocate adequate funds for capacity building
ISRS personnel attrition	Medium	Have a contingency plan for unforeseen/emerging issues

Conflicts (Evictions, wildlife, intercommunity)- public health emergencies		Medium		Consider alternative routes. Improve information access. Enhance events-based surveillance	

1.85 Appendices

Appendix I: Monitoring and Evaluation Indicators

	#	Indicator	Type of indicator	Monitored where/by whom	Monitoring frequency
Access to diagnostics	1.	Number of specimens referred for Testing	Output	Referring facility	Monthly
		2.Number of referred specimens received for testing	Output	Referral laboratory	Monthly
		3.Proportion of referring facilities participating in the specimen referral system by level	Input	At county or national level	Quarterly
		4. proportion of referring facilities reporting ISRS commodity stock at county level	Output	County/National	Quarterly
		5.Proportion of specimens transported to referral laboratory	Outcome	Referring facility	Monthly
Timeliness (TAT)		Proportion of specimen delivered to testing laboratory within the specify time	Output	Referral Laboratory	Monthly
		Proportion of test results released by referral laboratory within the specified time	Outcome	Referral laboratory	Monthly

		Proportion of referred specimens whose result was received within the specified target time	Outcome	Referring facility	Monthly
Quality of specimen		Proportion of specimens that were rejected (disaggregated by reason for rejection)	Outcome	Referral laboratory	Monthly
Biosafety & Biosecurity		Proportion of shipments that were lost or damaged in transit	Output	Transport service provider	Monthly
		Proportion of transport service providers trained on National Specimen Referral Guidelines requirements	Process	At county or national level by CHMT or MOH/NPHL	Annually
Enhance cost efficiency		Number of shipments transported to the hub or referral laboratory	Output	Transport service provider	Monthly
Quality of data	2.	Percentage of referring facilities whose specimen referral logbook (or equivalent) has been filled completely	Process	Referring facility/ by supportive supervisory visits	Quarterly

Appendix II: Personnel Roles and Responsibilities

Service Unit	Human Resources	Roles
National Level	National ISRS coordinator	• Develop and review national policies and guidelines on ISRS • Resource mobilization and grants application for funding on ISRS • Partner mapping and coordination on ISRS • ISRS planning/Commodity management and logistics • Develop and coordinate ISRS TWGs and taskforce • Coordinate mapping of facilities and rerouting of Specimens to various reference and referral labs • Develop ISRS vote head in the health budget • Develop training curriculum on ISRS
	M and E officer on ISRS	• Digitization of the ISRS • Identifying and defining ISRS key performance indicators (KPI) • Coordinate ISRS performance reviews and share reports • Development of the online ISRS platform for reporting and tracking of the Specimens and results • Review and dissemination of standardized reporting and transaction tools on ISRS • Develop KOBO collect or ODK for Specimen networking and monitoring of riders.
	Lab managers for the reference and referral labs	• Training of technical staff on ISRS • Develop standard operating procedures on ISRS • Develop terms of references and MOUs with various implementing partners and stakeholders on ISRS • Review standard operating procedures on ISRS for compliance on safety, health regulations and quality standards • Maintaining inventory on ISRS • Define inter lab referrals and linkages for all the reference labs on ISRS
County Level	County Director of Health	• Dissemination of the ISRS Strategies and County action plan to the health committee at the County Assembly • Ensure that all SRS budgeted activities are approved for funding in the county health budget

		● Ensure adequate staffing at all levels for ISRS implementation ● Stakeholder engagement on ISRS implementation. ● Coordination, management and reporting of ISRS activities to the National and County health management teams
	County ISRS Coordinator (CMLC or designee)	● Develop ISRS annual workplans and budgets ● Identify Specimen referral network design, strategy and select appropriate transport service providers. ● Oversee requisition, utilization and management of equipment and supplies for ISRS. ● Establish contracts with the ISRS service providers ● Coordinate County ISRS performance reviews ● Coordinate training and capacity building on ISRS in the county.
	County Disease Surveillance Coordinator	● Dissemination of ISRS guidelines, policies and ensuring compliance and adherence. ● Develop job descriptions for the Specimen transporters ● Conduct needs assessment on ISRS as per the disease surveillance activities.
	County Health Administrator	● Develop and review disease surveillance work plans to include ISRS ● Capacity build on ISRS implementation in compliance with all Health and Safety Regulations ● Conduct real-time analysis of disease outbreak data and ISRS coverage ● Participate in preparation and implementation of ISRS budgets ● Approve requisitions for equipment and supplies for ISRS activities.
	County Health records and information officer	● Liaise and coordinate contracted ISRS service providers ● Ensuring compliance with health care laws and regulations on ISRS ● Tracking and reporting on ISRS key performance indicators (KPI) ● Conduct scheduled ISRS performance reviews ● Dissemination of standardized reporting and transaction tools on ISRS ● Ensure the ISRS data are entered in all the reporting platforms

