



**NATIONAL HEALTH  
LABORATORY SERVICE**



**ANNUAL PERFORMANCE PLAN  
2021 - 2022**

APPROVED NHLS APP

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## LIST OF ABBREVIATIONS

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AARQA	Academic Affairs, Research, and Quality Assurance
AIDS	Acquired Immune Deficiency Syndrome
AG	Auditor-General
BAC	Benefits Advisory Committee
BSL	Bio-Safety Level
CCMI	Competition Commission Market Inquiry
CCMT	Comprehensive Care, Management and Treatment
CD4	Immune-level indicator
CDC	Centers for Disease Control and Prevention
CEO	Chief Executive Officer
CMSA	Colleges of Medicine in South Africa
CST	Community Screening
DMP	Diagnostic media Products
DNA	Deoxyribonucleic Acid
EDL	Essential Diagnostic List
EOC	Emergency Operations Centre
FBC	Full Blood Count
FMPPI	Framework for Managing Programme Performance Information
GWME	Government-Wide Monitoring and Evaluation
HIV	Human Immunodeficiency Virus
HPCSA	Health Professions Council of South Africa
HPV	Human Papilloma Virus
ICT	Information and Communication Technology
ILO	International Labour Organisation
IP	Intellectual Property
ISO	Organisation of International Standards
LIS	Laboratory Information System
MBOD	Medical Bureau for Occupational Diseases
MTSF	Medium-Term Strategic Framework
NAPHISA	National Public Health Institutes of South Africa
NCR	National Cancer Registry
NDP	National Development Plan
NDoH	National Department of Health
NEPAD	New Partnership for Africa's Development
NHA	National Health Act

NHI	National Health Insurance
NHLS	National Health Laboratory Service
NICD	National Institute for Communicable Diseases
NIOH	National Institute for Occupational Health
NPG	National Pathology Group
NSI	National System of Innovation
NSP	National Strategic Plan
OHSACT	Occupational Health and Safety Act
PLWHIV	People Living with Human Immunodeficiency Virus
PFMA	Public Finance Management Act
PMTCT	Prevention of Mother to Child Transmission
POCT	Point-of-Care-Testing
PTS	Proficiency Testing Scheme
QMS	Quality Management System
SANAS	South African National Accreditation System
SAMA	South African Medical Association
SAVP	South African Vaccine Products
SDG	Sustainable Development Goals
SONA	State of the Nation Address
SOP's	Standard Operating Procedures
TAT	Turnaround Times
TB	Tuberculosis
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TTO	Technology Transfer Office
U&E	Urea and Electrolytes
UHC	Universal Health Coverage
WHO	World Health Organisation
XDR	Extreme Drug Resistance

## STATEMENT BY THE MINISTER OF HEALTH

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The National Health Laboratory Service (NHLS) 2021/22 Annual Performance Plan (APP) is drawn from the 2020/21 – 2024/25 Strategic Plan. This APP takes into account all the relevant policies, legislation and other mandates the NHLS.

The APP accurately reflects the strategic goals and objectives which the National Health Laboratory Service will endeavour to achieve over the period 2021 – 2022.

I hereby endorse this NHLS APP developed by the Board of the NHLS under the guidance of Professor Eric Buch, Chair of the NHLS Board and Dr Karmani Chetty, NHLS Chief Executive Officer.

**Dr Zwelini Mkhize (MP)**  
**Minister of Health**

Signature: \_\_\_\_\_



## STATEMENT BY THE CHAIRPERSON OF THE NHLS

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Approximately 70% of the clinical decisions and patient diagnosis are linked to pathology and laboratory services. The NHLS plays a critical role in providing these services to approximately 80% of the South African population. The NHLS played a pivotal role in providing testing for the COVID-19 in the public sector. Furthermore, the NHLS, in collaboration with its two divisions, namely: National Institute for Communicable Diseases (NICD) and the national Institute for Occupational Health (NIOH), has been instrumental in researching about SARS-CoV-2 virus while also providing advisory services to the National Department of Health and other stakeholders.

It is widely recognised that good governance is the foundation of a capable state, which in turn is a prerequisite for a successful democracy. Against this backdrop, the National Health Laboratory Service (NHLS) will continue to practice good governance by maintaining an unqualified audit opinion of the Auditor General and ensuring a corrupt-free organisation.

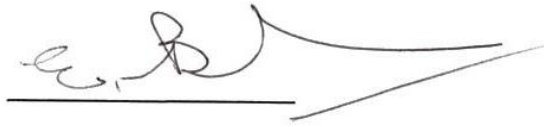
The MTEF NHLS Strategic Plan (SP) puts emphasis on clinical efficiency, quality, cost-effectiveness and good governance. The 2021/22 Annual Performance Plan (APP) is aligned to, and guided by, the MTEF NHLS Strategic Plan. It gives expression to NHLS' efforts to deliver an affordable service that is of high quality and cost-effective, efficient and responsive to the needs of the patients and the NHLS clients.

The NHLS is known of its competent staff and expertise, its innovation in research and diagnostics, the high calibre teaching and training capabilities and its contribution to better health care for the people of South Africa. However, the NHLS will be operating in an increasingly competitive and demanding environment because of the implementation of the National Health Insurance Fund. The 2021/2022 Annual performance plan represents the priorities and programmes which will make the NHLS to have a strong, sustainable and efficient service to deliver for the NHI. To deliver for the NHI, the NHLS will continue to strengthen the value-adding services, such as, providing competitive prices, with quick turnaround times, increased efficiency, high-quality service through accelerated accreditation of the laboratories. the NHLS will continue

to leverage innovation and new technology to improve efficiency and focus on enhancing health professionals and patient experience.

I am confident that the 2021/22 APP supports the strategic priorities of the organisation and that it also contributes to the realisation of the NHLS outcomes as per our mandate.

As the Board, we are committed to supporting the executive management team in their endeavours towards enhancing the provision of reliable and efficient service delivery at low cost.

A handwritten signature in black ink, appearing to read 'e. Buch', is written over a horizontal line. A long, sweeping horizontal stroke extends to the right from the end of the signature.

Professor Eric Buch

Chairperson of the Board (NHLS)

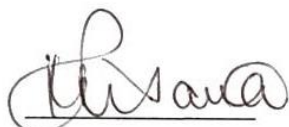


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It is hereby certified that this Annual Performance Plan was:

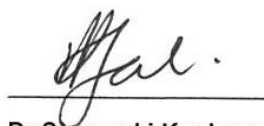
- Adopted by the management of the National Health Laboratory Service (Herein under referred to as “The NHLS”) under the guidance and support of the Board;
- Takes into account all the relevant policies, legislation and other mandates for which the NHLS is responsible; and
- Accurately reflects the strategic goals and objectives which the NHLS will endeavour to achieve over the period 2021/22.



**Prof Koleka Mlisana**  
**Executive Manager:**  
**Academic Affairs, Research and Quality Assurance**



**Prof Adrian Puren**  
**Director (Acting):**  
**Institute for Communicable Diseases**



**Dr Spooponki Kgalamono**  
**Director:**  
**National Institute For Occupational Health**




**Mr Jone Mofokeng**  
**Executing Manager (Acting)**  
**Human Resources**



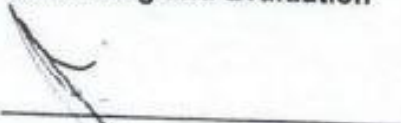
**Mr Sibongiseni Hlongwane**  
**Chief Information Officer**

**OFFICIAL SIGN OFF**

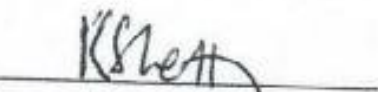
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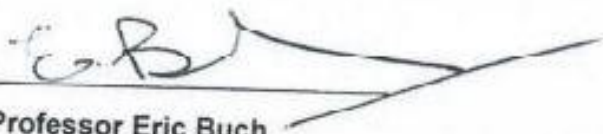
**Ms Violet Gabashane**  
**Senior Manager:**  
**Monitoring and Evaluation**



**Mr Jonas Shai**  
**Chief Financial Officer (Acting)**



**Dr Karmani Chetty**  
**Chief Executive Officer**



**Professor Eric Buch**  
**NHLS Board Chairperson**

**Approved by:**



**Dr Zwelini Mkhize, (MP)**  
**EXECUTIVE AUTHORITY, MINISTER OF HEALTH**

### 1. Constitutional Mandate

In terms of the provisions of the Constitution of the Republic of South Africa, 1996 (as amended), the NHLS is, amongst others, guided by the following sections and schedules and its role is to contribute towards:

- 1) The Constitution, which places obligations on the state to progressively realise socio-economic rights, including access to health care.
- 2) Section 27 of the Constitution, which states as follows: with regards to health care,
  - (1) Everyone has the right to have access to –
    - (a) health care services, including reproductive health care;
  - (2) The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights; and
  - (3) No one may be refused emergency medical treatment.

### 2. Legislative and other mandates

The legislation outlined below makes provision for NHLS planning, monitoring of performance, reporting and evaluation.

#### 2.1 Public Finance Management Act (PFMA), 1999 (as amended)

Section 27(4) of the PFMA makes provision for the development of measurable objectives that must be included in the annual budgets of national and provincial institutions. Sections 40 (3) (a) and 55 (2) (a) make provision for the reporting of performance against predetermined objectives in institutions. The PFMA promotes reporting against predetermined measurable objectives that are outlined in short and medium-term plans. Section 51 (c) of the PFMA states that the Accounting Officer has the responsibility to manage, safeguard and maintain assets and to manage the liabilities of the department or entity, while Section 51 (a) (iv) makes a provision for a system for properly evaluating all major capital projects prior to a final decision and managing available working capital efficiently and economically.

## **2.2 The National Health Laboratory Service Amendment Act, 5 of 2019**

The National Health Laboratory Service Amendment Act, 2019 (Act No. 5 of 2019) was signed into law by the President on 29 April 2019.

The NHLS amendment Act serves to amend the National Health Laboratory Service Act 2000 (Act No.37 of 2000) to define certain expressions and to amend certain definitions; to make the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) applicable to the NHLS, to adjust the objects and duties of the service; to strengthen the governance and funding mechanism of the service and to provide for matters connected therewith. The NHLS amendment Act is pending proclamation.

## **2.3 The National Health Act, 61 of 2003**

The above mentioned Act provides a framework for a structured uniform health system within the Republic, taking into account the obligations imposed by the Constitution and other laws on the national, provincial and local governments concerning health services. The objects of the National Health Act (NHA) are to:

- unite the various elements of the national health system in a common goal to actively promote and improve the national health system in South Africa;
- provide for a system of co-operative governance and management of health services, within national guidelines, norms and standards, in which each province, municipality and health district must address questions of health policy and delivery of quality health care services;
- establish a health system based on decentralised management, principles of equity, efficiency, sound governance, internationally recognised standards of research and a spirit of enquiry and advocacy which encourage participation;
- promote a spirit of co-operation and shared responsibility among public and private health professionals and providers and other relevant sectors within the context of national, provincial and district health plans; and
- create the foundations of the health care system, and must be understood alongside other laws and policies which relate to health.

### **3. Applicable Policies and planned Legislative and Policies**

#### **3.1 National Health Insurance Bill**

The National Health Insurance (NHI) Bill, provides the establishment of the National Health Insurance (NHI) Fund as a legally defined organ of the state.

The Bill seeks to:

- establish the NHI Fund, its functions, power, and duties. It further provides for the control of the NHI Fund by the Board;
- define beneficiaries of services covered by the NHI Fund, including population registration;
- provide for contracting of accredited providers of personal health care services; and
- allows the Minister to determine health care benefits that will be reimbursed through the NHI Fund, as well as the service coverage and cost measurement provision.

#### **Key Features of the NHI Bill**

The purpose of the NHI Bill is to establish and maintain an NHI fund through mandatory prepayment that aims to achieve sustainable and affordable universal access to quality health care services.<sup>[25]</sup> This will be achieved by; (i) serving as the single purchaser and single-payer of health care services to ensure the equitable and fair distribution and use of health care services; (ii) ensuring the sustainability of funding for health care services; and (iii) providing for equity and efficiency in funding by pooling of funds and strategic purchasing of health care services, medicines, health goods and health-related products from accredited and contracted health care service providers. This applies to all health establishments, excluding military health services and establishments.

The NHI Fund is to purchase health care services as determined by the Benefits Advisory Committee (BAC), on behalf of (i) citizens, (ii) permanent residents, (iii) refugees and (iv) inmates. A person seeking health care services from an accredited provider must be registered as a user of the fund. The user must also present proof of registration to the fund to the health care service provider to claim the health-care service benefits to which he or she is entitled. The NHI fund will be established as an autonomous public entity in line with the Public Finance Management Act (PFMA). The NHI Board is accountable to the Minister of Health and has to govern the fund in accordance with PFMA provisions.

The Board shall consist of not more than 11 persons, appointed by the Minister, who are not employed by the fund and one member who represents the Minister. Board members are appointed for a term not exceeding five years, which is renewable only once. The criteria for board members are as follows; (i) be a fit and proper person; (ii) have appropriate technical expertise, skills and knowledge or experience in health care service financing, health economics, public health planning, monitoring and evaluation, law, actuarial sciences, information technology and communication; (iii) be able to perform effectively and in the interests of the general public; (iv) not employed by the State; and (v) not have any personal or professional interest in the fund. The Minister may appoint a chairperson and deputy chairperson from amongst the members of the board.

### **3.2 National Development Plan: Vision 2030**

The National Development Plan (NDP) is a long-term vision for the country, which provides a broad strategic framework to guide key government choices and actions and focuses on the critical capabilities needed to transform the economy and society. The plan highlights that accelerated development in South Africa requires the active support of all citizens, leadership in all sectors that puts the country's collective interests ahead of narrow, short-term goals, and also promotes radically improved government performance.

The NDP sets out nine (9) long-term health goals for South Africa. Five of these goals relate to improving the health and well-being of the population, while the other four deal with aspects of strengthening health systems. NHLS' role is to contribute to and align its services with the National Development Plan vision 2030.

By 2030, South Africa should have achieved the following:

- Raised the life expectancy of South Africans to at least 70 years;
- Progressively improved TB prevention and cure;
- Reduced maternal, infant and child mortality;
- Significantly reduced the prevalence of non-communicable diseases;
- Completed health system reforms;
- Primary healthcare teams that provide care to families and communities;
- Universal health care coverage; and
- Filled posts with skilled, committed and competent individuals.

### 3.3 Sustainable Development Goals

The Sustainable Development Goals 2030 built on the Millennium Development Goals 2015 were adopted as the Global Goals by world leaders on 25 September 2015. They formulated seventeen (17) Sustainable Development Goals (SDGs) to end poverty, fight equality and tackle climate change by 2030. The following targets have been adopted for Goal 3 “Ensure healthy lives and promote well-being for all at all ages:

1. By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births;
2. By 2030, end preventable deaths of new-borns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortalities to at least as low as 25 per 1,000 live births;
3. By 2030, end the epidemics of AIDS, TB, Malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases;
4. By 2030, reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being;
5. Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol;
6. Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all;
7. Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, as per the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all;
8. Substantially increase health financing and the recruitment, development, training, and retention of the health workforce in developing countries, especially in the least developed countries and Small Island Developing States;
9. Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

The vision of the NHLS is to provide a high-quality patient-centred laboratory service that is clinically efficient and cost-effective. This will contribute significantly to goal 3 of the SDG, namely

to, “Ensure healthy lives and promote well-being for all at all ages”, as well as to the vision of the South African health system “A long life for all South Africans”.

### 3.4 Alignment with the National Department of Health’s (NDoH’s) Medium-Term Strategic Framework and National Development Plan Implementation Plan 2019-2024

The NHLS plan is aligned to the National Department of Health’s plan which responds to the priorities identified by the cabinet of the 6<sup>th</sup> administration of democratic South Africa, which are embodied in the Medium-Term Strategic Framework (MTSF) for period 2019-2024. It is aimed at eliminating avoidable and preventable deaths (**survive**); promoting wellness, and preventing and managing illness (**thrive**); and transforming health systems, the patient experience of care, and mitigating social factors determining ill health (**transform**), in line with the United Nation’s three broad objectives of the Sustainable Development Goals (SDGs) for health.

Over the next five years, the NHLS responses are structured into four outcomes and 12 outputs that are aligned to the NDoH goals as well as the Pillars of the Presidential Health Summit compact, as outlined in the table below.

**Table 1: Alignment of NHLS Outcomes and Outputs with NDoH Goals and the pillars of the Presidential Health Summit Compact.**

	<b>NDoH MTSF 2019-2024 Goals</b>	<b>NHLS Outcome</b>	<b>NHLS Outputs</b>	<b>Presidential Health Summit Compact Pillars</b>
Survive and Thrive	Goal 1: Increase Life Expectancy, improve health and Prevent Disease	Clinical effectiveness and efficiency  High-quality service	Modernised Laboratory Services  Improved Total Turnaround Times	N/A



	<b>NDoH MTSF 2019-2024 Goals</b>	<b>NHLS Outcome</b>	<b>NHLS Outputs</b>	<b>Presidential Health Summit Compact Pillars</b>
Transform	Goal 2: Achieve Universal Health Covered by Implementing NHI	Cost-effective services  Good Governance	Appropriately trained human resources in adequate numbers  Performance-driven workforce  Equitable service coverage  Improved stakeholder relations  Reduced cost of pathology services to the clients  Audit opinion of the Auditor General	Pillar 4: Engage the private sector in improving the access, coverage and quality of health services; and  Pillar 6: Improve the efficiency of public section financial management systems and processes
	Goal 3: Quality Improvement in the Provision of care	High-Quality Services	Strengthened total quality management systems	Pillar 5: Improve the quality, safety and quantity of health services provided with a focus on primary health care,  Pillar 7: Strengthen Governance and Leadership to improve oversight, accountability and health system performance at all levels  Pillar 8: Engage and empower the community to ensure adequate and appropriate community-based care  Pillar 1: Augment Human Resources Health Operational Plan  Pillar 2: Ensure improved access to essential medicines, vaccines and medical products through better management of

	<b>NDoH MTSF 2019-2024 Goals</b>	<b>NHLS Outcome</b>	<b>NHLS Outputs</b>	<b>Presidential Health Summit Compact Pillars</b>
				supply chain equipment and machinery  Pillar 6: Improve the efficiency of public sector financial management systems and processes  Pillar 9: Develop an Information System that will guide the health system policies, strategies and investments
	Goal 4: Build Health Infrastructure for effective service delivery	Clinical effectiveness and efficiency	Modernised information technology systems	Pillar 3: Execute the infrastructure plan to ensure adequate, appropriately distributed and well-maintained health facilities

### **3.5 Framework for Managing Programme Performance Information (2007)**

The Framework for Managing Programme Performance Information (FMPPI) outlines key concepts in the design of management systems to define, collect, report and use performance information in the public sector. The FMPPI emphasises that performance information is essential to focus the attention of the public and oversight bodies on whether public institutions are delivering value for money, by comparing their performance against their budgets and service delivery plans, and to alert managers to areas where corrective measures are required.

### **3.6 Policy Framework for the Government-Wide Monitoring and Evaluation System (2005)**

The Framework for the Government-Wide Monitoring and Evaluation (GWME) System that identifies programme performance information as one of the data terrains underpinning GWME, focusing on information that is collected by the government institutions in the course of fulfilling their mandates and implementing the policies of the government.

### **3.7 National Public Health Institute of South Africa**

The establishment of the National Public Health Institute of South Africa (NAPHISA) is envisaged, and will comprise divisions dealing with the following:

- Communicable Diseases;
- Non-Communicable Diseases;
- Injury and Violence Prevention;
- Occupational Health and Safety;
- Environmental Health

The establishment of NAPHISA as a single national public entity is intended to provide a high level of coordination across functions for surveillance. The entity will provide evidence, expertise, and advise the government to achieve improvements in the health of the population. It will also provide coordinated disease and injury surveillance, research, training, and workforce development, and it will monitor and evaluate services and interventions directed towards major health problems affecting the population. NAPHISA will provide training, conduct operational research and support interventions aimed at reducing the burden of communicable; non-communicable diseases; injuries and violence and occupational diseases.

The NAPHISA Bill was approved by Parliament on 25 February 2020 however, the implementation date is currently not known. Once assented to by the President, regulations will still need to be drafted before the Act is proclaimed.

NAPHISA will impact the functioning of the NHLS, as there will be a demarcation between roles and functions and initially this separation may not be as obvious. Planning will need to be undertaken to take into account the separation of functions, human resources, administration, support functions, finance, and research and training.

### **3.8 Relevant Court Rulings**

There are no court rulings that will have a significant ongoing impact on operations or service delivery obligations.

### 4 Situational Analysis

#### 4.1 External Environment Analysis

##### 4.1.1. *The Role of pathology and laboratory service in health care.*

Pathology and laboratory information enables physicians and other healthcare professionals to make appropriate evidence-based diagnostic or therapeutic decisions for their patients. Clinical laboratory services have a direct impact on many aspects of patient care including, but not limited to, length of stay, patient safety, resource utilisation, and customer satisfaction.

The NHLS is responsible for most HIV and tuberculosis tests in the public health system and plays a critical role in screening for cervical cancer. HIV and TB treatment depend on accurate and timely tests. A unique feature of the NHLS is that all its laboratories are networked using a single laboratory information system. All the data are stored in a Central Data Warehouse (CDW) which is a national resource for programme design, monitoring and evaluation.

##### 4.1.2. *Population*

STATS SA, mid-year population estimates 2020, indicates that the population of South Africa is growing rapidly with recent figures suggesting 59,62 million individuals who currently require healthcare in 2020, compared to the 58,8 million of 2019 (~1.4% increase). More than half the population live in three provinces, namely, Gauteng, KwaZulu-Natal and Western Cape. Gauteng continues to record the largest share of South Africa's population, with ~15.5 million people (~26%) living in the province. The second-largest population of ~11.5 million people (~19,3%) was recorded in KwaZulu-Natal, followed by Western Cape with ~7,0 million.

Life expectancy at birth for 2020 is estimated at 62,5 years for males and 68,5 years for females. The infant mortality rate for 2020 is estimated at 23,6 per 1 000 live births. The life expectancy has been increasing since 2007.

The increase in the population in South Africa occurs against the backdrop of declining economic growth, a decrease in budget and rising health costs. The COVID-19 pandemic has added more pressure with the rise in infection and deaths and concomitant unemployment.

