

ADDRESS BY THE MINISTER OF HIGHER EDUCATION, SCIENCE AND INNOVATION, PROF BLADE NZIMANDE AT THE OFFICIAL OPENING OF THE NUCLEAR MEDICINE RESEARCH INFRASTRUCTURE (NUMERI) FACILITY AT STEVE BIKO ACADEMIC HOSPITAL, 21 MAY 2024

Programme Director, Mr Daan Du Toit, Acting Director-General of the Department of Science and Innovation;

Prof Themba Mosia, Vice-Chancellor and Principal of the University of Pretoria;

Ms Phindile Baleni, Director-General in the Presidency;

Mr Panyaza Lesufi, Premier of Gauteng;

Dr Lehlohonolo Majake, CEO of Steve Biko Academic Hospital;

Dr Rudzani Nemutudi, Deputy Director at iThemba LABS;

Mr Thabo Tselane, Group Managing Director of NTP Radioisotopes;

Dr Shulamit Ron-Bigger, Chief Operating Officer at Aktis Oncology, United States of America;

Ms Lerato Makgae, National Liaison Officer and AFRA National Coordinator for the International Atomic Energy Agency in South Africa;

Prof. Mike Sathekge, CEO and President of NuMeRI;

Prof. Kgomotso Mokoala, President of the South African Society of Nuclear Medicine;

Senior officials from both my Departments;

Members of the media;

Ladies and gentlemen:

It is my honour and privilege to be speaking to you today on such an important occasion- the launch of the Nuclear Medicine Research Infrastructure or NuMeRI.

Background to the establishment of NuMeri

The world class facility we are unveiling here today is a product of our long-standing cooperation with the European Union (EU). In 2012, we established a Trade, Development and Cooperation Agreement with the EU.

Under this agreement, my Department of Science and Innovation (DSI) partnered with the EU to develop a South African first Research Infrastructure Roadmap (SARIR) for our country.

With joint investments, four research infrastructure experts split equally between Europe and South Africa and in close consultation with researchers and policy-makers, identified priority research infrastructures that can enhance South Africa's scientific and developmental priorities.

NuMeRI became one of the thirteen research infrastructures under the South African Research Infrastructure Roadmap. NuMeRI emerged from previous investments in the erstwhile and successful Nuclear Technologies for Medicine and Biosciences Initiative or NTeMBI, managed at the South African Nuclear Energy Corporation (Necsa), since 2009.

Starting in the 2016/17 financial year, NuMeRI was amongst the first seven Research infrastructures that were implemented. In line with the detailed implementation plan, Phase I of the research infrastructure was established and hosted at Necsa for 3 years.

Phase II was to be implemented at an academic hospital. The bidding process for the appointment of the Phase II NuMeRI Hub at an academic hospital site was finalised in 2018 and the Steve Biko Academic Hospital (SBAH) in collaboration with the Nuclear Medicine Department of the University of Pretoria was the successful bidder.

The benefits and impact of NuMeri

The mobilisation of innovation and technology to address the disease burden and the need to provide quality health care to all South African's is a key priority of my Department's Decadal Plan on Science, Technology, and Innovation. NuMeRI is an important pillar in this effort.

The NuMeRI is a one-stop-shop medical imaging facility dedicated to drug development and imaging-based clinical research and open to all researchers that will benefit from imaging in their product development.

This facility is another key milestone in advancing our Bio-economy strategy. It will assist in taking bio-innovations further down the value chain from radiolabelling to preclinical testing. It will also contribute to good manufacturing practices and with clinical trials.

NuMeRI's capabilities will contribute to the Precision Medicine approach and targeted personalised therapies being developed in South Africa.

NuMeRI's governance and efficiency

To ensure efficient governance and management, the two partners (University of Pretoria and Steve Biko Academic Hospital) agreed to the establishment of a NuMeRI Not-for-Profit Company (NPC).

The University of Pretoria and Necsa are founding members of the NPC and are represented on the board and draw on the knowledge of officials of my Department, who are actively involved in the implementation of the NuMeRI.

NuMeRI Funding

The first phase of NuMeRI, established and hosted at Necsa for three years was made possible by an investment of close to R150 million between 2016 and 2019.

The Phase II implementation at Steve Biko Academic Hospital (SBAH) started in the 2020/21 financial year with an investment of approximately R390 million since 2020 by the Department of Science and Innovation.

The University of Pretoria also received an additional R85 million for the Nuclear Medicine Research Infrastructure (NuMeRI) (building) under the 6th IEG Cycle. These allocations are because of the DSI/DHET agreement for funding RI of national interest in that DHET will fund the building costs and DSI the research infrastructure.

This significant investment by my departments will provide a long-term enabling support environment that will enable South African researchers as well as commercially driven healthcare companies (pharmaceutical and biotechnology) to remain a significant global player in nuclear medicine.