Sub County Level	Sub County Health Coordinator	Oversee the ISRS implementation at Sub County level. • Stakeholder engagement at sub county level on ISRS implementation. • Mapping of facilities on ISRS coverage at the sub county. • Identifying routes for spokes and hubs Specimen and results shipment.
	Sub County ISRS focal person (SCMLC)	• Coordinate training and sensitization on ISRS to health care providers and Specimen transporters • Coordinate logistics and commodities for ISRS. (Triple packaging, Cold chain materials, thermometers) and communicate ISRS service interruptions
	Sub County health records and information officer	• Conduct ISRS supportive supervision and data quality audits at facility level • Conduct periodic HRH performance appraisals on ISRS • Prepare and submit ISRS activities reports • Dissemination of ISRS guidelines, policies and ensuring compliance and adherence.
	Sub county disease surveillance officer	• Tracking and reporting on ISRS key performance indicators (KPI) • Conduct scheduled ISRS performance reviews • Dissemination of standardized reporting and transaction tools on ISRS (registers, Specimen and results tracking logs, reporting forms) • Ensure the ISRS data are entered in all the reporting platforms. • Generate ISRS performance scorecards for various facilities • Conduct need assessment on ISRS as per the disease surveillance activities. • Develop and review disease surveillance work plans to include ISRS • Capacity build on ISRS implementation in compliance with all Health and Safety Regulations • Conduct real-time analysis of disease outbreak data and ISRS coverage • Coordinate Specimen collection, transportation, and tracking during disease outbreaks.

Facility Level	Facility In charges	• Oversee ISRS implementation at facility level • Develop Standard procedures on ISRS per test type indicating the quality requirements that must be met for Specimen shipment
	Lab managers	• Prepare monthly ISRS reports and submit them to the Sub County ISRS Coordinators (SCMLCs). • Tracking ISRS performance indicators • Ensure availability and utilization of ISRS transaction tools (Specimen and results tracking logs, Specimen manifests, rejection logs • Conduct corrective actions for gaps identified on ISRS
	Facility health administrators	• Participate in preparation and implementation of ISRS budgets • Approve requisitions for equipment and supplies for ISRS activities.
	Facility Lab technologists/ Clinicians/ Nurses	• Collection of Specimens • Ensure requisition forms are dully filled • Packaging of Specimens as per the ISRS SOPs
	Facility ISRS focal person	• Ensure availability of ISRS tools and commodities at all the service delivery points and sites. • Timely communication to ISRS service interruptions e.g. equipment is broken down or reagents shortage.
	Transporters	• Verify the Specimen integrity and documentation of all the tools before leaving the facility. • Ensures that the dispatched logbook/Specimen shipment manifest is adequately filled • Conduct mentorship on ISRS at SDPs/sites
		• Collection of all Specimens from the peripheral facilities to the testing sites • Collection of all Specimens from the facilities to various courier offices.

	Community health promoters/ Community Health Assistants	• Account for and ensure that all the Specimens picked from the facilities reach the referred testing site/laboratory as per the standard operating procedures and requirements. • Account for and ensure that all results collected from the testing sites/laboratories are dispatched to the respective facilities as per the standard operating procedures. • Conduct community sensitization and patient referrals on ISRS • Perform such functions as may be assigned by the county executive committee member in county legislation or under any other law. (primary health care Act No.3 of 2023) Functions of CHPs • Support in patient contact tracing for Specimen collections and follow ups. • Coordinate and report on ISRS activities during community outreaches and health campaigns • Conduct health talks and sensitizations at the households on the available diagnostic methods and access to testing through ISRS

Appendix III: Specimen Management

Test	Specimen Type	Collection Guide	Transportation Requirements	Storage Requirements	Rejection Criteria
TB Diagnosis	Sputum	• Collect early morning sputum into a sterile, leak-proof container. • Ensure the patient rinses their mouth with water before collection.	• Transport at room temperature within 24 hours. - If delayed, refrigerate at 2-8 ° C for up to 72 hours.	Refrigerate at 2-8 ° C if not tested immediately.	• Insufficient quantity. • Leakage during transport. • Visible contamination. • No labeling.