### 4.1.3. Burden of Disease

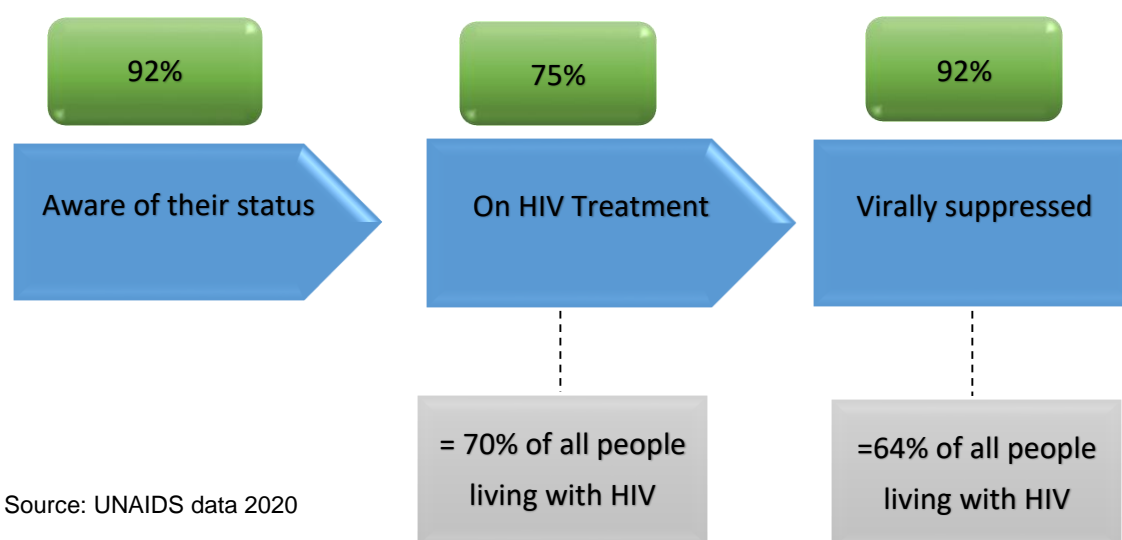
#### 4.1.3.1. Communicable Diseases

The NDP has called for South Africa to achieve a “generation free of HIV AIDS”, while Goal 3 of the SDG has set the target to “end the epidemic of AIDS, tuberculosis, and malaria” by 2030.

It is estimated that 7,5 million people are living with HIV in South Africa, with 19% prevalence in adults (age 15 - 49 years); 200,000 new infections; 72,000 AIDS-related deaths. 71% of the adults living with HIV are on antiretroviral treatment and 47% of children living with HIV are on antiretroviral treatment (Source:UNAIDS Data 2020)

South Africa is making good progress towards the UNAIDS 90-90-90 targets, particularly with regards to testing and viral suppression. Ninety-two percent (92%) of people living with HIV were aware of their status, of which 75% are on antiretroviral treatment. Of those diagnosed and on treatment, 92% were virally suppressed. This equates to 70% (62% in 2018) of all people living with HIV in South Africa on treatment and 64% (54% in 2018) virally suppressed.

Figure 1: Progress towards 90-90-90 targets (all ages) in South Africa from 2018 to 2020 is detailed below:



Source: UNAIDS data 2020

Adapted:([avert.org/professional/hiv.around-world/sub-sharan-africa.south-africa](http://avert.org/professional/hiv.around-world/sub-sharan-africa.south-africa))

Tuberculosis (TB) remains the leading cause of mortality in South Africa. An estimated 360 000 South Africans became ill with TB in 2019. An estimated 58 000 people died from TB, of which an estimated 36 000 were HIV positive ([tbfacts.org/tb-south-africa/](http://tbfacts.org/tb-south-africa/)). The high number of people living with HIV in South Africa is increasing the number of people with active TB disease ([tbfacts.org/tb-south-africa/](http://tbfacts.org/tb-south-africa/)). Improvements in case detection and retaining patients in care will be essential to reduce premature mortality and to prevent MDR and XDR-TB. The global End TB strategy has called on

the WHO member states to reduce the number of deaths caused by TB by 75% by 2025, and 90% by 2030 when compared to 2015 baselines. This translates to a target of not more than 8 510 deaths by 2025, and 3 404 by 2030, to ensure that South Africa achieves its SDG target of “ending the TB epidemic by 2030”. This will require the health system to intensify case finding, and placing those diagnosed on treatment, and to ensure that they complete their treatment because TB is curable.

The rapid acceleration plan for HIV and TB treatment access will have a knock-on effect on the NHLS in that it will require a significant programme review aimed at the automation, modernisation, consolidation and integration of laboratory platforms and services to ensure affordability.

COVID -19 pandemic further placed more pressure on the health systems in South Africa and globally. On 31 December 2019, the World Health Organization (WHO) China Country Office was informed of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province of China. On 7 January 2020, the causative pathogen was identified as SARS-CoV-2, a novel coronavirus causing coronavirus disease, 2019 (COVID-19). The majority of these cases were linked to seafood, poultry and live wildlife market in Wuhan City, suggesting that the novel coronavirus has a possible animal origin. The virus appears to spread initially through importation, followed by community-level transmission.

South Africa diagnosed its first case of COVID-19 on the 5 March 2020. The patient was a 38-year old male from KwaZulu-Natal (KZN) who travelled to Italy. The President of the Republic, Mr Ramaphosa declared COVID-19 as a national State of Disaster on the 15 March 2020.

By the 23 March 2020, 12 815 tests had been conducted, of which 402 patients were confirmed to have tested positive as cases of COVID-19. There was also confirmation of local transmission, which prompted the announcement of a total lockdown by the President of the Republic by the 26 March 2020, to try and reduce the transmission of the virus and flatten the infection curve.

The WHO provided laboratory testing strategy recommendations for COVID-19. The NHLS developed its testing strategy following the WHO and NDoH guidelines. Laboratory testing was conducted for people meeting the case definition for persons under investigation (PUI). This definition included:

- Symptomatic individuals seeking testing;
- Hospitalised individuals for whom testing was done;
- Individuals in high-risk occupations;
- Individuals in outbreak setting;and

- Individuals identified through community screening and testing (CST) programmes.

CST was implemented in April 2020, and was implemented differently in different provinces. The implementation ranged from mass screening (including asymptomatic individuals) to screening of individuals in contact with confirmed cases to targeted testing of cluster cases..

Figure 2 shows the COVID-19 Statistics as at the 26 January 2021, with a total of approximately 8 million tests performed. The original testing strategy was developed to accommodate South Africa’s constrained testing capacity in both public and private sectors. However, with the positivity rate remaining high, there was a need for more testing in order to find more cases and contain the pandemic. The updated prioritised COVID-19 testing guidance was then released in October 2020 which indicated the prioritised categories of people who should be tested in both the public and private sector.

Figure2: COVID-19 Statistics as at the 26 January 2021

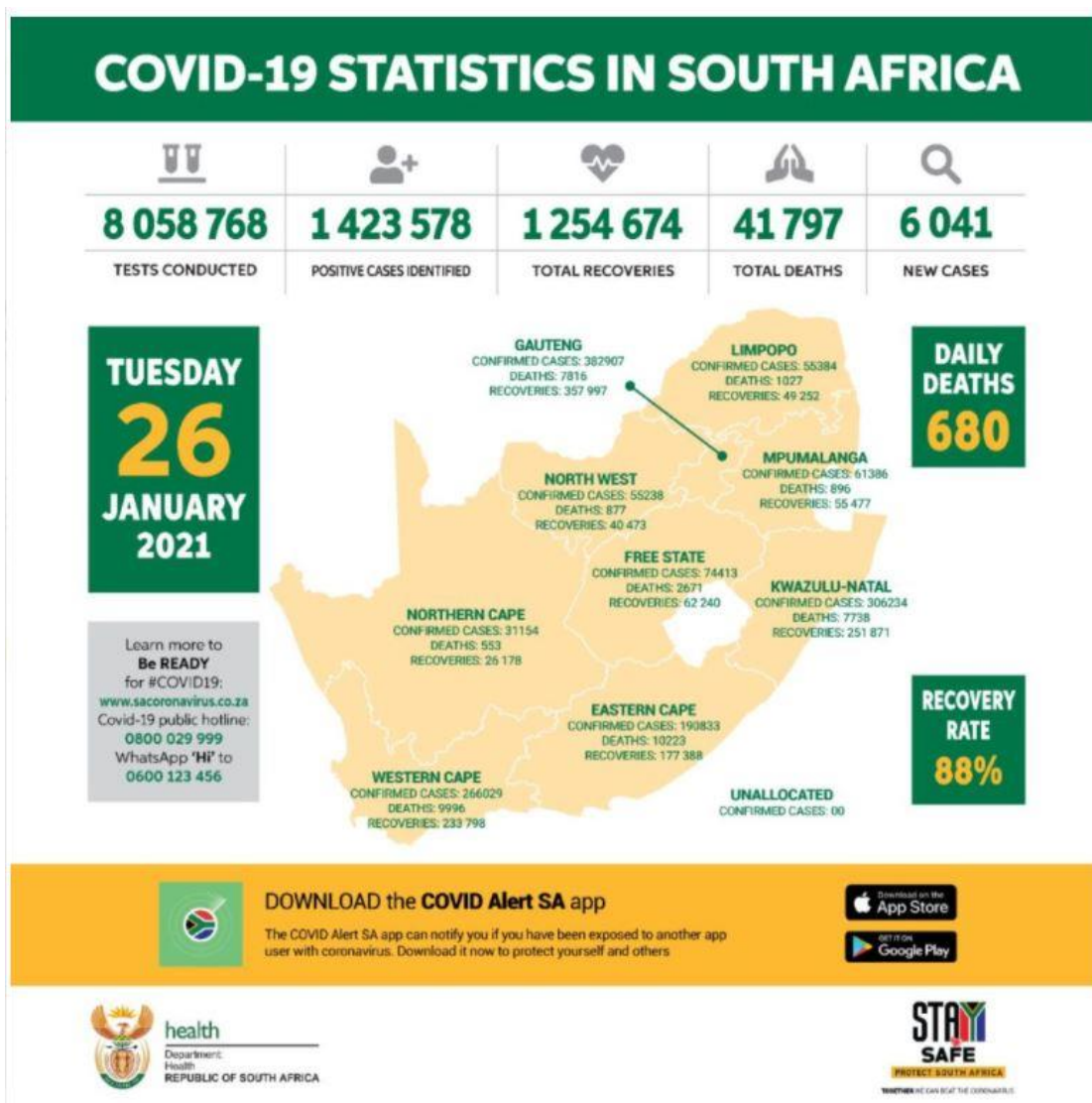
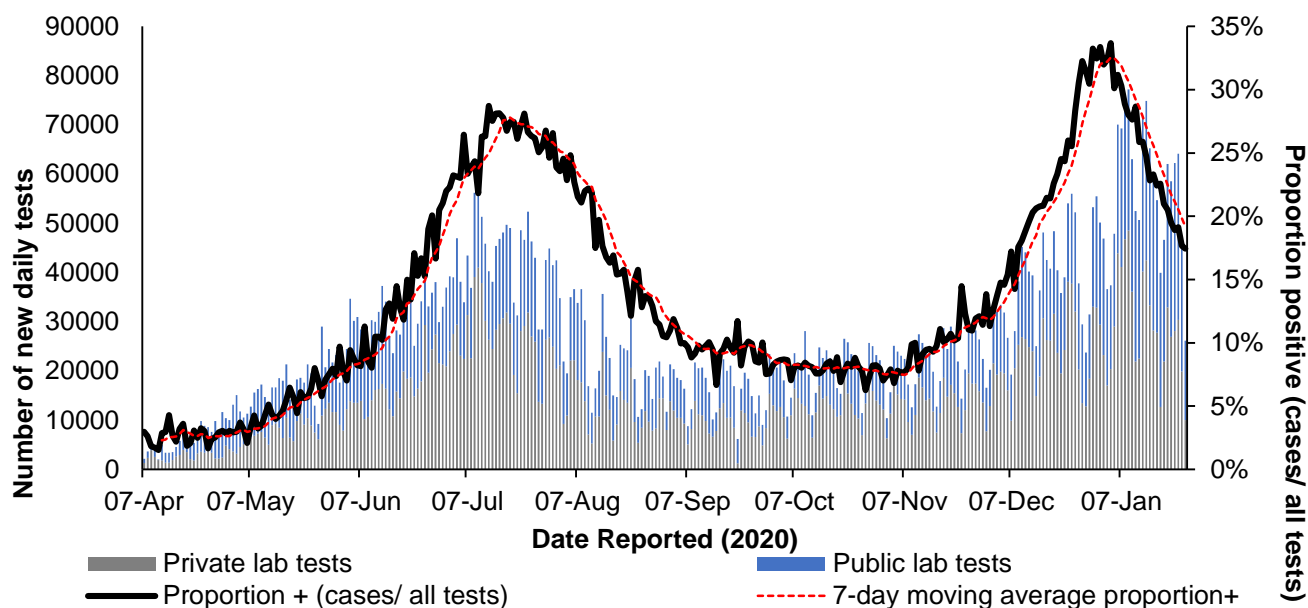


Figure 3: Number of new daily PCR tests for SARS-CoV-2 and proportion positive by date of reporting and health sector, and 7-day moving average proportion positive, 6 April 2020 to 07 January 2021, South Africa



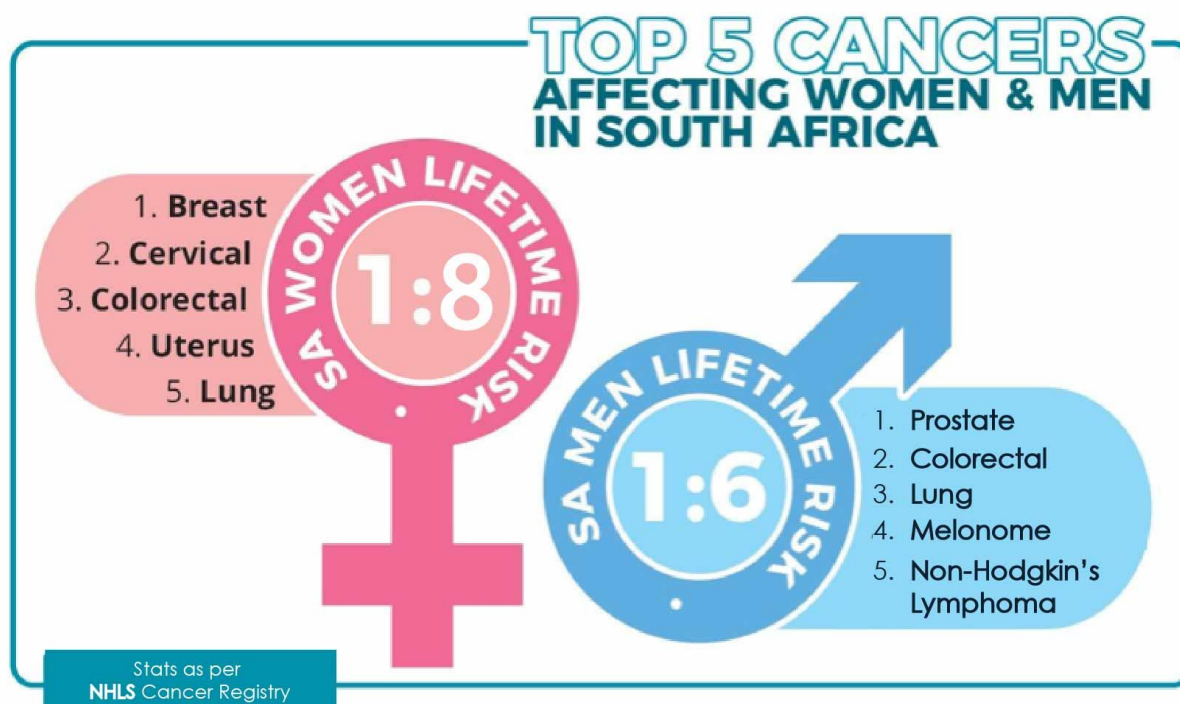
#### 4.1.3.2. Non-Communicable Disease

A non-communicable disease (NCD), is medical condition or disease which by definition is non-infectious and cannot be transmitted from person to person. NCDs may be chronic diseases for long duration with slow progression, or they may result in more rapid death. According to the World Health Organisation (WHO), the four main types of NCDs are cardiovascular diseases (like strokes and heart attacks), cancer, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes.

A wave of NCDs is likely to add further requirements to laboratory services with, for example, cancer predicted to increase by at least 30% by 2030 with annual global figures reaching an estimated 10 million cases (*Lancet, 2017*). The NHLS reports over 80 000 newly diagnosed cancers per year in the country. The overall lifetime risk for cancer is 1:8 for women and 1:6 for men. The top five cancers in South Africa were: breast, cervical, colorectal, uterine and lung cancers for women; and prostate, colorectal, lung, melanoma and Non-Hodgkin's Lymphoma in men. The most common cancer in African men was prostate cancer and cervical cancer in women, figurexx.



Figure4: Top five cancers affecting women and men in South Africa.



In November 2020, WHO released the new estimates of the global burden of cervical cancer associated with HIV. They estimated the women living with HIV have a six-fold increased risk of cervical cancer when compared to women without HIV (<https://www.who.int/news/item/16-11-2020-who-releases-new-estimates-of-the-global-burden-of-cervical-cancer-associated-with-hiv>). Worldwide, an estimated 5% of all cervical cancer cases are attributed to HIV. These statistics vary by world regions. The fraction of cervical cancer is high in areas with high HIV prevalence. The WHO aims to double the efforts and work towards achieving the new WHO cervical cancer elimination targets of 90% HPV vaccination coverage, 70% screening coverage and 90% access to treatment for cervical pre-cancer and cancer, including access to palliative care by 2030. The roll-out of HPV testing by the NHLS will contribute to the achievement of the WHO cancer elimination targets and cancer surveillance conducted by the National Cancer Registry at the NHLS assists in monitoring the progress of South Africa towards these targets.

In a recent survey in rural South Africa, high rates of stroke, cardiovascular disease, hypertension, and dyslipidemia were noted in addition to HIV, with at least 56% of individuals having two or more of these diseases (*Hofman,2014: SAMJ*). It was predicted that by 2030, non-communicable diseases (NCDs) would account for five times as many deaths as communicable diseases in low and middle-income countries (*Hofman,2014: SAMJ*).

Due to the high burden of communicable diseases, non-communicable diseases have not been a high priority of the National Department of Health. This has changed as demonstrated by national public health policies released recently to facilitate national access to diagnosis and care for Cervical and Breast Cancers (*NDOH Breast cancer, Prevention and control policy; Cervical cancer policy, August 2017*). The advent of COVID-19 has highlighted the complex relationship between infections and NCDs and thus priorities for public health.

#### **4.1.3.2. Causes of death in South Africa.**

Although TB remained the number one cause of death in 2017 (~28 700 deaths), there was an indication that non-communicable diseases are now taking over as the major causes of death in South Africa; with diabetes (~25 000 deaths), various forms of heart diseases and cerebrovascular diseases (strokes) (22 259 deaths) taking a lead after TB. HIV/AIDS has been ranked as the fifth disease causing 21,439 deaths ([statista.com/statistics/1127548/main-causes-of-death-in-south-africa/](https://www.statista.com/statistics/1127548/main-causes-of-death-in-south-africa/)).

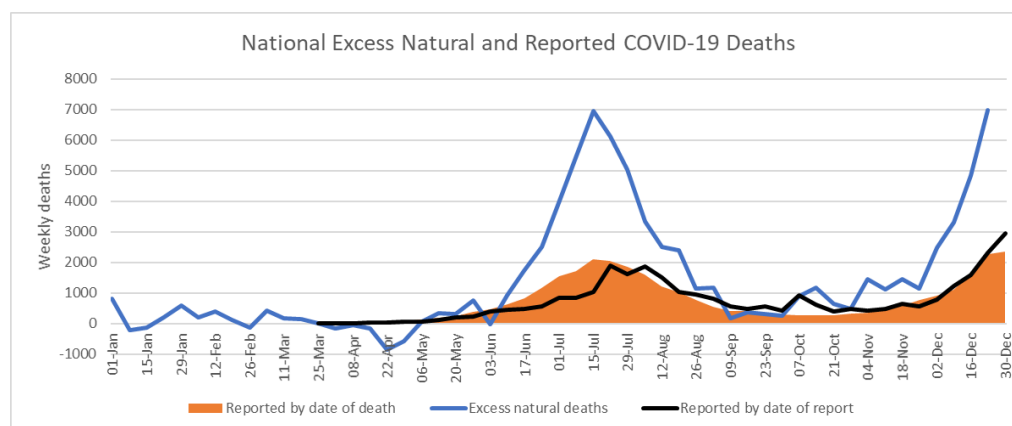
As of 5 January 2020, there were a total of 1,149,591 confirmed SARS-Cov-2 cases and 31,368 reported COVID-19 deaths in South Africa giving a crude case fatality rate (CFR) of 2.7%. There is however considerable heterogeneity in the CFR between provinces ranging from 1.5% in North West to 4.7% in the Eastern Cape (table 2). While some of the heterogeneity in provincial CFRs arises from provincial differences in population age structures and prevalence of comorbidities, the predominant driver is likely differential COVID-19 case and mortality ascertainment and reporting.

The South African Medical Research Council (SAMRC) estimates that there were 83,918 excess deaths in South Africa in the period 6 May 2020 to 5 January 2021. The temporal-spatial correlation between confirmed cases and excess deaths strongly indicates that the vast majority of these excess deaths were due to COVID-19. The trend in the reported deaths is entirely consistent with the excess deaths when using the date of actual death (figure 5). However, there is still a considerable gap between reported deaths and excess deaths, indicating that there are large numbers of COVID-19 related deaths that are not being reported. This is likely to be deaths that occur in community, deaths that occur before a test for SARS-COV2 is performed, and unreported COVID-19 confirmed deaths. The gap varies by province as can be seen in the provincial graphs that appear below (figure 5).

**Table 2: Confirmed SARS-Cov-2 cases, reported deaths, excess deaths crude case fatality rate and reported to excess deaths by province as of 5 January 2021**

Province	SARS-CoV-2 Cases	Reported Deaths	Excess deaths	Crude Reported CFR	Reported: Excess Deaths
Eastern Cape	175 941	8 292	25 065	4.7%	0.33
Free State	64 409	2 215	5 394	3.4%	0.41
Gauteng	310 201	5 923	16 003	1.9%	0.37
KwaZulu-Natal	230 283	4 870	15 604	2.1%	0.31
Limpopo	30 840	636	3 461	2.1%	0.18
Mpumalanga	40 751	664	4 120	1.6%	0.16
North West	43 159	648	3 550	1.5%	0.18
Northern Cape	26 353	417	2 124	1.6%	0.20
Western Cape	227 654	7 703	11 563	3.4%	0.67
<b>Total</b>	<b>1 149 591</b>	<b>31 368</b>	<b>83,918</b>	<b>2.7%</b>	<b>0.36</b>

**Figure 5: Excess and reported COVID-19 deaths**



These examples demonstrate the increasing need and greater investment in automation, innovation and precision laboratory medicine to facilitate rapid testing, early diagnosis, improved efficiencies, and greater prevention in public health.