Human resource development at NuMeRI

High-level human resource development as part of a broad-based research development programme will be significantly boosted moving forward. For example, it is anticipated that this infrastructure will triple the current clinical PhDs and increase six-fold Basic Science PhDs.

To date, 20 master's and 15 PhD students have completed their studies with a further 17 master's and 22 PhD students finishing their studies. The breakdown is as follows:

	completed	Current
Number of students participating for master's degrees	20	17
Number of students participating for Doctoral degrees	15	22
Other students participating in the project	20	
Other trainees participating in the project		

The overall impact of the NuMeri is expected to be as follows-

- Strengthening the Nuclear Medicine capacity;
- Enhancing South African research in Medicinal Chemistry;
- Expediting development of drugs to address national priority diseases, e.g. Cancer and Tuberculosis;
- Improving quality of life of local pollution;
- NuMeRI also has a strong academic stature with Nuclear Medicine Research Institute of University of Pretoria as part of NuMeRI; and
- NuMeRI has been selected as an Anchor Centre which is part of the Rays of Hope for Cancer Care of IAEA.

The innovation of the project is paramount. It is one of a few in the world that managed to create a one-stop for imaging and therapy, equipped with two cyclotron (one for a

commercial partner and one for research) seamlessly connected to two separate radiopharmacies.

The research Radiopharmacy is equipped with 10 hot cells connected via dumbwaiter lift to the preclinical floor below the cyclotron and clinical suite above. All of which meet the stringent requirements for GMP.

The imaging techniques available include microPET, microSPECT, Autoradiography, Cherenkov imaging, all of which meet the stringent requirements for GLP. Equally so, the clinical unit is equipped with top of the range human PET and SPECT cameras and therapy rooms complying with GCP.

NuMeRI's research activities advance the objectives and priorities of the National Department of Health, strengthening the Nuclear Medicine capacity in South Africa and beyond its borders in Africa.

It enhances South African research in Medicinal Chemistry, expediting the development of drugs to address national priority diseases such as cancer and Tuberculosis, enabling new pharmaceuticals to reach market sooner, and giving South African pharmaceutical development a competitive edge with global equivalents.

NuMeRI has already demonstrated its impact in addressing the Grand Challenges related to the Bio-economy, particularly in "Pharmaceutical solutions to attack the disease burden that is further worsened by poverty". It aspires to cover bench to bedside for drugs providing a platform for drug discoverers to test new drug entities locally all the way to the clinical format.

South Africa's rich talent and biodiversity can be used to attract multinational pharmaceutical companies. NuMeRI has to date created a variety of radiotracers which can be used in a number of applications, not only radiopharmaceuticals.

The tracing of nanoparticles helps to elucidate their behaviour and where they go in living organisms as have been demonstrated. In all fields of treatment, personalised medicine is becoming a reality. Radiopharmaceuticals are ideal for this as it provides

a non-invasive technique to determine a patient's individual uptake or excretion of a drug.

This is called companion diagnostics where a radiopharmaceutical imaging agent is used to individualise the dose of a chemotherapeutic or internal radiotherapeutic agent.

This research is embedded within the healthcare domain and creates a mutually beneficial environment for medical research and general practice – with public health being the common goal. The research conducted at NuMeRI has contributed to the development of a range of therapies that address the national priority diseases.

Research will be mainly in Oncology and also covers other communicable and non-communicable diseases. Infection imaging has been a particular interest of NuMeRI/UP/SBAH/Necsa with the first PET infection imaging agent developed which is used as a research tool. TB research has been pursued for many years and advances are being made to specific TB imaging agents.

Benefits of NuMeRI to the community

Like any facility of its calibre, ensuring benefit to the community remains the key driver. Some of the NuMeRI's benefits to the community with regards to imaging and theragnostics are-

- 60 patients per day;
- 40 Cancer per day;
- Change management in 52% of patients; and
- Overall survival: over 2 yrs in patients that would have had 2 months (this sentence is confusing).

Future plans

In conclusion, once it is fully established, the NuMeRI will be a distributed network comprising-

- The NuMeRI main centre at Steve Biko Academic Hospital (NuMaCS);

- The NuMeRI node for Infection Imaging (NII) at Tygerberg Hospital (managed by the University of Stellenbosch); and
- An interim Pre-clinical Imaging Facility (iPCIF) at Pelindaba (which will be transferred to NuMaCS once the Specialised Laboratory to house the IPCIF is completed);

The opening of this facility represents yet another important milestone in the development of scientific infrastructure for our country and this is embodied in the fact that the NuMeRI is the first of its kind on the African continent.

Given the incredible capabilities of this facility, it is my sincere hope that those who will manage it will also help us as government to build similar capacity in other provinces so that we may build a more transformed and equal health care system for our country.

Lastly, thank you for the support that we continue to get from the Steve Biko Academic Hospital, University Pretoria, NECSA and other partners who contributed to the development of this world class facility.