Test	Sample Type	Collection	Transport	Storage	Rejection Criteria
HIV Diagnosis (PCR)	Whole blood or DBS (Dried Blood Spot)	• For whole blood, collect in an EDTA tube (minimum 2 mL). • For DBS, use recommended filter paper and air dry thoroughly.	• Transport DBS at ambient temperature in a sealed plastic bag with desiccant. • Whole blood: transport at 2-8 ° C within 48 hours.	Whole blood: Store at 2-8 ° C. - DBS: Store at room temperature with desiccant for up to 14 days.	• Improper drying of DBS. • Hemolyzed blood samples. • Missing patient identification.
Malaria Diagnosis	Capillary or venous blood	• Collect finger-prick capillary blood onto a microscope slide or into an EDTA tube. • Avoid contamination.	• Transport blood smears at room temperature. • EDTA blood: Transport at 2-8 ° C within 24 hours.	Blood smears: Room temperature. - EDTA blood: Refrigerate at 2-8 ° C for up to 48 hours.	• Insufficient blood sample. • Clotted or hemolyzed blood. • Smear not prepared properly.
Bacteriology Culture	Swabs, urine, stool, CSF, or aspirates	• Use sterile swabs or containers. • For CSF, collect aseptically into sterile tubes. • Ensure immediate transport.	• Transport at room temperature within 2 hours for CSF and swabs. • Urine/stool: transport at 2-8 ° C.	Refrigerate urine/stool samples at 2-8 ° C. - CSF: Process immediately or store at 2-8 ° C for <24 hrs.	• Delayed transport (>24 hrs). • Leakage or contamination. • Mislabeling or missing patient data.
TB Culture	Sputum	• Collect in sterile, wide-mouth containers. • Minimum volume: 5-10 mL.	• Transport at 2-8 ° C in a cold box if transport exceeds 24 hours. • Deliver to lab within 72 hours.	Store at 2-8 ° C to prevent bacterial overgrowth.	• Insufficient volume. • Leaking container. • Transport delay >72 hours. • No proper labeling.

Blood Culture	Venous blood	● Collect 5-10 mL of blood aseptically into blood culture bottles.	● Transport at room temperature in an upright position. ● Deliver within 8 hours.	Incubate at 37 ° C or transport immediately to laboratory for incubation.	● Insufficient volume. ● Contaminated samples. ● Improper labeling. ● Broken culture bottles.
Stool for Bacteriology	Stool	● Collect in a clean, sterile container. ● Minimum sample: 2-5 grams (about the size of a walnut).	● Transport at 2-8 ° C in a cold box. ● Deliver to the lab within 24 hours.	Refrigerate at 2-8 ° C if processing is delayed.	● Sample dried out. ● Contamination with urine. ● Inadequate sample size. ● No labeling.
Urine Culture	Midstream urine	● Collect midstream urine into a sterile container (minimum 10 mL).	● Transport at 2-8 ° C in a cold box. ● Deliver within 24 hours.	Refrigerate at 2-8 ° C if not processed immediately.	● Insufficient volume. ● Leakage during transport. ● Delayed transport >24 hours. ● No labeling.

Appendix IV:Routes:

Hub #	Hub name	Testing available at hub	Is this an Existing hub or a planned new one to be established?	Spokes
1	Narok County Referral Hospital	Currently Do MTB/RIF on Xpert,covid 19 , Haem, biochem, malaria microscopy, Microbiology,Bacteriology,HbA1C. Crag test	Existing	Narok county referral Hospital, Olchorro Health Centre,l ,AIC Siyiapei Dispensary,
				Narok county referral Hospital, Oloropil Dispensary,St Teresa Olokirikirai Dispensary,Enabelbel H/C
				Narok county referral Hospital,Naisuya Dispensary,Nkareta Dispensary,
				Narok county referral Hospital,Enaibor Ajijik Dispensary,Sakutiek H/C, Sankale Clarence Health Centre,
				Narok county referral Hospital,FLC Fountain of life hospital,Maasai Mara University College Clinic,Sasa Centre, Ebenezer reproductive health clinic, Hertlands Medical Center, Medicatia Hospital,
1				GK Prisons Dispensary, Medicross Kenya,Narok Cottage Hospital, Narok Manyatta Dental and Medical Clinic,Olchekut Community Based Clinic, Premierecare Diagnostic Hospital Annex Limited,The Shepherd Hospital Limited, Tree of life healthcare limited, The Mara Specialist Hospital
				Narok CRH-Naroosura, Ntuka, Majimoto, Ewuaso-ngiro NCRH
				Narok CRH-Olokurto- Narok county referral hospital