## 4.2. Internal Environment Analysis

### 4.2.1. Laboratory Services

The NHLS's mandate is to ensure that services provided represent the best quality and value for public resources. The NHLS laboratories are predominantly based in public hospitals, in all nine provinces, with their service package increasing with the level of care of that hospital. The recent technological advancements employed in modern laboratories, provide the opportunity for substantial process improvements and delivery of results to clinical services.

Turnaround time (TAT) of test results is one of the most prominent indicators of laboratory service performance and quality of service and it is often used as a key performance indicator. The NHLS has in the past years shown to have achieved good TAT during the analytical phase (in-lab TAT: **Figure2: stage 5 only**); however, clinicians and patients have not experienced the impact of the reported in-lab TAT. The NHLS will continue to improve its systems to ensure that the total turnaround times (from the time the specimens are collected by the NHLS drivers from the health facilities until the time the results are received in those facilities: **(Figure2: stage 2 – stage 7)** are improved to ultimately add value to the care of the patients. Figure 2 illustrates the full value chain from the collection of samples at the primary health care facility to the laboratory and the delivery of results back to the primary health care facility.

**Figure 2: The overview of the entire laboratory process value chain (from the time the specimen is collected from the patient and registered on the HPRS to the time the results are communicated to the patient).**

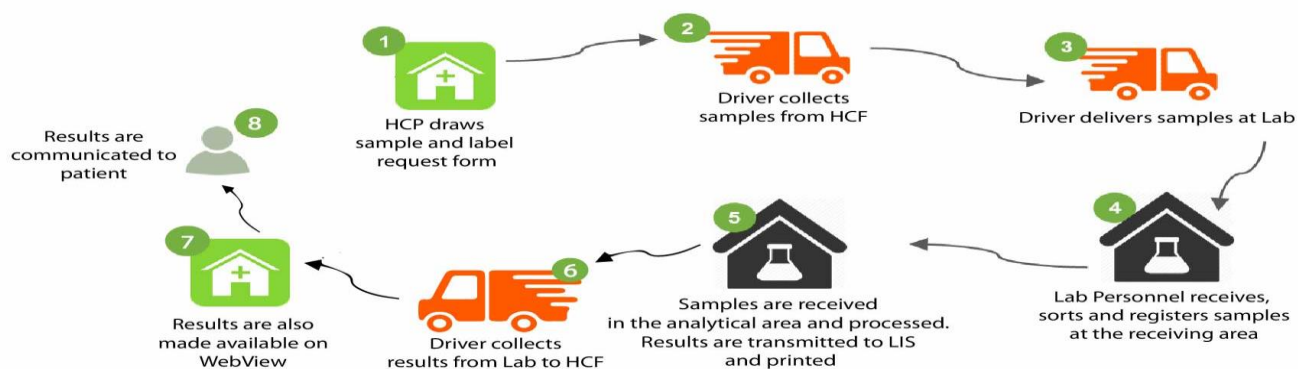


Diagram adapted from the NPP presentation.

Table 3 generally demonstrates good analytical TAT. The implementation of the specimen tracking system will enable the measurement of the pre (Figure 2 above; from stage 2 – 4) and post-analytical (Figure 2 above; from stage 6-8) TAT to demonstrate the total laboratory process value chain and enable the identification of gaps and implementation of improvement plans where necessary..

**Table3: Analytical turnaround times trend in the past five years (2015-2019)**

Performance Indicator	2015/16	2016/17	2017/18	2018/19	2019/20
	<b>Percentage Turnaround time (Analytical)</b>				
Percentage TB microscopy tests performed within 40hours	91%	96%	94%	94%	95%
Percentage TB GeneXpert tests performed within 40 hours	New	97%	91%	94%	94%
Percentage CD4 tests performed within 40 hours	89%	94%	91%	91%	94%
Percentage viral load (VL) tests performed within 96 hours	64%	87%	82%	86%	79%
Percentage HIV PCR tests performed within 96 hours	73%	82%	77%	76%	72%
Percentage of cervical smear tests performed within five weeks	48%	97%	90%	84%	86%
Percentage of laboratory tests (FBC) performed within eight hours	New	80%	94%	95%	95%
Percentage of laboratory tests (U&E) performed within eight hours	New	80%	91%	94%	94%

#### **4.2.2 COVID-19 Pandemic**

The current novel coronavirus disease 2019 (COVID 19), which was reported in December 2020, presented a significant challenge for the entire world. The NHLS and the NICD have dealt with outbreaks in the past and were therefore well-prepared to respond in a way that offers substantial protection to the public.

During the initial phase when they were no imported cases of COVID 19, the testing for SARS COV-2 was done by the NICD. As the number of cases increased, the NHLS rapidly decentralised testing to NHLS laboratories. In preparation for this, the NHLS had capacitated itself through the urgent procurement of state of the art equipment in Virology laboratories in the country. The

equipment procured also included automated or semi/automated extraction instruments, which greatly reduce turnaround time.

In anticipation of the increased demand for testing, the NHLS prepared a plan to increase its testing capacity and ensure that it has sufficient reagents, consumables and human resources to deal with the demand. The NHLS is currently confident that it is well prepared to be able to cope with the demand for testing.

The COVID-19 pandemic impacted negatively on the Priority Programmes. This was evidenced by the decrease in the number of tests performed for many of the Priority Programme tests when compared to the same period in the previous financial year. This is due to patients not accessing the health facilities during the lockdown period. The table below shows a comparison of the NPP test volumes and the impact COVID-19 pandemic had on the programme.

**Table 4: The impact of COVID-19 on test volumes of NPP tests.**

Description	Apr-Dec 2019	Apr-Dec 2020	Var %
Micro TB Misc Flour	738 362,00	514 713,00	-30%
Gene Expert PCR TB	1 644 802,00	1 144 166,00	-30%
EXF Cytology (Gynae)by LBC	617 269,00	399 642,00	-35%
CD4 PLG	2 113 965,00	1 725 735,00	-18%
HIV PCR	459 838,00	499 198,00	9%
Easy Q Viral Load	4 254 803,00	4 365 703,00	3%

The analysis above indicates that, despite the challenges posed by the COVID-19 pandemic, the NHLS continued to implement the processes of enhancing the provision of rapid, reliable and efficient service delivery at low cost. This was achieved through state-of-the-art laboratories, the right people with the right skills at the right level, effective and efficient procurement services, cutting edge information technology whilst ensuring that it remained financially stable to sustain its operations.

The workplace management of COVID-19 in the NHLS was largely guided by directions and regulations issued from various national departments. Various policies and procedures were drafted which included updating risk assessments to cater specifically for COVID-19, screening of employees, exposure management of affected workers, cleaning and disinfecting of contaminated areas and vulnerable worker assessments. In addition, Health and Safety committees were instructed to meet regularly, COVID-19 compliance officers were appointed country-wide and the CEO's National Health and Safety Forum provided additional opportunity to engage with workers.

Implementation of the necessary precautions and controls resulted in having to adapt work procedures. Adaptations included staff working from home where possible and required, rotational shifts, the purchase and installation of various barriers, hand sanitizing stations, purchase and distribution of cloth masks, and the bulk purchase of what-ever personal protective equipment was available. Online COVID-19 training was done and posters distributed

#### **4.2.3. Academic Affairs, Research and Quality Assurance**

Academic Affairs, Research and Quality Assurance (AARQA) incorporates the Academic Affairs and Research (AAR) and the Quality Assurance divisions. The AAR division is responsible for technical teaching and training of all laboratory professionals and provides support to academic institutions to fulfil the research mandate of the NHLS; the Quality division oversees all the quality management systems for the organisation. AARQA strives to ensure consistent adherence to accreditation and compliance measures across all the laboratories through the benchmarking of quality assurance standards for the NHLS. The in-house Health Technology Assessment (HTA) programme focuses on the pre-evaluation of new *in vitro* Diagnostic Devices to facilitate the effective and reliable introduction of technology advancement in the service platform and provide an opportunity for competitive and open selection of innovative approaches to diagnostic technology.

##### **4.2.3.1. Accreditation:**

The National Health Insurance (NHI) Bill states that all services must obtain accreditation to receive funds from the NHI Fund. This has major implications for the NHLS facilities. The NHLS has implemented a concerted drive to ensure that all the facilities are accredited for the implementation of the NHI.

The percentage of accredited laboratories per tier at the end of March 2020 was as follows:

- 51/53 of national central laboratories
- 13/17 of provincial tertiary laboratories
- 25/44 of regional laboratories, and
- 29/147 of the district laboratories.

The NHLS has made a remarkable progress in the SANAS accreditation of laboratories. A total number of fifty (50) laboratory were SANAS accredited, between April 2018 and December 2020. The National Central laboratories are ahead with 95%(51/53) of them accredited with SANAS, followed by the Provincial Tertiary laboratories with 76%(13/17) of the laboratories accredited with SANAS. The previous financial year focused a lot on the SANAS accreditation of the regional and

district laboratories. There were four regional laboratories and two district laboratories accredited with SANAS in 2017 financial year as opposed to 25 regional laboratories and 29 district laboratories recommended for SANAS accreditation in the 2020 financial year.

**Figure 6: Accreditation of Laboratories**

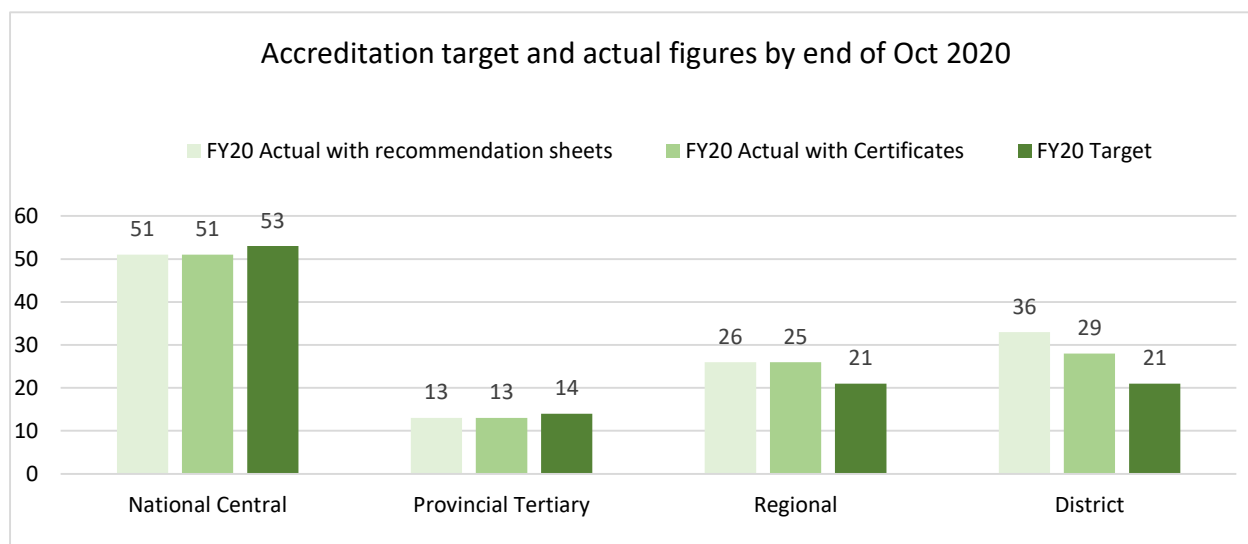


Figure 6 shows laboratories that have been recommended for accreditation by the accrediting body (SANAS); the recommended laboratories that have already received accreditation certificates and thirdly the FY20 targets for accreditation.

Whilst, the NHLS will be focusing on increasing the number of accredited laboratories, especially district laboratories, so that it is ready for the implementation of the NHI, it will continue to uphold high-quality service in the laboratories that are not yet SANAS accredited. That will be done by continuously performing quality compliance audits and enrolling all its laboratories in the proficiency Testing Schemes.

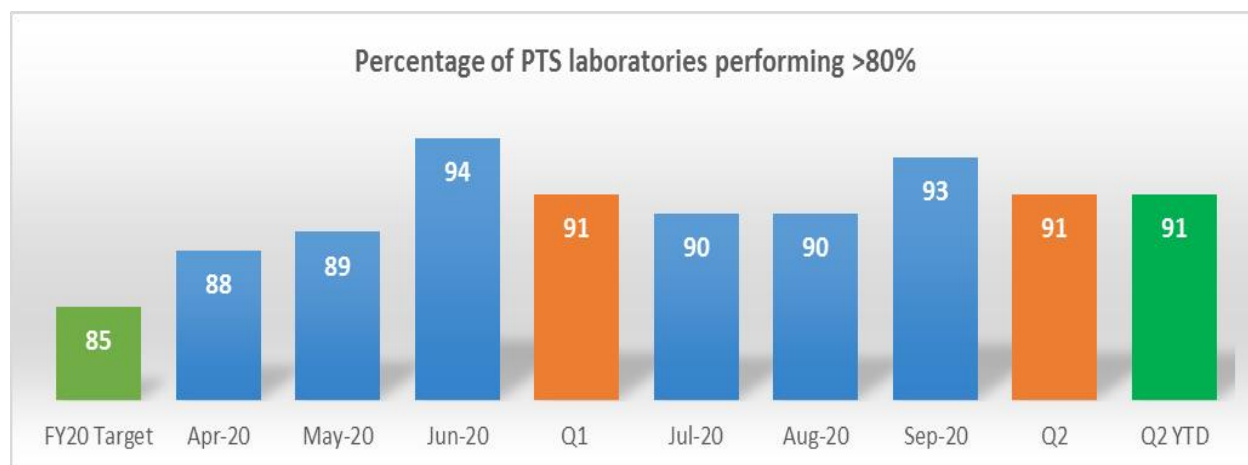
#### **4.2.3.2. Proficiency Testing Schemes**

NHLS Proficiency Testing Scheme (PTS) is ISO 17043 accredited. It provides PTS to all internal laboratories as well as the external laboratories both in and outside South Africa in the following, Bacteriology, Blood gas, Bets HCG, Cardiac Markers, CD4 (Flow cytometry), Cryptococcus Antigen, C Reactive Protein, Chemistry, Endocrinology, Erythrocyte Sedimentation Rate, Hematology (full blood count), hepatitis B surface antigens, HIV Early Infant Diagnosis, HIV Serology, HIV Viral Load, Malaria Rapid Diagnostic Tests, Morphology (Blood), Mycology Moulds, Mycology Yeast, Non-Treponemal Syphilis, Treponemal Syphilis, TB Culture, TB Line Probe



Assay, TB Microscopy, Parasitology Blood, Parasitology Stool, reticulocyte Count and Therapeutic Drug Monitoring.

Figure 7: Proficiency Test Scheme Results



Countries with laboratories enrolled in NHLS PT Schemes: 2020/21 are Angola, Botswana, Burkina Faso, Cameroon, Democratic Republic of Congo, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Ivory Coast, Kenya, Lesotho, Malawi, Mozambique, Namibia, Niger, Nigeria, Sierra Leone, Swaziland, Tanzania, Uganda, United States of America, Zambia, and Zimbabwe. The strategy continues to focus on strengthening the PTS unit and a web-based PTS software has now been implemented and is currently being rolled out to all the different schemes. Furthermore, plans are in place to establish a fully automated PTS laboratory that will service all NHLS laboratories, the private sector laboratories in SA and laboratories across the African continent.

#### 4.2.3.3. Research and Innovation:

In furthering its mandate of supporting health research and training for health science education, the NHLS conducts research in collaboration with the universities and national and international researchers. The research within the NHLS is mainly driven by the burden of disease in the country and this aligns with the priority focus areas of the NDoH and the strengthening of health systems as aligned in the National Strategic Plan (NSP). While there is still a tendency for the individual disciplines within the pathology to conduct research in silos, cross-disciplinary research is encouraged. The NHLS research output has been commendable to date. However, research should have not only an academic focus but also include other important areas such as operational research and entrepreneurial research, that will influence policy and benefit the community. A strategic innovation plan has been developed creating an enabling step that will allow the organisation to improve efficiencies and it is currently being implemented. The plan is designed to enhance innovative ideas that will result in cost-saving as well as novel mechanisms of delivery of laboratory services, improving the competitiveness of the NHLS. A technology

transfer office (TTO) has been established, which will manage all IP and innovation-related activities, providing the necessary internal systems and securing funding to support and guide the innovations, including procedures to test/evaluate new products and processes.

Innovation must be viewed and managed as a positive, enabling step that will allow the NHLS to improve efficiencies and effectiveness, therefore, saving on the overall costs of providing diagnostic services to the nation and providing a service that is tailor-made to South African requirements. Furthermore, an innovation-enabled NHLS will be better integrated into the National System of Innovation (NSI), allowing it to guide and benefit from existing infrastructure, competencies and support, thereby strengthening both the NHLS and the system. The internal ability to support innovation and a potential income stream from successful innovations will encourage interested staff to contribute to a positive culture of the organisation. Innovation remains a strong value proposition of the NHLS which should be fully leveraged to support its strategic positioning.

The NHLS has a track record demonstrating innovative processes and products. However, there is a need to deepen and embed innovation more firmly into the strategic plans, structures, and operations as a means of ensuring that the NHLS remains at the forefront of diagnostic services and also to maintain efficiency and effectiveness as a core responsibility in the NHLS. This directly supports the intent of the National Development Plan and will align the NHLS as a key institution of the South African National System of Innovation. Academic Affairs and Research (AAR) Department will concentrate on technology transfer, innovation and Intellectual Property (IP) management; hence the establishment and fully-staffed TTO.

The AAR Department continues to improve operational efficiencies of the Grants Office by establishing well-defined processes that ensure optimal support and accountability to both the funders and the principal investigators. The AAR will actively explore new funding sources to broaden the current pool of grantors.

#### **4.2.3.4. Teaching and Training**

The NHLS is the sole provider of training of pathologist registrars. It also trains intern medical scientists, intern medical technologists and student medical technicians in the country. To date, the pass rate of registrars, who are trained to be pathologists, has been a huge challenge within the NHLS. The high failure rates in pathology registrar training limit the outputs of new pathologists, thus compounding the shortage of pathologists. The NHLS being the sole training platform for pathologists in the country, means that the organisation becomes the pool for the private pathology sector as well. This has resulted in the current aggressive recruitment by the private sector of pathologists. The private sector has an advantage over the NHLS in that it attracts pathologists at much higher salaries. There is, therefore, an urgent need to train and qualify more

pathologists to be able to meet the demand of both the NHLS and the private sector. To increase the number of qualified pathologists in the country, the NHLS must increase pathology awareness amongst undergraduates, contribute through the Colleges of Medicine in South Africa (CMSA) towards the development of the curriculum and create, communicate and fund a rotation plan to different areas of expertise to maximise training exposure to the registrars.

The HPCSA regulations on the approval of the laboratories as training laboratories dictates that there must be sufficiently qualified medical technologists in the training laboratory who will be responsible for the training of intern medical technologists and student medical technicians as well as other practitioners who work under supervision. This puts a lot of pressure on the NHLS in terms of the available capacity for training of intern medical technologists and student medical scientists. The NHLS continues to look into identifying laboratories as training centres and capacitating them accordingly.

Other factors which need to be considered with regards to training within the NHLS are:

- The number of intern medical scientists and intern medical technologists vs. the demand in the industry;
- The number of students who qualify from the universities and universities of technology vs. the available capacity for training within the laboratories;
- The number of student medical technicians and student laboratory assistants we need to train vs. the NHLS demand on medical technicians and laboratory assistants; and
- The integration of the Bachelor of Science in Medical Laboratory Science graduates into the NHLS working platform.

#### **4.2.4. National Institute for Communicable Disease**

The National Institute for Communicable Diseases (NICD) is the national public health institute of South Africa, providing reference microbiology, virology, epidemiology, surveillance and public health research and training in communicable diseases. It serves as a publicly-trusted source of information, both during outbreaks and as part of its routine surveillance of priority infectious diseases.

The NICD works in close collaboration with the National and Provincial Departments of Health in the planning of policies and programmes to support communicable disease control and elimination efforts and provides specialised laboratory testing. A key role is to detect, respond and report timeously during communicable disease outbreaks by providing technical support and critical laboratory diagnostic services.

Several NICD laboratories are the World Health Organization (WHO) collaborating partners, providing reference diagnostic services and surveillance for communicable diseases such as influenza, poliomyelitis, tuberculosis and measles, among others. The NICD houses biosafety level (BSL) 3 laboratories and the only suited high-containment BSL 4 laboratory in Africa, making it a premier research, surveillance and diagnostics institution in the area of communicable diseases. The sequencing core facility at the NICD conducts next-generation sequencing for diagnosis and outbreak support. Surveillance for malaria and arbovirus vectors is a key function of the NICD, which also houses five insectaries for culturing a wide range of mosquito species that are of public health importance.

The NICD monitors disease trends using a variety of methods and data repositories. This includes the NHLS Central Data Warehouse (CDW) and the recently established Notifiable Medical Conditions (NMC) mobile application that collects real-time data on communicable diseases of public health importance. This enables the collation and interpretation of up-to-date intelligence on communicable disease incidence in South Africa. This information can be used to calculate outbreak response thresholds, predict future disease trends, and inform control policies and regulatory practices.

The National Emergency Operations Centre (EOC) based at the NICD serves as a coordination centre for responses to public health emergencies such as the Listeriosis outbreak of 2017/2018 and the COVID-19 outbreak in 2020. It aims to collate, organise and deploy resources, both internal and external, in response to a major infectious disease incident, outbreak or related event, which has been declared a Public Health Emergency by the Director-General of the National Department of Health. The National Emergency Operations Center (EOC) which was activated on the 31<sup>st</sup> January 2020 by the Minister of Health in response to the emergent COVID-19 pandemic. The NICD together with partners developed national guidelines and training materials to support the surveillance, case finding, diagnosis, management and public health response to SARS-CoV-2 cases. The NICD's 24-hour Clinicians' hotline was expanded to deal with the increased demand for COVID-19 information through hiring of 12 community service doctors. A public hotline was also set up to address the needs of the public with regards to COVID-19 related information and remains operational through the 0800 029 999 number hosted by the NHLS. Eight of the nine provinces have Provincial Epidemiologists that support the provinces and there has been deployment- of epidemiologists is provided to provincial health departments to help with outbreak investigations. Epidemiology training has been conducted for surveillance officers, communicable disease coordinators in the Northern Cape and Free State for 98 Department of Health professionals. The NICD continues to provide critical epidemiological information for the national COVID-19 response through the national incident management team (IMT). This includes the collation of daily test and case numbers and sending a daily report to the Minister of Health and the National Department of Health; and the issuing several weekly reports (see

[www.nicd.ac.za](http://www.nicd.ac.za)). Reports of rates of virus transmission ( $R_0$ ) are also produced regularly and used in planning. COVID-19 data is now being shared directly with the NDoH and the provinces through an application programming interface (API). Up-to-date information is accessible through interactive dashboards and a publicly available dashboard is also available. NICD continues to communicate surveillance data, guidelines and response to media queries on scientific information. Media coverage grew fivefold from 2 021 news items in the previous financial year, to 10 962 news items media. NICD was also involved in the WHO Intra- Action review for the country .

The new hospital surveillance system, DATCOV was initiated on 1 April 2020. This online platform allows public- and private-sector hospitals to submit data on patients diagnosed with COVID-19. Following a directive from the National Health Council, all 605 hospitals in the country are now reporting through DATCOV. Recording over 100,000 admissions, DATCOV provides local real-time data on epidemic progression, including which provinces are most affected, which populations are at highest risk for severe diseases as well as outcomes (in-hospital case fatality ratio). In addition, DATCOV has been expanded to include modules for (a) deaths that occur out of hospital, (b) surveillance in long-term care facilities, (c) paediatric clinical registry, and (d) follow-up for long-term symptoms and complications of COVID-19, so called “Long COVID”. The data has yielded valuable information for understanding the risk factors associated with COVID-19 mortality and providing local data on the role of comorbidities such as non-communicable diseases, HIV and tuberculosis. DATCOV data has been used for estimation of reproductive number. The NICD, in collaboration with the SAMRC, has initiated a COVID-19 mortality linkage project to better quantify COVID-19 mortality data.

The NICD has sequenced hundreds of SARS-CoV-2 genomes and contributes to the national molecular surveillance efforts to track the spread of known viral genotypes and monitor new evolving mutations. The NICD is part of a broader consortium of sequencing laboratories. The NICD has also established virus neutralization assays in preparation for assessing COVID-19 vaccine trials as well as conducting post-marketing surveillance of commercial antibody tests. A new environmental surveillance program with the Water Research Commission is underway, PCR has been modified to detect SARS-CoV-2 in environmental samples. The number of sites for environmental surveillance of SARS-CoV-2 has increased to 19 sites located in six provinces of Gauteng, Western Cape, Free State, KwaZulu-Natal, Eastern Cape and Limpopo. Sampling is conducted every two weeks, SARS-CoV-2 was detected at 16/19 sites. A new environmental surveillance program with the Water Research Commission has begun. This program could assist as an early warning system for COVID-19 outbreaks. The World Health Organisation has requested that we expand the environmental detection of SARS-CoV-2 to support neighbouring countries in Southern Africa

The NICD has established partnerships and cooperative agreements with the Centres for Disease Control and Prevention, the National Institute of Allergy and Infectious Diseases, the Africa Centres for Disease Control and Prevention, the European Centre for Disease Control and Prevention, as well as WHO, and many other internationally recognised institutions. The NICD has a significant footprint and is a major global role player in the field of communicable disease surveillance and related research. The Centre for Vaccines and Immunology supported the African region for polio surveillance, notifying 16 countries and the World Health Organisation of results for immediate action. One focus for the 2021 financial year will be to pass regulatory approvals to host a Polio Essential Facility, one of the few globally. The Centre for Emerging Zoonotic and Parasitic Diseases (CEZPD) continued to provide national and regional capacity for the diagnosis, surveillance, and research of viral, bacterial and parasitic pathogens, particularly those classified as zoonotic biosafety level 3 (BSL3) and biosafety level 4 (BSL4) agents, including: viral haemorrhagic fevers, arthropod-borne viral infections, rabies and rabies-related infections, bacterial infectious diseases such as anthrax, botulism, and plague, rickettsioses, malaria, parasitic opportunistic infections, diarrhoeal disease in under-5 children, schistosomiasis and soil-transmitted helminthic diseases.

South Africa's public health needs and priorities guide the NICD's surveillance and research agenda. The Centre for Enteric diseases (CED) followed up on 113 suspected outbreaks (including food- and water-borne disease, typhoid fever and viral enteric disease). Laboratory and epidemiological support (including field investigations where required, testing of patient samples, and molecular subtyping of isolates/samples) was provided for 18 outbreaks, including 15 foodborne disease outbreaks, two typhoid fever outbreaks and a norovirus outbreak. Centre for Respiratory Diseases and Meningitis (CRDM) strengthened and expanded pneumonia surveillance by appointing additional staff (across existing sites) and expanding surveillance to include two rural surveillance sites (Agincourt Health Centre and Tintswalo Hospital in the Bushbuckridge district of Mpumalanga). Additional case definitions were added for Group A and B streptococcus at sentinel sites. Regular site visits and staff training were conducted, initially with an on-site visit and then on online platforms during the COVID-19 pandemic. The Viral watch continued to provide valuable data on influenza circulation and as a platform to detect COVID-19. Additional surveillance programmes, such as the private hospitalisations and outpatient consultations continued to provide data on influenza and other respiratory pathogen circulation. This data provided important information on COVID-19 hospitalisations. A number of research projects were started to inform policy makers on SARS-CoV-2 and COVID-19, these include: Viral Shedding study, household transmission study, serosurvey and health care utilisation survey, and application based community surveillance system. The CRDM laboratory was also part of a national viral sequencing consortium. CRDM will continue to conduct surveillance programmes for respiratory pathogens, influenza, respiratory syncytial virus and other respiratory pathogens continue to be of importance in the pandemic period. In addition, SARS-CoV-2 surveillance in

2021 will be vital, specifically in the vaccine introduction period. CRDM will review and implement changes to the surveillance programmes to accommodate necessary changes to document the effect of vaccine introduction once vaccination plans are finalised. Research projects will continue and data will be published timeously to inform policy and support NDoH. GERMS-SA laboratory-based enhanced surveillance on organisms of public health importance continued through-out the year, with data collection performed through medical record review rather than interviews from June 2020. Organisms under enhanced surveillance included: *Streptococcus pneumoniae*; *Haemophilus* spp.; *Neisseria meningitidis*; Group A streptococcus (*Streptococcus pyogenes*); Group B streptococcus (*Streptococcus agalactiae*); *Salmonella* Typhi; *Salmonella* enterica serotype Paratyphi (A, B and C); Nontyphoidal *Salmonella* spp.; *Cryptococcus* spp.; and Rifampicin-susceptible TB. Pneumonia surveillance at sentinel hospital sites in 6 provinces was enhanced to include surveillance for all suspected COVID-19 cases. In 2020, the NICD Provincial Epidemiology Team (PET) played a very critical role in the response to the COVID-19 pandemic in the provinces. The provincial epidemiologists played different roles within their respective provincial Incidence Management Teams (IMTs), including data management and harmonisation, analysis and reporting, daily provincial COVID-19 situational reports, presentation at different provincial meeting forums, trainings, technical support and capacity building at district. The team began working alongside provincial and district response teams to strengthen the reporting of COVID-19 mortality, especially deaths outside of healthcare facilities, with technical and financial support from Africa CDC. The epidemiological support to the provinces with regards to COVID-19 response continues in 2021, with implementation of COVID-19 community death reporting strengthening in four sentinel sites (Nelson Mandela Bay, Mangaung, Thabo Mofutsanyana and Frances Baard Districts). The Centre for Emerging Zoonotic and Parasitic Diseases (CEZPD) continued to provide national and regional capacity for the diagnosis, surveillance, and research of viral, bacterial and parasitic pathogens, particularly those classified as zoonotic biosafety level 3 (BSL3) and biosafety level 4 (BSL4) agents, including: viral haemorrhagic fevers, arthropod-borne viral infections, rabies and rabies-related infections, bacterial infectious diseases such as anthrax, botulism, and plague, rickettsioses, malaria, parasitic opportunistic infections, diarrhoeal disease in under-5 children, schistosomiasis and soil-transmitted helminthic diseases. The primary roles of the National Cancer Registry (NCR) are national pathology-based cancer surveillance and implementation of population-based cancer registration. During the year under review, the NCR used multi-model supervised machine learning techniques to assign malignancy status to histology reports from the

National Health Laboratory Service (NHLS) Corporate Data Warehouse (CDW) and identify missing cancer records, which could not be identified by routine CDW algorithms. This significantly improved the completeness of the pathology-based registry for the years 2015, 2016 and 2017. Reports for the pathology based registry for 2016 and 2017 were published on the NCR website.

Research is conducted from the genetic and environmental factors that govern transmissibility, virulence, epidemic behaviour and distribution of the most significant pathogens. Investigating the impact and effectiveness of interventions such as vaccines and drug treatments, including monitoring biological resistance to these interventions, is used to develop new guidelines and policies. Technology development and intervention-driven research are used to improve communicable disease surveillance, diagnostics and control. The Centre for HIV and STIs supported multiple prevention trials including vaccines and antibody-mediated protection trials conducted in South Africa and the Africa region. The Centre for TB (CTB) completed evaluation of various rapid molecular TB diagnostic tests: Xpert XDR cartridge, BD MAX™ MDR-TB (BD MAX) and FluoroType® MTBDR. Data submitted to WHO for the Guideline development group meeting on Nucleic Acid Amplification tests Assessment of Whole Genome Sequencing for drug resistance prediction and transmission dynamics of M/XDR-TB in two districts in South Africa. The Centre for Hospital Infections and Antimicrobial Resistance (CHARM) will lead a multi-centre pragmatic randomised-controlled phase III trial at 10 sites in South Africa and Tanzania nested within the national screening programmes – “Fluconazole plus flucytosine vs. fluconazole alone for cryptococcal antigen-positive patients identified through screening”. CEZPD continued its biosurveillance programme for zoonotic pathogens in local bat populations. Confirmation of the period for the highest marburgvirus exposure risk (April-June) highlights the value of biosurveillance and demonstrates that this virus continues endemic circulation in South Africa. Diagnostic and surveillance capacity was improved through the development and validation of a number of diagnostic platforms, including: 1. a pen-side test for the detection of nucleocapsid protein of RVF in viremic livestock, 2. a reverse transcription recombinase assay for rapid detection of canine-associated rabies, and three indirect enzyme-linked immunosorbent assays for the detection of serum immunoglobulin G (IgG) antibodies to Ebola virus in human sera. Real-time PCR for trypanosomiasis was validated and is now available for patient sample testing. New research project to begin during 2021: metagenomic analysis of sewage at selected study sites to detect enteric bacterial pathogens and antimicrobial resistant pathogens of public health concern.

Through a variety of educational programmes in public health, the NICD offers training in unique settings such as the BSL 3 and 4 laboratories. The institute offers formal and informal training to



field epidemiologists through the Field Epidemiology Training Programme (FETP), medical registrars, and field and laboratory personnel, including intern medical scientists, environmental health practitioners and post-graduate students. GERMS-SA field staff trained numerous provincial teams on nasopharyngeal specimen taking practises and assisted in contact tracing of the first COVID-19 cases in KwaZulu-Natal.

Staff generate new knowledge and disseminate information through numerous publications such as the Communiqué and the Public Health Surveillance Bulletin as well as reports, guidelines and scientific journals.

#### **Strategic objectives of the NICD**

- To be the national public health institute for surveillance of communicable diseases in South Africa.
- To detect outbreaks or epidemics at an early stage to be able to timeously and effectively respond to them, or to anticipate imminent outbreaks or epidemics by investigation, research and analysis of data and to communicate accordingly.
- To engage in directed and relevant research to answer questions related to national and regional public health communicable diseases problems, their surveillance and management.
- To provide a reference function for communicable diseases laboratories in the public and private sectors nationally, regionally and internationally.
- To build capacity for communicable diseases nationally and regionally.

#### **4.2.5. National Institute for Occupational Health**

The NIOH is a division of the National Health Laboratory Service. It provides occupational and environmental health and safety support and services across all sectors of the economy, including the informal economy. Its mandate is to promote workers' health and safety through a range of programmes, including but not limited to: surveillance of occupational diseases; specialised laboratories and health hazard evaluations; applied laboratory and epidemiological research; statutory autopsy services and other clinical services; as well as teaching and training on critical occupational health and safety skills.

NIOH established the following goals that aimed to address South Africa's occupational health and safety issues in a resource-constrained environment, namely to:

- Promote safety and health in workplaces through interventions, recommendations and capacity building
- Provide specialised safety, health and environment services to the NHLS
- Maintain Quality management systems
- Strengthen stakeholder collaborations
- Increase capacity for occupational surveillance
- Establish revenue generating streams for sustainability of key programmes

The year 2020 was dominated by the COVID-19 pandemic, which impacted on workplaces across the globe. Whilst the arrival of the pandemic crippled some of the services provided by the Institute, it provided numerous opportunities that emphasised the value of the NIOH well beyond the occupational health space. The NIOH played a crucial role in the training of various occupational groups across numerous sectors, in an effort to equip industry with the tools required to protect and promote workers' health and safety, including the safe return to work during the pandemic. As the demand for online COVID-19 training increased, the online training platform capacity was extended to livestreaming on You-Tube when Zoom reached its maximum capacity of 3000 participants. A dedicated workplace advisory hotline, specifically for occupational health professionals, employees and employers, had to be established and has now been expanded to address general workplace queries beyond COVID-19. To date, 60 webinars have been conducted with over 40 000 participants being trained on COVID-19 topics. Several guidelines and fact sheets have been developed also and translated into local languages. All these materials are accessible via the NIOH's zero-rated website.

During the past year, there were some notable developments in occupational health and safety (OHS) in South Africa where NIOH played a role. A number of staff members represented the NIOH at key high level decision making technical committees including NEDLAC and the Department of Employment and Labour (DoEL), drafting and revising occupational health legislation and guidelines. The NIOH also launched its inaugural newsletter called the NIOH OccuZone as a medium to disseminate critical information to its stakeholders.

In addition, the NIOH has increased its digital footprint through the effective utilisation of the social media platforms Twitter and YouTube. These communication channels provided the opportunity for networking on a global scale, assisted with targeting specific stakeholders through tailored communication, and provided a diverse PR platform to share information. New website visits have increased by 57% with new visitors from other African countries and Europe.

The NIOH, being the primary provider for Safety, Health and Environment (SHE) services to the entire NHLS, has provided overall leadership in guiding the implementation of policies for NHLS staff members in line with national guidelines. During 2020, the NHLS purchased the intellectual

property of the Occupational Health and Safety Information System (OHASIS) so as to take sole ownership of this user-friendly system that supports surveillance, compliance with OEHS legislation, enables online training and provides information for research analysis. Recently, the OHASIS has been extensively adapted to cater for the new challenges posed by COVID-19 and further enhancements made to cater also for the unique needs posed by the laboratory environment within the NHLS. It is gradually being rolled out to several provinces as well as in neighbouring countries.

The specialised laboratories of NIOH managed to maintain Quality Management System Accreditation year upon year. The Institute is the only entity in South Africa that has acquired 4 different quality management systems i.e. ISO 15189 (Medical Laboratories), ISO17025 (Testing and Calibration Laboratories), ISO17020 (Conformity Assessment for Inspection Bodies) and ISO 9001 and has also been able to provide pre-SANAS internal audits, training and support to NHLS laboratories, including Proficiency Testing (PT) Scheme guidance to staff.

Stakeholder engagement had been lacking but in the recent past, the NIOH managed to strengthen functional working relationships with our key stakeholders: the Department of Employment and Labour (DoEL), the National Department of Health (NDoH), Organised labour, NGOs and professional societies. The NIOH, at the insistence of organised labour, and at the request of the NDoH, conducted countrywide onsite audits of public and private health care facilities. This is evidence of the relationship of trust that has been built.

The NIOH is a World Health Organization Collaborating Centre and has been recognised as a Centre of Excellence. It collaborates with various local and international universities, governments, and organisations, including advising the African Union Development Agency (AUDA-NEPAD) as well as collaborating with the International Labor Organization on matters including research, skills development, and policy advisory support. Currently the NIOH serves as the advisory body for occupational health in the region. Research remained a priority for the Institute and focused on the prevention of workplace exposure with specific reference to hazardous biological agents. Some of the COVID-19 collaborative research focussed on PPE, exposure assessment in health facilities treating COVID-19 patients and assessment of anti-bacterial efficacy of hand sanitisers, to mention a few.

Surveillance for occupational diseases was prioritised as a new strategic thrust. An occupational health surveillance system was established to cater for workplace COVID-19 infections submissions. This was made possible by partnerships with governmental entities and financial and human resource support from business partners. The system is now a foundation on which surveillance for all occupational diseases will be based.

All of the above-mentioned new strategic areas and responsibilities represent a major challenge for the NIOH as it manages with limited resources to address its priorities. Hence there is concerted effort to generate revenue by exploring various funding mechanisms available in order to effectively and sustainably fulfil its core mandate.

The NIOH recognises that new issues may emerge or become more important during the five years and some plans may be retired because they have been achieved so priorities may be shifted in response to changing conditions.

#### **4.2.6. South African Vaccine Producers**

The South African Vaccine Producers (SAVP), a wholly-owned subsidiary of the NHLS, is a national asset that supplies strategic products to a global market. The focus of the SAVP is the production of world-renowned antivenom products, which are regarded as the gold-standard for treating bites from the deadliest African snake species.

SAVP is registered as a pharmaceutical manufacturer and has been producing antivenoms to treat the bites of snakes and arthropods for more than 80 years. These therapeutic animal antibodies remain the only specific treatment for envenomation. Worldwide antivenom production is threatened by being economically unattractive.

SAVP is the sole manufacturer of this antivenom in Sub Sahara Africa. There is now a resurgence of interest in antivenom production with a view of harmonizing production and quality control methods. SAVP is currently collaborating with WHO in their initiative, which categorised snakebite envenomation under the category of Neglected Tropical Diseases, on the 9<sup>th</sup> June 2017.

Increasing the SAVP antivenom output and achieving WHO pre-qualification will require an investment in infrastructure, modern plasmapheresis equipment and overall capacity.

#### **4.2.7. Diagnostic Media Products**

There are currently three (3) Diagnostic Media Products (DMP) Units within the NHLS which are responsible for producing microbiological culture media and reagents for use in clinical diagnostic laboratories. The media produced are supplied internally to NHLS laboratories, as well as externally to private laboratories and some laboratories within Africa. The NHLS aims to consolidate these departments under single management and strengthen it to become one of the revenue-generating units.

DMP has an advantage over external suppliers in that it gives competitive prices to both internal and external customers and economies of scale. For this reason, it is capable of mass production and supply on a national basis.

Customer satisfaction is key and they consider suppliers based on various factors including the production TAT, price, and quality of the product, availability of stock, service excellence and administrative efficiency. This has to be supported with after-sales service, a trustworthy relationship and the capability to resolve challenges that are encountered. In effect, a true business unit with the appropriate full shop of resources. The certification status (ISO 9001: 2015) gives clients confidence in DMP to deliver competitive and quality products.

The current sales and client base were acquired with no marketing or strategic market assessment. Engagement with clients to understand needs can help focus understanding of what capacity to invest in. One of DMP's external clients is the WHO whose geographic reach and laboratory-related scope is wide. DMP should seek a strategic partnership with key industry role players including the WHO, CDC and reference labs to build a closer understanding of their laboratory needs and hone in on the best growth opportunities.

#### **4.2.8. Administration**

The effective and efficient functioning of the laboratories is as strong as its administration. It is for this reason that the NHLS must invest in administration departments to create an enabling environment for the delivery of its core mandate.

The administration programme plays a crucial role in the delivery of the NHLS services through the provision of a range of support services, such as organisational development, human resource and labour relations, information technology, property management, security services, legal, communication and the integrated planning, monitoring and evaluation function. NHLS depends highly on the effective management of financial resources and procurement process as administered within the financial department. Generating sufficient revenue remains a critical focus area for NHLS to ensure financial viability and sustainability.

##### **4.2.8.1. Finance**

The entity after several years of financial difficulties has largely stabilised its finances and produced a surplus of R1,1 billion in 2019/2020 when compared to a surplus of R996 million in 2018/19. The surplus of R1,1 billion in 2019/2020 is due to an increase in diagnostic services to provinces, improved payments from provinces and cost containment measures implemented. The surplus was used for COVID-19 including capital equipment that will enhance services after the pandemic..

The total revenue increased from R8,9 billion in 2018/2019 to R9,7 billion in 2019/2020.

The NHLS received a net cash inflow of R9.1 billion in 2019/2020 compared to R8.0 billion in 2018/2019. The better collection of outstanding debt is attributed to improved relations with customers (notably Provincial Departments of Health), including payment agreements. Of this R9.1 billion, R3.6 billion was utilised for personnel cost and R4.2 billion was utilised for goods and services. A stringent cost containing plan has yielded results in that indirect and controllable expenses has been significantly reduced in recent years.

The long outstanding accounts payable balance from procurement of good and services were significantly reduced, resulting in a reduction of the creditor days from 30 days in the previous financial year, to 28 days in the year under review. The improvement of creditors days illustrates NHLS' continuous commitment to the timely payment of suppliers for goods and services rendered. Improved financial stability enabled the NHLS to significantly reduce outstanding debt.

Years of financial instability has led to the NHLS under-investing and maintaining in necessary capital equipment and infrastructure. This is being addressed by an accelerated CAPEX programme.

The NHLS is implementing better procurement policies and procedures to eliminate irregular expenditure. This includes system enhancements and continuous procurement training interventions. Notwithstanding the above, the NHLS acknowledges that further improvements are required, especially in terms of turnaround times concerning capital expenditure.

Most of the consumables (reagents) required by the NHLS to perform its tests can only be used in the machines of the specific manufacturers. It is therefore essential that a diverse equipment fleet is used to guard against a single dominant supplier renegeing on its contracted obligations and putting the NHLS at risk.

#### **4.2.8.2. Information and Communication Technology**

Information Technology continues to play a strategic role in enabling the NHLS to achieve its mandate. It is therefore important that the NHLS as a key role player in the South African healthcare ecosystem applies information technology successfully to transform its business processes and deliver value to customers.