#				
				Narok CRH, Sekenani, Nkoilale, Lions, Ngooswani, Ewuaso-Ngiro-Narok CRH
				Narok CRH, Naikara,Narok CRH
2	Ololulunga SCH			Ololulunga SCH, Mulot HC, Mulot Catholic, Rongena, Salabwek, Baraka, Enelerai
				Ololulunga SCH, Olchoro-oirowua, Ngiito, Ilmotiok, Mogoywet, Chemwokter
				Ololulunga SCH, Nkorkori, Lemek -OSCH
				Ololulunga SCH, Sogoo, Olmekenyu- OSCH
3	Transmara West Sub County Hospital	Currently Do MTB/RIF on Xpert,covid 19 , Haem, biochem, malaria microscopy, Microbiology,Bacteriology,HbA1C	Existing	TMWSCH, Osinoni, Nkararo, Narololong, Sikawa, Oldanyati
				TMWSCH, Akemo, Ololchani, Shankoe, Olereko, Enoosaen, Keyian SDA
				TMWSCH, st joseph, KYC, Entargeeti, Nganayio, Olengoloto
				TMWSCH, Shartuka, Tororek, Kapune, Romosha, Megwera, Osupuko,
4	Lolgorian Sub County Hospital	Currently Haem, malaria microscopy,Salmonella antigen,Blood sugar,	Existing	Lolgorian, Allens medical clinic, Masurura, Mashangwa
				Lolgorian, Oldonyorok, Angata Barikoi, Ngendalel, Kondamet, Keringani
				Lolgorian, Engos AMS, Emurutoto, Kichwa Tembo clinic, Iltolish
				Lolgorian, Sitoka, Esoit, St Teresa of Jesus, Emarti
5	Nairegia Enkare Sub County Hospital	Currently MTB on TB LAMP,Tb microscopy, Haem, malaria microscopy,Salmonella antigen	Existing	Nairegia Enkare SCH,St Joseph's the Worker Dispensary,ACK Nturumeti Dispensary,Ilkiremisho Dispensary,
				Nairagie Enkare Sub-County Hospital,Sintakara Dispensary,Ilkirragarien Dispensary, Osiligi Dispensary, Oltepesi Dispensary
				Nairagie Enkare Sub-County Hospital,Inkoirienito Dispensary,Suswa Dispensary,Olasiti (AIC) Dispensary

				Nairegia Enkare SCH,Ilaiser Dispensary,Kojonga Dispensary
				Nairagie Enkare Sub-County Hospital,Ntulele Health Centre,Shasyt Annex Health Care Clinic,Mayian Brilliant Medical Centre,Nalepo Medical Clinic, Eor-Ekule Health centre,
				Naragie-enkare- Oletukat, Ongata Naado
6	Emurua Dikirr Sub County Hospital	Currently do Tb microscopy, Haem, malaria microscopy,Salmonella antigen	New	Emurua Dikirr, Kabolecho, Kiribwet, ilkerin, Kamaget, Savimbi clinic, Kurangurik
				Emurua dikirr, mogondo, Mogor, Sosiana, Soget, Takitech
				Emurau dikirr, Kapsasian, Chemamit, Kapweria, Kelonget, Abossi, mogoywet, Ndamama, Njipiship, Olchebosei
7	Olokurto Health Centre	Currently do: Malaria microscopy,TB microscopy,LF LAM	Existing	Olokurto H/C, Olposumoru Dispensary,Bethany Hill Crest Hospital,Entiyani Dispensary-Olokurto
8	Sogoo Health Centre	Currently do Also:Malaria microscopy,TB microscopy,LF LAM	New	Sogoo, Saptet, Saire- Sogoo
9	Naroosura Health centre	Currently MTB/RIF on Truenat. Also, haem, malaria microscopy	New	Naroosura, Entasekera- Naroosura
10	Sekenani	Require TB molecular test (Truenat)	New	Sekenani, Losho, Megwera, Enkitoria, Talek- Sekenani
11	Lemek	Collection point	New	Lemek, Mararianta, Aitong-Lemek

© 2025