#### **Information and Communication Technology Infrastructure**

The information and communication technology (ICT) infrastructure remains a challenge in the NHLS. Network connectivity (MPLS) for the Wide Area Network's capacity does not meet the traffic demands. Faults are not resolved on time leading to laboratories being down without any

commitments for uptime. Plans are in place to acquire services from other institutions and service providers. The NHLS is in the process of upgrading the server and storage infrastructure to increase its capacity to be able to handle the increase in data . The NHLS must invest more in digital solutions to enable standardisation and optimisation of laboratory and business processes.

### **Laboratory Information System**

The Laboratory Information System (LIS) is the primary centralised system where laboratories can register patients and their test orders and then process, capture and report results. Major health care facilities that have a hospital information system have been interfaced to the LIS to allow for electronic sharing of results as soon as they are available. The LIS will leverage the use of HPRS and mobile applications to provide a real-time communication system with patients.

The LIS is supporting laboratories in their COVID-19 pandemic response. This includes implementing new SARS-COV-2 tests rapidly and configuring new and existing analysers to upload these results directly into the LIS. Additional reporting flags and locations for initiatives like Community Screening and Testing were implemented to assist with evolving monitoring needs. A new web based portal was created to allow community reporting of SARS-COV-2 rapid antibody and antigen tests as required by SAPHRA. Realtime patient communication for COVID-19 results were implemented – allowing a patient to receive their results by SMS as soon as the result is released on the LIS. Expanding results delivery to mobile devices for both patients and clinicians are part of the planned initiatives to leverage greater efficiencies from the LIS.

### **Enterprise Resource Planning**

The NHLS has invested in the use of Oracle E-Business Suite (EBS) Enterprise Resource Planning (ERP) solution to manage the following business functions: finance, supply chain management, contract management, payroll and human resources. The ERP system has been customised over time to suit the business needs which has resulted in complications on the administration of the system. Additional requirements on talent management from HR and sourcing from SCM are currently being considered for procurement. Oracle has been engaged for different alternatives for the future of the ERP whether to continue owning the entire system and upgrade it, switch over to cloud services or a hybrid environment. A decision will be formally made as soon as we get the performance history of the system that we own to assess its capability for the near future.

### **Digital Transformation Initiatives**

Digital transformation is the integration of digital technology into all areas of a business, fundamentally changing how the organisation operates and delivers value to customers. The NHLS has identified the following areas that are in urgent need of digital transformation:

- Laboratory processes through digital pathology.
- Specimen tracking using GPS and/or RFID technology.
- Mobile App for access to patient results and patient engagement.
- Digitizing Supply Chain Management Processes
- Order Entry System for laboratory test orders

These areas will be prioritised in this medium term.

### **Information Technology Service Delivery Model**

There is an increasing drive in the NHLS to reduce costs and improve operational efficiencies through technological innovation. This often translates into the need for a growing number of Information Technology (IT) services, where success or failure of the business can hinge on its ability to facilitate these services on time, within budget, and to specification.

Developing in-house IT capabilities to complete projects or provide services can be a costly and risky venture, particularly when the IT needs of an organisation are constantly changing. The IT department will review its service delivery model to improve its operational efficiency.

#### **4.2.8.3. Human Resources**

A highly trained and skilled pathology workforce is essential to the provision of quality pathology services and the healthcare services that rely on them. Internationally it has been identified that at least 70% of all healthcare decisions involving diagnosis or treatment are informed by pathology.

Despite the reliance on diagnostic services, there are numerous challenges in the pathology sector and a growing threat to the future capacity of the pathology workforce as a whole to continue to support the quality of care at existing levels and likely increased demand for services into the future.

Notwithstanding this, the excellence of our organisation demands parallel distinction in all aspects of the workplace if we are to sustain our global stature. These demands include upholding and living our Code of Conduct as well as our values. The Code of Conduct is the ethical foundation of our operations and supports our values. Our values are the beliefs we all share, that drives our organisational culture and priorities. They provide a framework for making decisions and defining how all employees are expected to conduct themselves professionally and responsibly. This is critical in our journey of providing high-quality patient-centred laboratory service that is clinically effective, efficient and cost-effective.



Taking from one of our values; unity of purpose, shared vision and teamwork, we are “One Team” and we are expected to execute our strategic plan with a unified national focus. To this end, we are expected to create and sustain a workplace culture of excellence and high engagement, foster innovation and growth, promote inclusion and respect diversity and enable the integration of the demands of career and life

We commit to enabling NHLS’ mandate of excellence in teaching, research, and diagnostic service through strategic, innovative, and flexible policies, practices, programmes, and services that:

- attract, develop, reward, and retain a diverse and talented workforce;
- foster a productive work environment where people feel valued and respected;
- support the changing nature of work and the work environment; and
- add value and reflect good stewardship of resources; that is fair, ethical, and legally compliant.

The above shall be detailed in our people strategy and be underpinned by a detailed implementation plan, that sets out clear actions and measures of success that must be deployed by the collective leadership across NHLS. This is achieved by creating an environment in which all colleagues are equally valued, honestly supported and truly recognised for their contributions. Thus we said, our staff lies at the heart of our work and it is only through their skills, commitment and motivation, that the NHLS fulfills its mandate.

Our key objectives for the period that lies ahead can be summarised as follows:

- develop our employer reputation to further enhance our overall brand identity and standing, to attract top talent;
- embed our remuneration and reward principles to equal remuneration for work of equal value, by further identifying key jobs in which grade discrepancies exist;
- establish clear performance objectives and expectations to ensure differentiation of performance across different levels, and to provide clarity on roles. This, to necessitate the development and implementation of the workload-benchmark framework;
- celebrate diversity and inclusion within our workforce, recognise the contribution of all staff, and enhance the overall success of the organisation by facilitating various individual, team and organisational development programmes; and
- continually identify, grow and manage our internal talent and staffing profile, to uphold our international profile. This will require preparing (re-skilling and re-training) staff in the face of technological changes for newly modified roles.

Our staff profile to this date is reflected below and it reflects our commitment to providing sustainable employment while addressing matters of patient care. Though the below is reflective of our profile as at 31 March 2020, the picture is similar for the past many years.

**Table 5: Workforce profile as at 31 March 2019**

Occupational Level	Male				Female				FN		Total Staff
	A	C	I	W	A	C	I	W	M	F	
Top Management	3	0	0	1	1	0	1	1	0	0	7
Senior Management	8	1	3	7	9	2	6	12	0	0	48
Professionals	111	25	50	99	267	32	112	196	4	3	899
Skilled (Academically Qualified)	688	73	54	54	1541	175	172	240	9	6	3012
Semi-skilled	687	61	36	10	1319	174	45	62	0	0	2394
Unskilled	294	8	0	1	456	21	1	0	1	0	782
<b>Total workforce</b>	<b>1791</b>	<b>168</b>	<b>143</b>	<b>172</b>	<b>3593</b>	<b>404</b>	<b>337</b>	<b>511</b>	<b>14</b>	<b>9</b>	<b>7142</b>
<b>Total %</b>	<b>25%</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>	<b>50%</b>	<b>6%</b>	<b>5%</b>	<b>7%</b>	<b>0,2%</b>	<b>0,1%</b>	
<b>NATIONAL EAP %</b>	<b>42,8%</b>	<b>5.2%</b>	<b>1.7%</b>	<b>5.1%</b>	<b>36,0%</b>	<b>4.4%</b>	<b>1,0%</b>	<b>3.9%</b>	-	-	-

We are a leading national pathology and laboratory service organisation devoted to research which improves clinical outcomes and patient care while helping to reduce the overall cost of patient care. Thus our stakeholder agreement with various universities remain critical as it enables our experienced health staff to be an integral part of the teaching platform and allow the transfer of competency to the future generational cohort of pathologist, scientist, medical technologist and medical technician

We may not be able to maintain our competitive advantages if we are not able to attract and retain key skills across various levels of the healthcare cohort; our executive, information technology and other key support staff. While we will be taking steps to retain such key staff, the challenge will be the global competition for such which could lead to compensation cost being unsustainable.

**Table 6: Training profile across NHLS**

Training type	Personnel expenditure R'000	Training expenditure R'000	Training expenditure as a % of personnel cost	No. of employees trained	Average training cost per employee
Non-PIVOTAL* programmes (short courses, workshops, seminars, congresses and CPD interventions)	3 929 241	45 067	1.15%	5 880	7 664
PIVOTAL programmes (for non-employees higher education qualifications)		780	-	12	65 000
PIVOTAL programmes (for non-employees participating in learnerships, on-the-job training and workplace experience)	21 000	21 000	-	218	96 330

\*PIVOTAL = Professional, vocational, technical and academic learning programmes that result in occupational qualifications or part qualifications on the National Qualifications Framework.

The NHLS continues to fulfil its role in promoting and prioritising skills development through the analysis of its employees' skills needs by implementing the WSP. Multiple learning programmes will be offered through short learning programmes, in-service conferences and congresses, as well as CPD programmes to enable the organisation to comply with legislation, improve quality of services, ensure business continuity and assist in the mitigation of risks.

In the financial year under review, the NHLS achieved 72% of the planned training target as compared to the legislated target of 60%. This figure is represented by a training headcount of 5880 employees who attended technical and non-technical short learning programmes, workshops, seminars, on-the-job training and conferences in the 2019/2020 period. This picture is consistent with previous years.

In addition to the regular training for learnerships and professional registrations, 12 scholarships were awarded to needy students across the country who are studying towards the National Diploma in Biomedical Technology and the Bachelor of Health Science, and 328 bursaries to the value of R7,5 million were issued to NHLS staff who wish to pursue their career development by way of formal qualifications. Furthermore, our commitment to provide training to the registrar, medical scientist and medical technologist is continuing. In the year past, March 2020 – we had 530 medical interns on our various training platforms.

**Table 7: Learnerships for Registrar, Scientist & Technologist**

Job Title	Headcount
Registrar	251
Medical Scientist Intern	61
Medical Technologist Student	218

To this end, our relationship with Organised Labour shall become even more critical if shared understanding could be achieved and meaningful alternatives are explored and agreed to.

We intend to execute on our vision of providing high-quality patient-centred service through a reliance on the performance of our information technology systems. The failure to operate these systems and/ or navigate across available functionalities could have an adverse effect on our services and performance. It is for this reason, the focus shall also be on re-skilling and re-training our staff to transition to the new technological world which requires new competencies. Our business requires the continued operation of sophisticated information technology systems and network infrastructure.

Running our operation with excellence is a prerequisite for delivering our core mandates, this will need us to invest in extraordinary people. This era also calls for us to anchor our efforts in integrity, ethics, inclusion and human welfare. It's time to affirm and lead with our values.

#### **4.2.8.4. Governance**

The Board as the accounting authority must provide oversight concerning compliance with Public Finance Management Act, 1999 (Act No. 1 of 1999) ("the PFMA"). According to the King IV Report on Governance for South Africa, 2016, the governing body should lead to ethically and effectively. They:

- Offer leadership that result in the achievement of strategy and outcomes over time.
- Exhibit characteristics of integrity, competence, responsibility, accountability, fairness and transparency, govern the ethics of the organisation in a way that supports the establishment of an ethical culture.
- Steer and set the direction, purpose and strategy of the organisation.
- Ensure that the reports issued by the organisation enable stakeholders to make informed assessments of the organisation's performance, and its short term, medium and long term prospects.

The Board in playing its oversight role concerning good governance and has implemented a fraud prevention and response plan. The plan is designed to assist staff in making sound decisions

regarding the reporting of fraud, corruption and other criminal offences which might impact the NHLS in its operations. Whistle-blowers are protected through the tip-off anonymous fraud hotline, which is managed by an independent service provider. The Board received a tip-off on several alleged misconduct issues and immediately conducted investigations and reported these irregularities to the AG's office.

Further, the board provides leadership by steering and setting the direction, purpose, and strategy of the organisation. It creates an enabling environment for the organisation so that it achieves its strategy and outcomes over time.

#### **4.2.8.5. Planning, Monitoring and Evaluation**

Monitoring and evaluation aim at informing policymakers about the progress towards achieving targets as set in the-performance plans and assist managers in making proper decisions. Currently, there is a monitoring and evaluation unit in the office of the CEO.

The functioning of the entire NHLS needs to be carefully monitored to maintain a high level of service. This includes, amongst others:

- evaluation of services in relation to accreditation/certification and turnaround of test results;
- evaluation (internal and external) of all training programmes to ensure that they remain relevant to the services being provided;
- evaluation of staff establishment and staff performance;
- evaluation of systems in financial management and supply chain management;
- monitoring and evaluation of the implementation of all NHLS strategic projects;
- prevention of disease through effective monitoring of people.

NHLS is a custodian of a wealth of valuable health data that could inform policy and guidelines through collaborative engagement, diagnostic and monitoring services. The data is critical in contributing to the reduction of disease progression, improving quality of care, quality of life and to ultimately reduce premature deaths.

The M&E unit was established in 2016 with the appointment of the Senior Manager: Monitoring and Monitoring and Evaluation. It has since been focusing on Monitoring and not Evaluation because of resource constraints. Its monitoring function is also limited to the Strategic objectives

but is not cascaded to the operations and support function. For the NHLS to realise the full benefits of having an M&E unit, it will:

- identify M&E coordinators in the regions and other support departments and train them on collecting, collating and reporting data to the M&E unit. The automation of the reporting tool is also critical for maintaining data integrity;
- evaluate programmes to improve accountability, performance, learning, communication and decision making;
- establish the business intelligence unit in the CEO's office to develop dashboards and real-time monitoring information; and
- use automated monitoring tools to maintain the integrity of the reported data.

By so doing, the NHLS will be able to cascade monitoring to the laboratory and departmental level and enable the Executive Managers and the Board to have complete oversight of the organisation

#### **4.2.9. SWOT Analysis**

The NHLS identified the SWOT analysis as a powerful tool to ensure that a better understanding of the current situation and environment will allow for a platform upon which planning can be performed. A clear understanding of the **S**trengths and **W**eaknesses will enable the NHLS to be in a better position to plan for any possible **O**pportunities or make plans to prevent **T**hreats from becoming realities to manage.

The complete SWOT analysis is provided in table 8.

**Table 8: Strengths, Weaknesses, Opportunities and Threats**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Strong academic base;</li> <li>• Sustainable partnerships through relevant research outputs;</li> <li>• Sustainable partnerships with NDoH, Universities, and UoTs etc.;</li> <li>• Internationally renowned intellectual capital;</li> <li>• National pathology laboratory footprint;</li> <li>• Exclusive national integrated data warehouse;</li> <li>• Leverage on the NHLS powers in the Act;</li> <li>• The largest employer of pathology professionals in the country;</li> <li>• Influence in the National and Regional Societies on laboratory medicine;</li> <li>• Competitive remuneration structure;</li> <li>• Africa leader in laboratory medicine.</li> <li>• The NHLS is regarded as experts in dealing with the outbreaks.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of succession planning and development across various levels;</li> <li>• Lack of workload standards;</li> <li>• The high failure rate of registrars;</li> <li>• Inequitable distribution of critical and scarce skills;</li> <li>• Inadequate ICT infrastructure capacity;</li> <li>• Limited advance technology in certain areas;</li> <li>• Limited ownership of value chain from collection of samples to return of results;</li> <li>• Inadequate communication both internally and externally;</li> <li>• Lack of consequences management;</li> <li>• Lack of coordinated research and innovation activities within NHLS;</li> <li>• The inadequate interface between LIS and billing.</li> <li>• Complacency due to perceived security from being a designated public sector service provider;</li> <li>• The limited performance monitoring system</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Multi sectorial partnerships to enhance sharing of intellectual capacity;</li> <li>• Other sources of income to enhance revenue streams;</li> <li>• Existing footprint in terms of the national and regional laboratory network;</li> <li>• Implementation of the National Health Insurance (NHI);</li> <li>• Trusted service provider by the health professionals;</li> <li>• Strengthening integrated IT systems;</li> <li>• Increased volumes through policy changes;</li> <li>• Utilise media coverage to promote our brand / corporate image;</li> <li>• Remote oversight of laboratories by pathologists;</li> <li>• Opening of new medical schools will expand the teaching platform;</li> </ul>	<ul style="list-style-type: none"> <li>• International reduction in grant allocation;</li> <li>• Private-sector competition especially in Anatomical pathology;</li> <li>• Medical inflation in relation to goods and services is generally higher than CPI;</li> <li>• Exchange rates;</li> <li>• Lack of investment in IT infrastructure;</li> <li>• Opening of new medical schools, the NHLS may not have enough resources to cover the need.</li> <li>• Sub-optimally functioning grants office;</li> <li>• The progressive erosion of the training platform;</li> <li>• Insufficient throughput from training platform;</li> <li>• Operational costs increasing higher than tariff increases;</li> <li>• Increased competition with the implementation of NHI;</li> <li>• The decrease in budget allocations from the National Treasury for teaching and training.</li> </ul>

Opportunities	Threats
<ul style="list-style-type: none"> <li>• Automation of technology;</li> <li>• Digital technology;</li> <li>• Central Data Warehouse repository of information;</li> <li>• Advances in logistics systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Highly dynamic and rapidly changing industry and the NHLS may not adapt as rapidly;</li> <li>• Perceived inefficiencies and high cost of pathology services</li> <li>• COVID-19 pandemic and its impact on services and financial sustainability.</li> <li>• The Impact of COVID-19 on employees.</li> </ul>

## 5. Stakeholder Analysis

The NHLS Strategy will require significant stakeholder buy-in to achieve the impact envisioned in the strategy. To do this, the NHLS continues to:

- create a shared understanding of stakeholder engagement;
- provide a set of principles to which the NHLS commits in the management of its stakeholder relations;
- identify and categorising stakeholders;
- define the engagement models for the different stakeholders; and
- provide a high-level programme and plan for engagement with each group of stakeholders.

Stakeholder analysis is a systemic way to analyse stakeholders by power and interest. Table 8 demonstrates the interest the different stakeholders have on the NHLS.



Table 8: Stakeholder analysis								
Stakeholder Group	Category	Interested in the impact on:						
		Legislation	Finance	Governance	Reputation	Business continuity	Research	Services/ Product
Government	National Department of Health	✓	✓	✓	✓	✓	✓	✓
	Provincial Department of health		✓	✓	✓	✓	✓	✓
	District Department of Health		✓	✓	✓	✓	✓	✓
	National Treasury	✓	✓	✓	✓	✓	✓	✓
	Chief Procurement Officer	✓	✓	✓	✓	✓	✓	✓
	Portfolio Committee	✓	✓	✓	✓	✓	✓	✓
Public Entities	Medical Research Council						✓	✓
	Council for Medical Schemes		✓					
Regulatory Bodies	Office of Health Standards Council	✓			✓	✓		
	South African Health Product Regulatory Authority	✓			✓	✓	✓	✓
	Health Professional Council of South Africa	✓			✓	✓	✓	
Private Sector	Hospitals					✓		✓
	Sector Laboratories		✓			✓		✓
	Pharmaceutical Companies		✓			✓	✓	✓
	Medical Devices				✓	✓	✓	✓
	Funders		✓	✓	✓	✓	✓	✓
	Distributors		✓					✓
	Sector Suppliers		✓		✓	✓	✓	✓
	Donor Funders		✓	✓	✓	✓	✓	✓
Mining Sector	Mineral Council of South Africa							✓

		Interested in the impact on:						
Stakeholder Group	Category	Legislation	Finance	Governance	Reputation	Business continuity	Research	Services/Product
Customers	Clinicians		✓		✓	✓	✓	✓
	Patients		✓		✓	✓	✓	✓
Health Science Faculties	Health Science Faculties				✓	✓	✓	✓
Universities and Research organisations	Universities and Research organisations				✓	✓	✓	✓
Universities of Technology	Universities of Technology				✓	✓	✓	✓
Professional bodies	Professional bodies				✓		✓	
NGO's	NGO's						✓	✓
Media	Media				✓			
Organised Labour	Organised Labour		✓	✓	✓	✓	✓	
NHLS Board of Directors	NHLS Board of Directors	✓	✓	✓	✓	✓	✓	✓
NHLS employees	NHLS employees	✓	✓	✓	✓	✓	✓	✓

## **6. Overview of 2021/2022 Budget and MTEF Estimates**

### **6.1. Materiality and Significant Framework Background.**

#### **Background**

Treasury Regulation Section 28.3.1 states: “For purposes of material [sections 55(2) of the Public Finance Management Act (PFMA)] and significant [section 54(2) of the PFMA], the accounting authority must develop and agree on a framework of acceptable levels of materiality and significance with the relevant executive authority.

Materiality and/or Significance within NHLS, is defined as threshold or cut-off point where the information (omission or inclusion of) will alter decisions that are to be taken. NHLS thus accepts that materiality can be both quantitative and qualitative.

In determining NHLS has taken the following factors into consideration:

- the nature of NHLS’s business;
- statutory requirements affecting NHLS;
- the inherent and control risks associated with NHLS

#### **6.1.1. Nature of the NHLS’ business**

The NHLS is the main provider of clinical support services to the national, provincial and local departments of health through its countrywide network of quality-assured diagnostic laboratories. The NHLS also provides surveillance support for communicable diseases, occupational health and cancer, and thus, the endeavour to align its strategy to both the Department of Health priorities and the National and Regional Burden of Disease.

The NHLS delivers services throughout the public sector from Primary Health Care level to tertiary/quaternary hospitals. The level of complexity and sophistication of services increases from the peripheral laboratories to the central urban laboratories (with specialized surveillance infrastructure existing at isolated sites).

### **6.1.2. Statutory requirements laid down on the NHLS**

The NHLS is managed according to the provisions of the National Health Laboratory Services Amendment Act 5 of 2019, as well as the NHLS Rules, gazetted in July 2007, and the Public Finance Management Act No. 1 of 1999 (as amended). It is a Schedule 3A public entity state governed by a Board and a Chief Executive Officer.

### **6.1.3. The control and inherent risks associated with the NHLS**

In assessing the control risk of the NHLS, cognizance was given to amongst others:

- proper and appropriate governance structures have been established;
- An audit and risk committee that closely monitors the control environment of the NHLS has been established;
- the function of internal audit was established and some of the projects are co-sourced with the external audit functions;
- a three-year internal audit plan, based on annual risk assessments being performed, is annually reviewed and agreed by the audit and risk committee;
- material risk that requires attention i.e. irregular expenditure reported in the annual report, are receiving attention with. controls being implemented to address weaknesses;
- a delegation of authority is in place where awards of tenders above R10million are approved by the NHLS Board;
- there is an Annual Performance Plan Accreditation Strategy listing the targeted date for the accreditation of each laboratory.
- senior management and Bargaining and Labour Forum (BLRF) engagement platforms have been established;
- turnaround times for resolving reported IT failure/downtime is in monitored;
- application of a conservative Investment Strategy during investment of funds;
- development of NHLS IT Strategy;
- laboratory referral processes are reviewed and updated regularly.

## Materiality Level for Consideration:

### Qualitative aspects

Materiality can be based on a number of financial indicators. Detailed below is an indicative table of financial indicators of the type that is widely used:

<b>Basis</b>	<b>Acceptable Percentage Range</b>
Gross revenue	0.25 – 1%
Gross profit	1 – 2%
Net income	2.5 – 10%
Equity	2 – 5%
<b>Total assets</b>	<b>0.5 – 2%</b>

The level of Materiality for 2021/2022 has been set as follows:

- Assets R6,839,965 x 0.5% = R 34,199,825 for transactions in the Statement of Financial Position, the 2019/2020 audited total assets balance was used.
- Gross revenue R9,809,785 x 0.5% = R 49,048,925 for classes of transactions in the Statement of Financial Performance, the 2020/2021 budget was used.

The utilisation of 0.5% for both the statement of financial position and performance is based on 6.1.1, 6.1.2 and 6.1.3 above.

As far as qualitative materiality is concerned, NHLS has adopted the following materiality levels:

- All amounts/events pertaining to criminal conduct and/or dishonest behavior;
- All amounts/events pertaining to non compliance with legislation;
- All unusual transactions/events that are not within the mandate of the NHLS as legislated;

## 6.2 Expenditure Estimates

The budget is forecasting to end the year with a total expenditure of R11,4 billion (2021/202) compared to R8,6 billion (2019/2020). The total expenditure estimate (2020/2021) comprise of Compensation of employees of R4,4 billion and Goods and Services of R6,9 billion. The total expenditure estimate translates to 6% growth. In the medium-term estimate, the total expenditure is R10.9 billion (2021/2022) compared to R8.6 billion (2019/20). The total expenditure estimate (2021/2022) comprises of Compensation of employees of R4.8 billion and Goods and Services of R6.0 billion. The decrease in the transfers received will impact negatively on the activities of the National Institute of Communicable Diseases and National Institute for Occupational Health.

**Table 9: Budget 2021 – 2022**

Statement of Financial Performance	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
Budget 2021/2022	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
Volume Increase	2%	3%	-1%	-5%	3%	0%	2%
Tariff Increase	5,2%	5,7%	3,9%	3,9%	4,0%	4,0%	4,0%
Labour Increase	7,4%	7,4%	7,3%	4,0%	5,0%	5,0%	4,5%
Goods & Services	6,2%	5,7%	7,0%	7,0%	6,0%	5,5%	5,5%
Average Test Price	80,80	86,00	89,35	103,58	107,72	112,03	116,51
Capital Expenditure	130 275 000	149 901 000	550 000 000	550 000 000	700 000 000	600 000 000	500 000 000
<b>Revenue</b>							
<b>Test Revenue</b>	<b>7 705 802 240</b>	<b>8 457 219 453</b>	<b>8 632 098 036</b>	<b>9 660 881 513</b>	<b>9 833 542 745</b>	<b>9 704 782 994</b>	<b>10 268 313 870</b>
Other	311 528 000	188 620 000	219 393 818	627 238 857	377 238 857	396 100 800	415 905 840
Interest Received	183 512 000	315 841 000	270 414 900	166 820 571	175 161 600	183 919 680	193 115 664
Transfers received	790 226 000	785 506 000	687 878 000	687 878 000	640 057 000	634 114 000	577 587 000
<b>Total revenue</b>	<b>8 991 068 240</b>	<b>9 747 186 453</b>	<b>9 809 784 754</b>	<b>11 142 818 942</b>	<b>11 026 000 202</b>	<b>10 918 917 474</b>	<b>11 454 922 374</b>
<b>Expenses</b>							
Compensation of employees	3 648 018 000	3 930 643 000	4 747 614 730	4 497 606 588	4 834 569 455	5 076 297 928	5 304 731 335
Goods and services	4 347 238 240	4 734 328 453	4 852 582 989	6 938 654 410	6 080 641 165	5 748 930 981	6 067 200 864
<b>Total expenses</b>	<b>7 995 256 240</b>	<b>8 664 971 453</b>	<b>9 600 197 719</b>	<b>11 436 260 998</b>	<b>10 915 210 620</b>	<b>10 825 228 909</b>	<b>11 371 932 198</b>
<b>Surplus/(Deficit)</b>	<b>995 812 000</b>	<b>1 082 215 000</b>	<b>209 587 036</b>	<b>-293 442 056</b>	<b>110 789 582</b>	<b>93 688 564</b>	<b>82 990 175</b>

### **7. Programme 1: Laboratory Service**

#### **7.1. Programme Purpose**

This programme represents the core business of the NHLS as mandated by the NHLS Act to provide cost-effective and efficient health laboratory services to all public sector health care providers; any other government institution inside and outside of the South Africa that may require such services; and any private health care provider that requests such services. It is anticipated that the NHLS should provide equitable, comprehensive, quality, timeous and cost-effective pathology service resulting in improved patient care.

## 7.2. Outcome, Outputs, Performance Indicators and Targets

### 7.2.1. Programme 1: Laboratory Service performance indicators and annual targets for 2020/2021

Outcome	Output	Output Indicator	Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
			2018/19 Audited	2019/20 Audited	2020/21 Planned	2021/22	2022/23	2023/24	2024/25	2025/26
Clinical Effectiveness and efficiency	Modernised laboratory services	Develop and Implement a service delivery model	New	New	Service delivery model developed	Service delivery model developed	Implement 20% of the service delivery model	Implement 40% of the service delivery model	Implement 80% of the service delivery model	Implement 100% of the service delivery model
		Develop and implement the specimen tracking system	New	New	Specimen tracking system developed	Specimen tracking system developed	Implement 30% if the specimen tracking system.	Implement 80% if the specimen tracking system.	Implement 100% if the specimen tracking system	Implement 100% if the specimen tracking system
	Improved turnaround times	Percentage of TB Microscopy tests performed within 40 hours	94%	95%	95%	92%	93%	94%	95%	95%
		Percentage of TB GeneXpert tests performed within 40 hours	94%	94%	91%	92%	93%	94%	95%	95%
		Percentage of CD4 tests performed within 40 hours	91%	94%	92%	93%	94%	95%	95%	95%
		Percentage of HIV Viral Load tests performed within 96 hours	86%	79%	80%	80%	83%	86%	88%	90%
		Percentage of HIV PCR tests performed within 96 hours	86%	72%	85%	80%	81%	82%	83%	85%



Outcome	Output	Output Indicator	Audited/Actual/planned performance			Estimated Performance	Medium-term targets				
			2018/19 Audited	2019/20 Audited	2020/21 Planned	2021/22	2022/23	2023/24	2024/25	2025/26	
		Percentage of cervical smear screening performed within 5 weeks	84%	86%	86%	90%	90%	90%	90%	90%	
		Percentage of laboratory tests (FBC) performed within eight (8) hours	95%	95%	92%	93%	94%	95%	95%	95%	
		Percentage of laboratory tests (U&E) performed within eight (8) hours	94%	94%	92%	93%	94%	95%	95%	95%	
Clinical Effectiveness and efficiency	Equitable service coverage	Develop and implement Point of Care Testing (POCT) plan	New	New	Point of Care testing plan developed	Point of Care testing plan developed	10% implementation of the Point of Care Testing plan.	20% implementation of the Point of Care Testing plan.	30% implementation of the Point of Care Testing plan.	50% implementation of the Point of Care Testing plan	
		Implement digital pathology	New	New	Roll out 100% anatomical pathology laboratories	Develop an implementation plan	Roll out 100% anatomical pathology laboratories	Roll out 30% of haematology laboratories	Roll out 60% of haematology laboratories	Roll out 100% haematology laboratories.	

## 7.2.2 Programme performance indicators and quarterly targets for 2020/2021

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
7.2.2.1	Develop and Implement a service delivery model	Annually	Service delivery model developed	N/A	N/A	N/A	Service delivery model developed
7.2.2.2	Develop and implement the specimen tracking system	Annually	Specimen tracking system developed	N/A	N/A	N/A	Specimen tracking system developed
7.2.2.3	Percentage of TB Microscopy tests performed within 40 hours	Quarterly	92%	92%	92%	92%	92%
7.2.2.4	Percentage of TB GeneXpert tests performed within 40 hours	Quarterly	92%	92%	92%	92%	92%
7.2.2.5	Percentage of CD4 tests performed within 40 hours	Quarterly	93%	93%	93%	93%	93%
7.2.2.6	Percentage of HIV Viral Load tests performed within 96 hours	Quarterly	80%	80%	80%	80%	80%
7.2.2.7	Percentage of HIV PCR tests performed within 96 hours	Quarterly	80%	80%	80%	80%	80%
7.2.2.8	Percentage of Cervical Smear screening performed within 5weeks	Quarterly	90%	90%	90%	90%	90%
7.2.2.9	Percentage of laboratory tests (FBC) performed within eight (8) hours	Quarterly	93%	93%	93%	93%	93%
7.2.2.10	Percentage of laboratory tests (U&E) performed within eight (8) hours	Quarterly	93%	93%	93%	93%	93%
7.2.2.11	Develop and implement Point of Care Testing plan	Annually	Point of Care testing plan developed	N/A	N/A	N/A	Point of Care testing plan developed

### 7.3. Reconciling performance targets with the budget and MTEF

The total expenditure increased from R7.2 billion (2019/20) to R8.0 billion (2019/20) this an increase of 11%. This is due to the volume, price and employees' inflationary increase. In the year 2021/22 total expenditure is forecasted to amount to R8.9 billion, representing an increase of 13% when compared to 2020/21. This has taken into account modernisation of laboratories and pathology services and the recruitment and retention of the right people with the right skills at the right level. To improve the total turnaround time of results, the NHLS will implement the specimen tracking system that will enable the NHLS to track all the specimens which are collected from the health facilities until the results are delivered back at the facilities. Furthermore, the NHLS will implement the Point of Care Testing (POCT) and digital pathology for the provision of equitable service coverage.

Program 1 - Laboratory Service								
Laboratory Service	Audited	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
R000's	2017/18	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
<b>Expenses</b>	<b>5 472 642</b>	<b>6 545 031</b>	<b>7 202 729</b>	<b>7 966 083</b>	<b>7 863 329</b>	<b>8 964 389</b>	<b>8 761 481</b>	<b>9 215 316</b>
Compensation of employees	2 714 171	2 960 864	3 218 694	3 923 224	3 923 224	3 917 587	4 104 940	4 289 662
Goods and services	2 758 471	3 584 167	3 984 035	4 042 859	3 940 105	5 046 802	4 656 541	4 925 654

## 8. Programme 2: Academic Affairs, Research and Quality Assurance

### 8.1. Programme Purpose

The main purpose of this programme is to strengthen the mandate of the NHLS of maintaining and providing quality assured and accredited laboratory medicine and the academic platform. Two of the focus areas within this programme are to ensure that research is conducted to contribute to service delivery improvement and quality and to ensure national coverage by NHLS pathologists. The aim is to oversee and collaborate with various training institutions that contribute to the development of qualified and skilled people operating within the scientific field of pathology services.

- **Sub-Programme - Quality Assurance** - The purpose of this sub-programme is to improve Total Quality Management systems within laboratories and support structures to improve the quality of results issued by NHLS laboratories.
- **Sub-Programme - Academic Affairs** -The purpose of this sub-programme is to support and promote training and capacity building of all medical laboratory health professionals to ensure a high-quality technical skill in pathology for the NHLS and the rest of the country. This mandate strengthens the business case for the sustained development of the NHLS through the increased output of highly trained Pathologists, Medical Scientists, Medical Technologists and Medical Technicians.
- **Sub-Programme – Research and Innovation** - The purpose of this sub-programme is to create an enabling research environment to promote multidisciplinary world-class research and resultant research outputs for the NHLS to contribute to national and global scientific knowledge. The sub-programme provides support for innovative research initiatives whilst promoting the exploration of innovative emerging technologies along with technology transfer that will enhance the capacity of South African research and development for novel ideas.

## 8.2. Outcomes, Outputs, Output Indicators and Targets

### 8.2.1. Programme 2: AARQA performance indicators and annual targets for 2020/2021

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicators	2018/19 Audited	2019/20 Audited	2020/21 Planned	2021/22	2022/23	2023/24	2024/25	2025/26
High-quality services	Strengthened total quality management systems	Percentage compliance achieved by laboratories during annual quality compliance audits	79%	86%	91%	92%	93%	94%	95%	95%
		Percentage of laboratories achieving proficiency testing scheme performance standards of 80%	96%	88%	95%	90%	91%	94%	96%	98%
		Number of National Central laboratories that are SANAS Accredited	50	51	53	52	53	53	53	53
		Number of Provincial Tertiary laboratories that are SANAS Accredited	12	13	14	15	16	17	17	17
		Number of Regional laboratories that are SANAS Accredited	17	25	21	28	35	40	44	44
		Number of District laboratories that are SANAS Accredited	11	25	21	28	35	42	50	55
		Number of ISO 9001 certified departments	3 departments	3 departments	4 departments	4 departments	5 departments	6 departments	7 departments	8 departments
		Develop and implement the pathologists' national coverage plan	New	New	Approved pathologists' national coverage plan	20% implementation of the pathologists' national coverage plan	30% implementation of the pathologists' national coverage plan	40% implementation of the pathologists' national coverage plan	50% implementation of the pathologists' national coverage plan	50% implementation of the pathologists' national coverage plan

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicators	2018/19 Audited	2019/20 Audited	2020/21 Planned	2021/22	2022/23	2023/24	2024/25	2025/26
	<b>Cutting edge health research</b>	Number of articles published in the peer-reviewed journals	593	600	620	640	660	680	700	720
<b>Clinical Effectiveness and efficiency</b>	<b>Appropriately trained human resources in adequate numbers.</b>	Number of pathology registrars admitted and trained in the NHLS	57	30	30	30	30	30	30	30
		Number of intern medical scientists admitted and trained in the NHLS	36	50	50	50	50	50	50	50

### 8.2.2. Programme performance indicators and quarterly targets for 2020/2021

Output Indicators		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
<b>8.2.2.1</b>	Percentage compliance achieved by laboratories during annual quality compliance audits	<b>Annually</b>	92%	N/A	N/A	N/A	92%
<b>8.2.2.2</b>	Percentage of laboratories achieving proficiency testing scheme performance standards of 80%	<b>Quarterly</b>	90%	90%	90%	90%	90%
<b>8.2.2.3</b>	Number of National Central laboratories that are SANAS Accredited	<b>Annually</b>	52	N/A	N/A	N/A	52
<b>8.2.2.4</b>	Number of Provincial Tertiary laboratories that are SANAS Accredited	<b>Annually</b>	15	N/A	N/A	N/A	15
<b>8.2.2.5</b>	Number of Regional laboratories that are SANAS Accredited	<b>Annually</b>	28	N/A	N/A	N/A	28
<b>8.2.2.6</b>	Number of District laboratories that are SANAS Accredited	<b>Annually</b>	28	N/A	N/A	N/A	28
<b>8.2.2.7</b>	Number of ISO 9001 certified departments	<b>Annually</b>	4 departments	N/A	N/A	N/A	4 departments
<b>8.2.2.8</b>	Develop and implement the pathologists' national coverage plan	<b>Annually</b>	20% implementation of the	N/A	N/A	N/A	20% implementation of the

Output Indicators		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>TH</sup>
			pathologists' national coverage plan				pathologists' national coverage plan
<b>8.2.2.9</b>	Number of articles published in the peer-reviewed journals	<b>Annually</b>	640	N/A	N/A	N/A	640
<b>8.2.2.10</b>	Number of pathology registrars admitted and trained in the NHLS	<b>Annually</b>	30	N/A	N/A	N/A	30
<b>8.2.2.11</b>	Number of intern medical scientists admitted and trained in the NHLS	<b>Annually</b>	50	N/A	N/A	N/A	50

### 8.3. Reconciling performance with budget and MTEF

The total expenditure has increased from R180 million (2019/20) to R351 million (2020/21) this an increase of 94%. In the year 2021/22, total expenditure is forecasted to amount to R343 million, representing a decline of 2% when compared to 2020/21. The total expenditure comprises of Compensation of Employees of R111 million and Goods and Services of R232 million.

In the medium term (2020/21- 2022/23) budget allocations will focus on development and implementation of pathologists' national coverage and improve Total Quality Management systems within laboratories and support structures to improve the quality of results issued by NHLS laboratories.

Program 2 - Academic Affairs, Research and Quality Assurance (AARQA)								
AARQA	Audited	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
R000's	2017/18	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
<b>Expenses</b>	<b>438 400</b>	<b>196 769</b>	<b>180 777</b>	<b>351 006</b>	<b>315 006</b>	<b>343 190</b>	<b>365 082</b>	<b>381 511</b>
Compensation of employees	85 900	71 131	40 174	103 387	103 387	111 170	121 175	126 628
Goods and services	352 500	125 638	140 603	247 619	211 619	232 020	243 907	254 883



## 9. Programme 3: Surveillance of Communicable Diseases

### 9.1 Programme Purpose

The National Institute for Communicable Diseases (NICD) is a national public health institute for South Africa providing reference microbiology, virology, epidemiology, surveillance and public health research to support the government's response to communicable disease threats.

### 9.2. Outcomes, Outputs, Output Indicators and Targets

#### 9.2.1. Programme 3: NICD performance indicators and annual targets for 2020/2021

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicator	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
High-quality services	A robust and efficient communicable disease surveillance system and outbreak response	Percentage of identified prioritised diseases under surveillance	89%	90%	90%	90%	90%	90%	90%	90%
		Percentage of outbreaks responded to within 24 hours after notification	100%	100%	100%	100%	100%	100%	100%	100%
		Percentage of NICD laboratories that are SANAS accredited	100%	100%	100%	100%	100%	100%	100%	100%
		Annual report of population-based cancer surveillance	1	1	1	1	1	1	1	1
		Number of NICD laboratories with WHO reference status	New	7 laboratories with WHO	7 laboratories with WHO	7 laboratories with WHO	7 laboratories with WHO	7 laboratories with WHO	7 laboratories with WHO	7 laboratories with WHO

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicator	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
				reference status.	reference status.	reference status.	reference status.	reference status.	reference status.	reference status.
		Number of articles published in the peer-reviewed journals	180	181	140	150	150	170	180	200
		Number of field epidemiologists qualified	9	6	7	7	8	8	9	10

### 9.2.2. Programme performance indicators and quarterly targets for 2020/2021

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
9.2.2.1	Percentage of identified prioritised diseases under surveillance	Quarterly	90%	90%	90%	90%	90%
9.2.2.2	Percentage of outbreaks responded to within 24 hours after notification	Quarterly	100%	100%	100%	100%	100%
9.2.2.3	Percentage of NICD laboratories that are SANAS accredited	Annually	100%	N/A	N/A	N/A	100%
9.2.2.4	Annual report of population-based cancer surveillance	Annually	1	N/A	N/A	N/A	1
9.2.2.5	Number of NICD laboratories with WHO reference status	Annually	7 laboratories with WHO reference status.	N/A	N/A	N/A	7 laboratories with WHO reference status.
9.2.2.6	Number of articles published in the peer reviewed journals	Annually	150	N/A	N/A	N/A	150
9.2.2.7	Number of field epidemiologists qualified	Annually	8	N/A	N/A	N/A	7

### 9.3 Reconciling performance with budget and MTEF

The total expenditure has decreased from R420 million (2019/20) to R394 million (2020/21), representing a decrease of 6%. Total expenditure is forecasted to amount to R443 million in 2021/22, representing an increase of 12% when compared to 2020/21. The total expenditure is comprises of Compensation of employees of R284 million and Goods and Services of R158 million.

In the medium term (2020/21- 2022/23) budget allocations will focus on delivering of a robust and efficient communicable disease surveillance system and outbreak response, ensuring that NICD laboratories that are SANAS accredited, produce an annual report of population-based cancer surveillance and maintain WHO reference laboratory status.

Program 3 - Surveillance of Communicable Diseases (NICD)								
Surveillance of communicable diseases	Audited	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
R000's	2017/18	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
<b>Expenses</b>	<b>326 176</b>	<b>403 836</b>	<b>420 410</b>	<b>394 841</b>	<b>394 841</b>	<b>443 244</b>	<b>466 995</b>	<b>488 010</b>
Compensation of employees	213 379	247 337	270 804	243 452	243 452	284 344	298 561	311 997
Goods and services	112 797	156 499	149 606	151 389	151 389	158 900	168 434	176 013

## **10. Programme 4: Occupational and Environmental Health and Safety**

The environment in this context refers to the environment that is contaminated through workplace activities or that can be protected from contamination through workplace interventions. Safety in this context refers to the synergies between occupational health and occupational safety such as in risk assessments, ergonomic assessments, teaching and training and surveillance of occupational diseases and injuries.

### **10.1. Programme Purpose**

The National Institute for Occupational Health (NIOH) is a National Public Health Institute, which provides occupational and environmental health and safety support across all sectors of the economy to improve and promote workers' health and safety. National and provincial government departments and public entities are important clients, including the MBDO of the NDoH. The Institute achieves this by i) providing occupational medicine, hygiene, advisory, statutory pathology and laboratory services, ii) conducting research and iii) providing teaching and training in occupational and environmental health and safety.

## 10.2. Outcomes, Outputs, Output Indicators and Strategic Objectives

### 10.2.1. Programme 4: NIOH performance indicators and annual targets for 2020/2021

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicator	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
<b>High-quality services</b>	Robust and efficient occupational and environmental health services	Percentage of occupational, and environmental health laboratory tests conducted within the predefined turn-around time	75%	93%	90%	90%	90%	90%	90%	90%
		Number of occupational, environmental health and safety assessments completed	36	30	32	15	15	15	15	15
		Number of occupational health surveillance reports produced	4	4	4	4	4	4	4	4
		Percentage of NIOH laboratories that are SANAS accredited	New	New	100%	100%	100%	100%	100%	100%

### 10.2.2. Programme performance indicators and quarterly targets for 2020/2021

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>TH</sup>
10.2.2.1	Percentage of occupational, and environmental health laboratory tests conducted within the predefined turn-around time	<b>Quarterly</b>	90%	90%	90%	90%	90%
10.2.2.2	Number of occupational, environmental health and safety assessments completed	<b>Annually</b>	15	N/A	N/A	N/A	15
10.2.2.3	Number of occupational health surveillance reports produced	<b>Annually</b>	4	N/A	N/A	N/A	4
10.2.2.4	Percentage of NIOH laboratories that are SANAS accredited	<b>Annually</b>	100%	N/A	N/A	N/A	100%

### 10.3 Reconciling performance with budget and MTEF

The total expenditure has increased from R138 million (2019/20) to R140 million (2020/21) this an increase of 2%. Total expenditure is forecasted to amount to R157 million in 2020/21, representing an increase of 12% when compared to 2020/21. The total expenditure comprises of Compensation of Employees of R113 million and Goods and Services of R44 million. In the medium term (2020/21- 2022/23) budget allocations will continue focusing on providing occupational and environmental health and safety across all sectors of the economy to improve and promote workers' health and safety.

Program 4- Occupational Health (NIOH)								
Occupational health	Audited	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
R000's	2017/18	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
<b>Expenses</b>	<b>114 014</b>	<b>125 954</b>	<b>137 787</b>	<b>140 273</b>	<b>140 273</b>	<b>157 717</b>	<b>166 046</b>	<b>173 518</b>
Compensation of employees	84 787	98 188	108 067	98 118	98 118	113 470	119 144	124 505
Goods and services	29 227	27 766	29 720	42 155	42 155	44 247	46 902	49 013

## **11. Programme 5: Administration**

### **11.1. Programme Purpose**

The administration programme plays a crucial role in the delivery of the NHLS services through the provision of a range of support services, such as organisational development, HR and labour relations, information technology, property management, security services, legal, communication and the integrated planning function. NHLS depends highly on the effective management of financial resources and procurement process as administered within the financial department. Generating sufficient revenue remains a critical focus area for NHLS to ensure financial viability and sustainability. There are four sub-programmes, namely:

#### **11.1.1. Financial Management**

The purpose of this -sub-programme is to improve the cash flow position of NHLS.

#### **11.1.2. Information Technology (IT)**

The purpose of -sub-programme is to build a robust and agile IT infrastructure and innovative digital solutions to facilitate and enable state of the art laboratory services at NHLS by 2020.

#### **11.1.3. Human Resources Management**

Purpose of the sub-the programme is to provide effective services through efficient processes, systems and adequate Human Resources.



## 11.2. Outcomes, Outputs, Output Indicators and Strategic Objectives

### 11.2.1. Programme 5; Sub-Programme: Financial Management performance indicators and annual targets for 2020/2021

Output Indicator			Audited/Actual/planned performance			Estimated Performance	Medium-term targets				
Outcome	Output	Output Indicator	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	
Cost-effective services	Improve liquidity position of the NHLS	Ratio of current assets to current liabilities	3.1 times	2:1	2:1	2:1	2:1	2:1	2:1	2:1	
		Cash flow coverage ratio (Operating cash in-flows / total debt)	4.1 times	1.5:1	2:1	2:1	2:1	2:1	2:1	2:1	
		Number of Creditor days	29 days	30 days	30 days	30 days	30 days	30 days	30 days	30 days	30 days
		Number of Debtors days	127 days	250 days	120 days	115 days	110 days	90 days	90 days	90 days	
		Percentage turnaround time for awarding tenders within 90 days.	84%	80%	85%	90%	90%	90%	90%	90%	
	Reduced cost of pathology services to the clients	Develop and implement a revenue and costing strategy.	New	New	Revenue and costing strategy developed.	Implement 30% of the revenue and costing strategy.	Implement 60% of the revenue and costing strategy.	Implement 80% of the revenue and costing strategy.	Implement 100% of the revenue and costing strategy.	Implement 100% of the revenue and costing strategy.	
Good Governance	Audit opinion of the Auditor General	Clean audit opinion of the Auditor general	Unqualified	Unqualified	Unqualified	Unqualified	Unqualified	Clean	Clean	Clean	
	Corruption free organisation	Percentage of allegations reported through the NHLS tipoff platform that are investigated within 180 days	New	New	90%	90%	90%	90%	90%	90%	

### 11.2.2. Sub-Programme performance indicators and quarterly targets for 2020/2021(Finance)

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>TH</sup>
11.2.2.1	Ratio of current assets to current liabilities	Quarterly	2:1	2:1	2:1	2:1	2:1
11.2.2.2	Cash flow coverage ratio (Operating cash in-flows / total debt)	Quarterly	2:1	2:1	2:1	2:1	2:1
11.2.2.3	Number of Creditor days	Quarterly	30 days	30 days	30 days	30 days	30 days
11.2.2.4	Number of Debtors days	Quarterly	115 days	115 days	115 days	115 days	115 days
11.2.2.5	Percentage turnaround time for awarding tenders within 90 days.	Quarterly	90%	90%	90%	90%	90%
11.2.2.6	Develop and implement revenue and costing strategy	Annually	Implement 30% of the revenue and costing strategy.	N/A	N/A	N/A	Implement 30% of the revenue and costing strategy.
11.2.2.7	Clean audit opinion of the Auditor general	Annually	Unqualified	N/A	N/A	N/A	Unqualified
11.2.2.8	Percentage of allegations reported through the NHLS tipoff platform that are investigated within 180 days	Annually	90%	N/A	N/A	N/A	90%

### 11.3. Outcome, Output, Output Indicators and Targets

#### 11.3.1. Programme 5; Sub-Programme: Information and Communication Technology performance indicators and annual targets for 2020/2021

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicator	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
<b>Clinical Effectiveness and Efficiency</b>	Modernised Information Technology systems	Develop and implement a real-time communication system with patients	New	New	Real-time communication system with patients developed	Send SMS to 20% of patients who provided cellphone numbers and gave consent	Send SMS to 40% of patients who provided cellphone numbers and gave consent	Send SMS to 60% of patients who provided cellphone numbers and gave consent	Send SMS to 100% of patients who provided cellphone numbers and gave consent	Send SMS to 100% of patients who provided cellphone numbers and gave consent
		Implement the interface between NHLS LIS and the HPRS	New	New	20% implementation of the HPRS	40% implementation of the HPRS	60% implementation of the HPRS	70% implementation of the HPRS	80% implementation of the HPRS	80% implementation of the HPRS
		Develop and implement the order entry system	New	New	Order entry system developed	Implementation of the order entry system in 20% of facilities that have internet connectivity.	Implementation of the order entry system in 40% of facilities that have internet connectivity.	Implementation of the order entry system in 60% of facilities that have internet connectivity.	Implementation of the order entry system in 100% of facilities that have internet connectivity.	Implementation of the order entry system in 100% of facilities that have internet connectivity.
		Percentage System Uptime for Critical Systems	99%	99%	99%	99%	99%	99%	99%	99%

### 11.3.2. Programme performance indicators and quarterly targets for 2020/2021 (IT)

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>TH</sup>
11.3.2.1	Develop and implement a real-time communication system with patients	Annually	Send SMS to 20% of patients who provided cellphone numbers and gave consent	N/A	N/A	N/A	Send SMS to 20% of patients who provided cellphone numbers and gave consent
11.3.2.2	Implement the interface between NHLS LIS and the HPRS	Annually	40% implementation of the HPRS	N/A	N/A	N/A	40% implementation of the HPRS
11.3.2.3	Develop and implement the order entry system	Annually	Implementation of the order entry system in 20% of facilities that have internet connectivity.	N/A	N/A	N/A	Implementation of the order entry system in 20% of facilities that have internet connectivity.
11.3.2.4	Percentage System Uptime for Critical Systems at laboratory level	Quarterly	99%	99%	99%	99%	99%

## 11.4. Outcomes, Outputs, Output Indicators and Targets

### 11.4.1. Programme 5; Sub – Programme: Human Resources performance indicators and annual targets for 2020/2021

			Audited/Actual/planned performance			Estimated Performance	Medium-term targets			
Outcome	Output	Output Indicators	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
<b>Clinical Effectiveness and Efficiency</b>	Appropriately trained human resources in adequate numbers.	Staff Turnover ratio	3%	5%	5%	5%	5%	5%	5%	5%
		Average staff recruitment turnaround within 90 days	89%	80%	90%	90%	90%	95%	95%	95%
		BBBEE compliance	New	New	Level 6	Level 5	Level 3	Level 2	Level 2	Level 2
		Number of intern medical technologists and student medical technicians admitted and trained in the NHLS	248	200	250	250	250	250	250	250
	Performance Driven Workforce	Percentage of employees with approved and evaluated performance agreements	94%	95%	95%	98%	99%	99%	99%	99%

#### 11.4.2. Programme performance indicators and quarterly targets for 2020/2021 (HR)

Output Indicator		Reporting Period	Annual target 2021/2022	Quarterly targets			
				1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>TH</sup>
11.4.2.1	Staff Turnover ratio	Quarterly	5%	5%	5%	5%	5%
11.4.2.2	Average staff recruitment turnaround within 90 days	Quarterly	90%	90%	90%	90%	90%
11.4.2.3	BBBEE compliance	Annually	Level 5	N/A	N/A	N/A	Level 6
11.4.2.4	Number of intern medical technologists and student medical technicians admitted and trained in the NHLS	Annually	250	N/A	N/A	N/A	250
11.4.2.5	Percentage of employees with approved and evaluated performance agreements	Semester	98%	N/A	95%	N/A	98%

#### 11.5. Reconciling performance and budget and MTEF

The total expenditure has increased from R795 million (2019/20) to R945 billion (2020/21) this an increase of 19%. Total expenditure is forecasted to amount to R1 billion for 2021/22, an increase of 7% compared to 2020/21 budget. The total expenditure comprises of the Compensation of Employees of R408 million and Goods and Services of R599 million.

In the medium term (2020/21- 2022/23) budget allocations will focus on reducing the cost of pathology services to the clients by developing and implementing a revenue enhancement and cost strategy, improving the liquidity position of the NHLS, aiming to attain a clean audit opinion, having a corruption-free organisation, modernising the information technology system to enable a real-time communication system with patients, implementating the HPRS, developing and implementing the order system and continuing with the delivery of support services such as organisational development, HR and labour relations, information technology, property management, security services, legal, communication and the integrated planning function.

Program 5 - Administration								
Administration	Audited	Audited	Audited	Budget	Forecast	Medium-Term Estimate		
R000's	2017/18	2018/19	2019/20	2020/21	2020/21	2021/22	2022/23	2023/24
<b>Expenses</b>	<b>691 318</b>	<b>717 798</b>	<b>795 262</b>	<b>945 093</b>	<b>945 093</b>	<b>1 006 670</b>	<b>1 065 625</b>	<b>1 113 578</b>
Compensation of employees	227 955	270 498	292 904	379 434	379 434	407 998	432 478	451 939
Goods and services	463 363	447 300	502 358	565 659	565 659	598 672	633 147	661 639

## Key risks.

The risks detailed below are not specific to a specific outcome. Any of them can have an impact on the NHLS Strategic Plan.

Table 12: NHLS Key Risks

Outcomes	Risk name	Mitigating action plans
Clinical effectiveness and efficiency High-quality service Cost-effective services Good governance	NHLS funding model and economic sustainability	1, Continuous engagement with epartments of Health and other stakeholders. 2, Investing in innovations to establish nd/or enhance revenue streams including services that are being provided by NIOH, DMP and SAVP. 3. Following a conservative Investment Strategy during investment of funds.
	IT Risk	1. Revision of business continuity plan 2. Complete Development of NHLS information security strategy 3. Complete Capacitation of IT security resources 4. Complete Information security awareness to be increased 5. Complete Review and update of IT policies and procedures



Outcomes	Risk name	Mitigating action plans
<p>Clinical effectiveness and efficiency</p> <p>High-quality service</p> <p>Cost-effective services</p> <p>Good governance</p>	<p>Skill shortages in key disciplines to execute strategy and business objectives</p>	<ol style="list-style-type: none"> <li>1. Implementation of the umbrella and bilateral agreement</li> <li>2. Design an enabling strategy to effectively balance the three mandates</li> <li>3. Review of current performance agreements to align the three mandates</li> <li>4. Motivate to ensure adequate TTR grant to fund sufficient training needs of the NHLS.</li> <li>5. Effective implementation of performance management system</li> <li>6. Continuous embedment and monitoring of HR policies</li> <li>7. Improvement of working conditions to enable improved relationships( focus groups conducted, climate and culture survey and recommendations implemented).</li> </ol>
	<p>Rising cost of employee compensation and insourcing</p>	<ol style="list-style-type: none"> <li>1. Development of relationship by objective strategy</li> <li>2. Capacitation of employee relations department</li> <li>3. Senior management and BLRF engagement platforms established</li> <li>4. Capacitating the legal function to assist with all ER matters.</li> </ol>
	<p>Aging Infrastructure and equipment</p>	<ol style="list-style-type: none"> <li>1. Investigate the possibility of utilising available internal resources to improve working conditions.</li> <li>2. Review and update current supplier database (i.e. identification of "Set Aside" suppliers with strategy to implement "Set Aside" suppliers .</li> <li>3. Implementation of cost containment measures .</li> <li>4. Development and implementation of infrastructure development and maintenance strategy .</li> <li>5. Formal maintenance agreements with hospitals</li> </ol>

Outcomes	Risk name	Mitigating action plans
Clinical effectiveness and efficiency High-quality service Cost-effective services Good governance	Procurement systems -SCM	1.Updating the contract management system 2. Upskill staff 3. Participate in existing contracts 4 Relook appropriateness of structure 5. Greater application of consequence management
	Laboratories Failure to obtain SANAS Accreditation	1. There is Annual Performance Plan Accreditation Strategy listing the targeted date for the accreditation of each laboratory. Currently planning is targeting to accredit all National Central laboratories prior to Mar 2021. In the plan for 2018, we are aiming to accredit 34 laboratories (3 central, 3 provincial/tertiary, 17 regional and 11 district facilities)  2. Quality Compliance auditors will be identified to assist laboratories to close non-conformances
	Failure to achieve set Predetermined Objectives	Quarterly report on all quarterly targets. Progress report on all annual targets. Reasons for deviations are discussed.
	Business continuity	Regular data back up testing; Regular Disaster Recovery testing Revising and updating of Business Continuity Plan
Clinical effectiveness and efficiency High-quality service	Cash flow	Careful management of cash Constant communication with debtors

Outcomes	Risk name	Mitigating action plans
<p>Cost-effective services</p> <p>Good governance High-</p>	<p>Covid-19</p> <p><b>(Negative )</b></p>	<ul style="list-style-type: none"> <li>• Appointment of designated Covid-19 Compliance Officers</li> <li>• Screening and testing of employees</li> <li>• Procurement and distribution of PPE.</li> <li>• Implementation of Covid-19 staff training</li> <li>• Implementation of NHLS Covid-19: Working arrangement for staff.</li> <li>• Continuous communication to NHLS staff and other stakeholders.</li> <li>• Identification and appointment of accredited service providers to disinfect facilities when required.</li> <li>• Review and updating of laboratory referral processes.</li> <li>• Review and implementation of laboratory essential test list.</li> <li>• Compiling and implementation of laboratory shutdown checklist procedures.</li> <li>• Regular scheduling of EXCO/OPCO meetings.</li> <li>• Implementation of zoom meetings.</li> <li>• Compiling and implementing Return to Work Framework NHLS Guidelines</li> <li>• Continuous engagement and evaluation of potential private and academic laboratory partners.</li> <li>• Appointment of accredited Epidemiologist as and when required</li> </ul>

Outcomes	Risk name	Mitigating action plans
	Covid-19  (Positive)	<ul style="list-style-type: none"> <li>• Procurement and distribution/allocation plan of PPEs for NHLS all staff</li> <li>• Procurement and distribution/allocation plan of COVID 19 collection materials, consumables, extraction kits, testing kits and testing platforms</li> <li>• Stock management plan and projections (short – weekly, medium - monthly and long term – 3 to 6 months)</li> <li>• Purchasing and implementation of Mobile Vans/Laboratories (including fittings/accessories eg generator/fridge/computer/Xpert)</li> <li>• Recruitment of additional personnel including head-hunting (drivers/nurses-phlebotomy &amp; occupational/techs/scientists/doctors)</li> <li>• Continuous engagement with Department of Health, Academia and other stakeholder</li> <li>• Planning and Review of routes for sample transportation from collection to testing labs</li> <li>• Sample and workflow management throughout total testing process (including sample tracking, turnaround time and temperature monitoring)</li> <li>• Validation records, maintenance plans and performance monitoring of extraction/testing kits and testing platforms</li> <li>• Coding/Pricing/Billing of COVID 19 test by method for Public and Private patients</li> <li>• Review and updating of laboratory send away and referral processes (update on laboratory contingency plan)</li> <li>• Review and implementation of essential test list and/or turnaround times</li> <li>• Compiling and implementation of laboratory shutdown and re-opening checklist procedures.</li> <li>• Monitoring of impact of COVID 19 on TB and HIV Viral</li> </ul>

Outcomes	Risk name	Mitigating action plans
		<p>load testing on shared testing platforms</p> <ul style="list-style-type: none"> <li>• Implementation of laboratory quality assurance (Internal and External) in compliance with SANAS standards/guidelines</li> <li>• Reporting and distribution channels for results to Healthcare workers and Contact Tracing Teams</li> <li>• COVID 19 Data access to assist in reporting, troubleshooting, monitoring and process improvement</li> <li>• Continuous engagement and evaluation of potential private, research and academic laboratory partners.</li> </ul>

### **NHLS INFRASTRUCTURE PLANNING FOR 2021/2022**

With the ever-increasing focus on infrastructure planning, funding and delivery, the National Health Laboratory Service (NHLS) Infrastructure Business Unit together with infrastructure users are playing an increasing role in accelerating operational efficiencies and shaping the future of the NHLS' strategic infrastructure.

But more focus isn't in itself a guarantee of better outcomes. The focus needs to be on the right areas to get the right results. When it comes to infrastructure, that means a greater emphasis on the planning phase, rather than delivery. There is no question that the users become impatient to get to the implementation stage.

The Department of Health (DoH) is responsible for the building of hospitals and laboratories which are housed in those hospitals. Although the NHLS is not responsible for building the laboratories which are housed in the hospitals, it has to play a role in the design of those laboratories. The plan covers all the buildings used by the NHLS, owned or leased and necessary considerations including functional and design considerations aspects of upgrading and adapting the existing laboratories. The NHLS must consult and follow proper processes if it has to do some work on the leased buildings and consult with all the relevant stakeholders.

After several years of neglect due to cash flow problems, NHLS will follow an accelerated plan to maintain existing infrastructure and to invest in the newly required infrastructure.

The infrastructure projects (Laboratories and Buildings) planned for 2021/2022 are estimated at R 176, 104, 466.00.

Programme 1: Laboratory Services

<b>Indicator Title :7.2.2.1</b>		<b>Develop and Implement a service delivery model</b>
<b>Definition</b>	The service delivery model will guide the designs, development, deployment, operation and retirement of services delivered by the NHLS to ensure that we offer consistent service through the country.	
<b>Source of data</b>	A document that details the service delivery model. The model will be implemented in phases and this document will define all the milestones and indicate in those phase in percentages for the sake of measuring progress.	
<b>Method of calculation</b>	N/A	
<b>Reporting cycle</b>	Annually	
<b>Calculation Type</b>	Non-Cumulative	
<b>Desired performance</b>	Service delivery model developed	
<b>Indicator responsibility</b>	Chief Executive Officer	
<b>Indicator Title: 7.2.2.2</b>		<b>Develop and implement the specimen tracking system</b>
<b>Definition</b>	Turnaround time (TAT) of test results is one of the most prominent indicators of laboratory service performance and quality of service and it is often used as a key performance indicator. The specimen tracking system will assist in measuring the value chain from the time the specimen is collected from the health facility to the time the results is received back to the same health facility.	
<b>Source of data</b>	From Information Technology	
<b>Method of calculation</b>	N/A	
<b>Calculation Type</b>	Non-Cumulative	
<b>Reporting cycle</b>	Annually	
<b>Desired performance</b>	Specimen tracking system developed	
<b>Indicator responsibility</b>	Chief Information Officer/Area Managers	
<b>Indicator Title: 7.2.2.3</b>		<b>Percentage of TB Microscopy tests performed within 40 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.	
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.	
<b>Method of calculation</b>	Total of the number of TB tests performed and reviewed within 40 hours divide by the total number of TB tests requested in the same period, expressed in percentage.	

<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	92%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.4</b>	<b>Percentage of TB GeneXpert tests performed within 40 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.
<b>Method of calculation</b>	Total of the number of TB GeneXpert tests performed and reviewed within 40 hours divide by the total number of TB GeneXpert tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>New indicator</b>	No
<b>Desired performance</b>	92%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.5</b>	<b>Percentage of CD4 tests performed within 40 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.
<b>Method of calculation</b>	Total number of CD4 tests performed and reviewed within 40 hours divide by the total number of CD4 tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	93%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.6</b>	<b>Percentage of HIV Viral Load tests performed within 96 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.



<b>Method of calculation</b>	Total number of HIV viral load tests performed and reviewed within 96 hours divide by the total number of HIV viral load tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Desired performance</b>	80%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.7</b>	<b>Percentage of HIV PCR tests performed within 96 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.
<b>Method of calculation</b>	Total number of HIV PCR tests performed and reviewed within 96 hours divide by total number of HIV PCR tests requested in the same period, expressed as a percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	80%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.8</b>	<b>Percentage of Cervical Smear screening performed within 5weeks</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.
<b>Method of calculation</b>	Total number of cervical smears tests performed and reviewed within 5 weeks divide by total number of cervical smear tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.9</b>	<b>Percentage of laboratory tests (FBC) performed within eight (8) hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.

<b>Method of calculation</b>	Total number of FBC tests performed and reviewed within 8 hours divide by the total number of FBC tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	93%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title 7.2.2.10</b>	<b>Percentage laboratory tests (U&amp;E) tests performed within 8 hours</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed.
<b>Source/collection of data</b>	The data comes from the information which is captured on the laboratory information system and is interfaced with the NHLS Central Data Warehouse (CDW) for consolidation. A report is then generated from the CDW.
<b>Method of calculation</b>	Total number of U&E tests performed and reviewed within 8 hours divide by the total number of U&E tests requested in the same period, expressed in percentage.
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Quarterly
<b>New indicator</b>	No
<b>Desired performance</b>	93%
<b>Indicator owner</b>	Area Managers
<b>Indicator Title: 7.2.2.11</b>	<b>Develop and implement Point of Care Testing plan</b>
<b>Definition</b>	Point of Care Test (POCT) is a test that is performed at, or near the site of patient care, with the view to effect immediate clinical decision-making and optimise patient management. The plan will be aligned with the national priorities in health.
<b>Method of calculation</b>	N/A
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Point of Care Testing plan developed
<b>Indicator owner</b>	Chief Executive Officer
<b>Indicator Title: 7.2.2.12</b>	<b>Implement digital pathology</b>
<b>Definition</b>	Digital technologies will change the role of pathologists while allowing patients to get results quicker and more accurately. The NHLS will invest in digital pathology to improve access to experts across the country to improve oversight and pathology in rural areas, especially in the area of anatomical pathology.
<b>Method of calculation</b>	Total number of anatomical pathology laboratories in the NHLS with digital pathology implemented divide by the total number of anatomical pathology in the NHLS.
<b>Calculation type</b>	Non-Cumulative

<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Develop an implementation plan
<b>Indicator owner</b>	Chief Executive Officer

## Programme 2: Academic Affairs, Research and Quality Assurance

<b>Indicator Title: 8.2.2.1</b>	<b>Percentage compliance achieved by laboratories during annual quality compliance audits</b>
<b>Definition</b>	This indicator measures the percentage of laboratories achieving 80% compliance using the internal quality compliance audits. The target laboratories are laboratories that are not SANAS accredited at the time audit.
<b>Source/collection of data</b>	Spreadsheet with percentage scores obtained by laboratories audited. Manual collection of data by Quality Assurance
<b>Method of calculation</b>	Total number of laboratories achieving a minimum score of 80% with the quality compliance audits divide by the total number of laboratories audited. (Audited laboratories refers to the laboratories which are not SANAS accredited only).
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	92%
<b>Indicator owner</b>	National Quality Assurance Manager/Executive Manager: AARQA
<b>Indicator Title: 8.2.2.2</b>	<b>Percentage of laboratories achieving proficiency testing scheme performance standards of 80%</b>
<b>Definition</b>	The indicator measures the percentage of laboratories achieving a minimum average score of 80% in all NHLS proficiency testing schemes they are enrolled in the financial year. This does not include external PT schemes performance.
<b>Method of calculation</b>	Total number of laboratories achieving a minimum average of 80% score in the NHLS proficiency testing scheme divide by the total number of laboratories which participated in the same proficiency testing schemes, express in percentage.
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	National Manager: Quality Assurance/Area Managers
<b>Indicator Title: 8.2.2.3</b>	<b>Number of National Central laboratories that are SANAS Accredited</b>
<b>Definition</b>	This indicator measures the number of laboratories in the National Central laboratories that are accredited by SANAS (Laboratory in this case refers to a discipline/department within the national central laboratory).
<b>Source/collection of data</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS

	assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	52
<b>Indicator owner</b>	National Manager: Quality Assurance/Area Managers
<b>Indicator Title: 8.2.2.4</b>	<b>Number of Provincial Tertiary laboratories that are SANAS Accredited</b>
<b>Definition</b>	This indicator measures the number of laboratories in the Provincial Tertiary laboratories that are accredited by SANAS (Laboratory in this case refers to a multidisciplinary facility in or attached to one Provincial Tertiary Hospital)
<b>Source/collection of data</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	15
<b>Indicator owner</b>	National Manager: Quality Assurance/Area Managers
<b>Indicator Title: 8.2.2.5</b>	<b>Number of Regional laboratories that are SANAS Accredited</b>
<b>Definition</b>	This indicator measures the number of Regional laboratories that are accredited by SANAS Assessors during an accreditation visit per Laboratory (Laboratory in this case refers to a multidisciplinary facility in or attached to one Regional Hospital).
<b>Source/collection of data</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	28

<b>Indicator owner</b>	National Manager: Quality Assurance/Area Managers
<b>Indicator Title: 8.2.2.6</b>	<b>Number of District laboratories that are SANAS Accredited</b>
<b>Definition</b>	This indicator measures the number of laboratories in the district laboratories that have are accredited by SANAS Assessors during an accreditation visit per Laboratory.
<b>Source /data collection</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	28
<b>Indicator owner</b>	National Manager: Quality Assurance/Area Managers
<b>Indicator Title: 8.2.2.7</b>	<b>Number of ISO 9001 certified departments</b>
<b>Definition</b>	This indicator measures the number of support departments in head office that have the ISO 9001 certification.
<b>Source/collection of data</b>	The ISO 9001 certificates or the assessment outcome letter
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	4 departments
<b>Indicator owner</b>	National Manager: Quality Assurance/Executive Managers of the respective departments
<b>Indicator Title: 8.2.2.8</b>	<b>Develop and implement the pathologists' national coverage plan</b>
<b>Definition</b>	A plan that will ensure equitable access to quality pathology services for all persons as well as access of pathologists to all healthcare practitioners nationally
<b>Method of calculation</b>	N/A
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	20% implementation of the pathologists national coverage plan
<b>Indicator owner</b>	Executive Manager: AARQA
<b>Indicator Title: 8.2.2.9</b>	<b>Number of articles published in the peer-reviewed journals</b>
<b>Definition</b>	The indicator measures the number of peer reviewed articles published by, and in collaboration with, NHLS researchers.

<b>Source/collection of data</b>	NHLS Research database. The database captures all the research peer reviewed articles which were published by the NHLS staff, this includes the NICD and NIOH publications.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	640
<b>Indicator owner</b>	National Manager: Academic Affairs and Research
<b>Indicator Title: 8.2.2.10</b>	<b>Number of pathology registrars admitted and trained in the NHLS</b>
<b>Definition</b>	Number of registrars appointed in the NHLS to be trained.
<b>Source/data collection</b>	Human Resource Information System which will confirm the appointment of pathology registrars.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	30
<b>Indicator owner</b>	National Manager: Academic Affairs and Research
<b>Indicator Title: 8.2.2.11</b>	<b>Number of intern medical scientists admitted and trained in the NHLS</b>
<b>Definition</b>	Number of intern medical scientists appointed in the NHLS to be trained.
<b>Source/collection of data</b>	Human Resource Information System which will confirm the appointment of the intern medical scientists.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	50
<b>Indicator owner</b>	National Manager: Academic Affairs and Research

### Programme 3: Surveillance of Communicable Diseases

<b>Indicator Title: 9.2.2.1</b>	<b>Percentage of identified prioritised diseases under surveillance</b>
<b>Definition</b>	This is described by the percentage of cases which were followed up at the enhanced surveillance sites for the organisms which are identified as priority as per the GERMS protocol.
<b>Source/collection of data</b>	The departmental enhanced site surveillance operational report (IT Database).
<b>Method of calculation</b>	Total number of cases followed up at the enhanced surveillance sites for the organisms identified as priority according to the GERMS protocol divide by the total number of cases that match the same case definition, expressed as a percentage.
<b>Calculation type</b>	Cumulative – Year to date

<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	Executive Manager: NICD
<b>Indicator Title: 9.2.2.2</b>	<b>Percentage of outbreaks responded to within 24 hours after notification</b>
<b>Definition</b>	Measure of speed to which we can respond to outbreaks. All the outbreaks which are notified to NICD are documented and stored in the database.
<b>Source/collection of data</b>	All the organisms which are responsible for the outbreaks are documented and kept in the database. The date of notification of the outbreak is also documented and the time it took for NICD to respond is documented.
<b>Method of calculation</b>	Total number of notified outbreaks responded to in 24 hours divided by the total number of outbreaks notified, expressed in percentage.
<b>Calculation type</b>	Cumulative –Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	100%
<b>Indicator owner</b>	Executive Director: NICD
<b>Indicator Title: 9.2.2.3</b>	<b>Percentage of NICD laboratories that are SANAS accredited</b>
<b>Definition</b>	This indicator measures the percentage of laboratories that have been accredited by SANAS.
<b>Source/collection of data</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Total number of medical laboratories accredited by SANAS divide by total number of all medical the laboratories in NICD (this exclude all the non - medical laboratories and the sequencing laboratory which does not have the ISO standard for accreditation), express in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	100%
<b>Indicator owner</b>	Executive Director: NICD
<b>Indicator Title: 9.2.2.4</b>	<b>Annual report of population-based cancer surveillance</b>
<b>Definition</b>	A report to demonstrate the population based cancer surveillance conducted in Ekurhuleni, Gauteng Province.

<b>Source/collection of data</b>	Data from the National Cancer Registry. The data will come from all the notified cancer cases identified in Ekurhuleni, in Gauteng province. Data is collected from all health care facilities in the Ekurhuleni District (both private and public). Every newly diagnosed case of cancer is notified to the cancer registry by a trained surveillance officer placed by the NCR in that facility. Data is captured from patient medical records to the gazetted notification form, then entered into an electronic database, from which analysis is conducted.
<b>Method of calculation</b>	N/A
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	1
<b>Indicator owner</b>	Executive Director: NICD
<b>Indicator Title: 9.2.2.5</b>	<b>Number of NICD laboratories with WHO reference status</b>
<b>Definition</b>	Maintain the accreditation status of the laboratories which has been accredited by World Health Organisation.
<b>Source/collection of data</b>	Official documents which recognise WHO reference laboratory status. Proof of attendance for a NICD staff member/s representing the NICD in their respective centre / discipline and / or Proof that the Centre or Laboratory did work on behalf of the WHO. The information is collected from various centres or laboratories and collated by the quality department in NICD.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	7 laboratories
<b>Indicator owner</b>	Executive Director: NICD
<b>Indicator Title: 9.2.2.6</b>	<b>Number of articles published in the peer reviewed journals</b>
<b>Definition</b>	The indicator measures the number of peer reviewed articles published by, and in collaboration with, NICD researchers.
<b>Source /data collection</b>	NICD Data. The database captures all the research peer reviewed articles which were published by the NICD staff
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative-Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	150
<b>Indicator owner</b>	Executive Director: NICD
<b>Indicator Title: 9.2.2.7</b>	<b>Number of field epidemiologists qualified</b>
<b>Definition</b>	Number of Field Epidemiologists qualified who were admitted at NICD for training. The candidates enrol with the relevant training facilities to complete their qualification in field epidemiology.



<b>Source/collection of data</b>	Copy of certified results from the training facility or a copy of the qualification from the training facility.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date (Academic Year ---January – December)
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	7
<b>Indicator owner</b>	Executive Director: NICD

#### Programme 4: Occupational and Environmental Health and Safety

<b>Indicator Title: 10.2.2.1</b>	<b>Percentage of occupational, and environmental health laboratory tests conducted within the predefined turn-around time</b>
<b>Definition</b>	It is a measure of the time it takes from registration on the Laboratory Information System (LIS) of the tests until the results are reviewed
<b>Source/collection of data</b>	NIOH Database and Excel spreadsheet of all the test performed and the time it took to complete the tests.
<b>Method of calculation</b>	Total number of occupational and environmental health laboratory tests conducted within predefined turnaround time in testing laboratories only (Analytical Services, Immunology, Microbiology, Occupational Hygiene, Pathology) divide by a total number of occupational and environmental health laboratory tests conducted in testing laboratories only (Analytical Services, Immunology, Microbiology, Occupational Hygiene, Pathology)
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	NIOH Head of Analytical Services
<b>Indicator Title:10.2.2.2</b>	<b>Number of occupational, environmental health and safety assessments completed</b>
<b>Definition</b>	An occupational, environmental health and safety assessment: is a report or letter with recommendations to address the issues reported which is not a project or substantial collaborative effort involving more than one man-week.
<b>Source/collection of data</b>	Records of reports or letters concerning risks in the work place sent to clients
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	15
<b>Indicator owner</b>	Head of Occupational Hygiene
<b>Indicator Title:10.2.2.3</b>	<b>Number of occupational health surveillance reports produced</b>
<b>Definition</b>	Pathological (macroscopic and microscopic) examination of cardiorespiratory organs and submission of diagnostic report to MBOD per case received

<b>Source/collection of data</b>	Cardiorespiratory organs from current and ex-miners are sent to the NIOH from regions within South and Southern Africa.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	4
<b>Indicator owner</b>	NIOH Head of Pathology
<b>Indicator Title:10.2.2.4</b>	<b>Percentage of NIOH laboratories that are SANAS accredited</b>
<b>Definition</b>	This indicator measures the percentage of laboratories that have been accredited by SANAS.
<b>Source/collection of data</b>	SANAS Accreditation Certificates or SANAS assessment outcome letter. The SANAS accreditation certificate is active for a four-year cycle, however SANAS assess the accredited laboratories annually and issue a letter of recommendation to indicate that the laboratory remains accredited. So, the laboratory is considered accredited as long as the accreditation certificate is still valid and the annual assessment are done to maintain the accreditation status.
<b>Method of calculation</b>	Total number of laboratories accredited by SANAS divide by total number of all medical the laboratories in NIOH, express in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	100%
<b>Indicator owner</b>	Executive Director: NIOH

## Programme 5: Administration: Sub-Programme – Financial Management

<b>Indicator Title: 11.2.2.1</b>	<b>Ratio of current assets to current liabilities</b>
<b>Definition</b>	This is a measure of short term liquidity.
<b>Source/collection of data</b>	The current assets figure and current liabilities figure are obtained from the Balance Sheet report generated by the Financial Accounting Department on a monthly basis.
<b>Method of calculation</b>	Current assets/current liabilities
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	2:1
<b>Indicator owner</b>	Chief Financial Officer
<b>Indicator Title: 11.2.2.2</b>	<b>Cash flow coverage ratio (Operating cash in-flows / total debt)</b>
<b>Definition</b>	Current assets/current liabilities
<b>Source/collection of data</b>	NHLS Cash flow report and Creditors Age Analysis as at the end of the reporting period
<b>Method of calculation</b>	Cash and cash equivalent / Payables from exchange transactions

<b>Calculation type</b>	Non-cumulative
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	2:1
<b>Indicator owner</b>	Chief Financial officer
<b>Indicator Title: 11.2.2.3</b>	<b>Number of Creditor days</b>
<b>Definition</b>	The creditor days' ratio measures how quickly invoices are being paid to suppliers. The longer it takes for the NHLS to make payments for services rendered/goods received, the greater the number of creditors' days.
<b>Source/collection of data</b>	The creditors figure is obtained from the Excel Age Analysis report generated by the Accounts Payable Department on a monthly basis. The net creditors figure is used and it excludes the SAVP (NHLS subsidiary). Purchases figures are determined through an account inquiry on Oracle and are obtained by selecting the parent expenditure accounts for production as well as support operations.
<b>Method of calculation</b>	(Total month-end trade creditors/ YTD Purchases annualised) x 365 days
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Cumulative – Year to date
<b>Desired performance</b>	30 days
<b>Indicator owner</b>	Chief Financial Officer
<b>Indicator Title: 11.2.2.4</b>	<b>Number of Debtors days</b>
<b>Definition</b>	The debtor days' ratio measures how quickly cash is being collected from debtors. The longer it takes for the NHLS to collect payments for services rendered, the greater the number of debtors' days.
<b>Source/collection of data</b>	The debtors figure is obtained from the Excel Age Analysis report generated by the Accounts Receivable Department on a monthly basis. The net debtors figure is used and it excludes the SAVP (NHLS subsidiary). The net debtors figure relates to total debt which incorporates government debt as well as private sector debt. Revenue figures are determined through an account inquiry on Oracle and are obtained by selecting the parent revenue account (5000 range) as well as other income (Grants, Teaching income, miscellaneous sales)
<b>Method of calculation</b>	(Total month-end trade debtors/ YTD Test revenue & other income annualised) x 365 days
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	115 days
<b>Indicator owner</b>	Chief Financial Officer
<b>Indicator Title: 11.2.2.5</b>	<b>Percentage turnaround time for awarding tenders within 90 days.</b>
<b>Definition</b>	The tenders must be awarded within 90 days after the closing date of the advert.
<b>Source/collection of data</b>	The supply chain management unit to provide data on the spreadsheet.

<b>Method of calculation</b>	Total number of tenders awarded within 90 days from closing date of the tender divide by the total number of tenders advertised for the same period, express in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	Chief Financial Officer
<b>Indicator Title: 11.2.2.6</b>	<b>Develop and implement revenue enhancement and costing strategy</b>
<b>Definition</b>	The NHLS has in past experienced challenges with financial stability caused by fluctuating cash flow. It is critical for the NHLS to investigate alternative sources of revenue to enhance the current revenue sources. The plan will outline other revenue streams which will improve the NHLS financial stability.
<b>Source /data collection</b>	A strategy document that has been developed.
<b>Method of calculation</b>	N/A
<b>Calculation Tyape</b>	Non-Cumulative
<b>Reporting Cycle</b>	Annually
<b>Desired performance</b>	Revenue and costing strategy developed
<b>Indicator Owner</b>	Chief Financial Officer
<b>Indicator Title: 11.2.2.7</b>	<b>Clean audit opinion of the Auditor general</b>
<b>Definition</b>	This means that AFS are prepared in accordance with GRAP and our internal policies and the information is presented to the public in the required framework and timeframes
<b>Source/collection of data</b>	Audit opinion
<b>Method of calculation</b>	N/A
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Unqualified
<b>Indicator owner</b>	Chief Financial Officer
<b>Indicator Title:11.2.2.8</b>	<b>Percentage of allegations reported through the NHLS tipoff platform that are investigated within 180 days</b>
<b>Definition</b>	The organisations face the fraud risk. To mitigate this, the NHLS has a fraud reporting platform where people can call anonymously to report any suspected fraud within the organis`ation.
<b>Source/collection of data</b>	A spreadsheet from audit and risk department.
<b>Method of calculation</b>	Total number of suspected fraud cases reported and investigated within 180 days divide by the total number of suspected fraud cases reported in the same period, express in percentage
<b>Calculation type</b>	Cumulative- Year to date

<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	90%
<b>Indicator owner</b>	Head: Audit and Risk Department

### Programme 5: Administration: Sub-Programme – Information and Communication Technology

<b>Indicator Title:11.3.2.1</b>	<b>Develop and implement a real-time communication system with patients</b>
<b>Definition</b>	A system that will send messages to patients informing them of the outcome of the tests done on them in real time.
<b>Source/collection of data</b>	Information Technology report from NHLS
<b>Method of calculation</b>	Total number of sms sent to patients who provided their cellphone numbers divide by the total number of patients who provided the NHLS with their cellphone numbers
<b>Calculation type</b>	Cumulative- Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Send SMS to 20% of patients who provided cellphone numbers and gave consent
<b>Indicator owner</b>	Chief Information Officer
<b>Indicator Title:11.3.2.2</b>	<b>Implement the use of the HPRS</b>
<b>Definition</b>	Chief Information Officer
<b>Source/collection of data</b>	Information Technology report from the NHLS
<b>Method of calculation</b>	Total number of health facilities using the HPRN divide by the total number of health facilities.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	40% implementation of the HPRS
<b>Indicator owner</b>	Chief Information Officer
<b>Indicator Title:11.3.2.3</b>	<b>Develop and implement the order entry system</b>
<b>Definition</b>	Maximising the information technology through electronic requesting of pathology tests, which will improve efficiency and the appropriate use of the laboratory tests. The requesting of tests will be done from the health facility.
<b>Source/collection of data</b>	Information technology report from the NHLS
<b>Method of calculation</b>	Total number of health facilities with internet connection where the order entry system is implemented divide by the total number of health facilities with internet connection, express in percentage.
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Implementation of the order entry system in 20% of facilities that have internet connectivity

<b>Indicator owner</b>	Chief Information Officer
<b>Indicator Title: 11.3.2.4</b>	<b>Percentage System Uptime for Critical Systems at laboratory level</b>
<b>Definition</b>	TrakCare, Oracle EBS and CDW system availability
<b>Source/collection of data</b>	SLA and incident report/reports
<b>Method of calculation</b>	Total SLA uptime minus downtime (impacting SLA uptime) as recorded on the incident report(s) for a month for each system (Oracle EBS, TrakCare and CDW). (the numerator is a total number of days in a quarter when the systems were down and denominator is the total number of days in that quarter, express that as a percentage)
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	99%
<b>Indicator owner</b>	Chief Information Officer

## Programme 5: Sub-Programme – Human Resource

<b>Indicator Title: 11.4.2.1</b>	<b>Staff Turnover ratio</b>
<b>Definition</b>	The rate at which an employer attracts and loses employees.
<b>Source/collection of data</b>	Human Resource Information System (Oracle)
<b>Method of calculation</b>	Divide the number of voluntary terminations by the total number of staff at the end of the reporting period, expressed as a percentage
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	5%
<b>Indicator owner</b>	Executive Manager: Human Resource
<b>Indicator Title: 11.4.2.2</b>	<b>Average staff recruitment turnaround within 90 days</b>
<b>Definition</b>	Time spent in filling a vacancy
<b>Source/collection of data</b>	A list of critical posts approved by the CEO, the date the posts were advertised and the date the offer was made to the successful candidate
<b>Method of calculation</b>	Number of posts filled within 90 days from the date they were advertised to the date the offer is made to the successful candidate divide by the total number of posts advertised, express in percentage
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Quarterly
<b>Desired performance</b>	90%
<b>Indicator owner</b>	Executive Manager: Human Resource
<b>Indicator Title: 11.4.2.3</b>	<b>BBBEE compliance</b>
<b>Definition</b>	To promote transformation in the NHLS
<b>Source/collection of data</b>	A BBBEE certificate from the department of labour
<b>Method of calculation</b>	N/A
<b>Calculation type</b>	Non-cumulative

<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	Level 5
<b>Indicator owner</b>	Executive Manager: Human Resource
<b>Indicator Title: 11.4.2.4</b>	Number of intern medical technologists and student medical technicians admitted and trained in the NHLS
<b>Definition</b>	Number of registrars appointed in the NHLS to be trained.
<b>Source/collection of data</b>	Human Resource Information System which will confirm the appointment of pathology registrars.
<b>Method of calculation</b>	Count
<b>Calculation type</b>	Cumulative – Year to date
<b>Reporting cycle</b>	Annually
<b>Desired performance</b>	250
<b>Indicator owner</b>	Executive Manager: Human Resource
<b>Indicator Title: 11.4.2.5</b>	Percentage of employees with approved and evaluated performance agreements
<b>Definition</b>	Alignment of individual, team and organizational performance to ensure delivery of strategy and appreciation of contribution
<b>Source/collection of data</b>	Performance Management System – HRIS
<b>Method of calculation</b>	The number of employees with approved and evaluated performance agreements divide by total number of employees, expressed as a percentage
<b>Calculation type</b>	Non-Cumulative
<b>Reporting cycle</b>	Semester
<b>Desired performance</b>	98%
<b>Indicator owner</b>	Executive Manager: Human Resource