

MPox OUTBREAK

What is driving
the mpox
spread?

UKSA
collaborates
with NICD on
mpox outbreak
response

WHAT ARE
PEOPLE SAYING
ON SOCIAL
MEDIA?

Mpox outbreak – WHO
declares the virus a public
health emergency of
international concern

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WHAT ARE PEOPLE SAYING ON SOCIAL MEDIA?





Prof.
Adrian Puren

MESSAGE FROM **THE EXECUTIVE DIRECTOR**

Dear Colleagues,

This edition of Pulse is published at a critical time, with South Africa and numerous other African nations urgently addressing the ongoing mpox outbreak. Given the gravity of the circumstances, it is both timely and crucial to dedicate part of this edition to exploring the implications of the mpox outbreak for the public.

While we celebrate the diverse stories showcasing the NICD's achievements over the past quarter, we've chosen to place a particular focus on mpox. We feature three in-depth articles on the subject. The first examines the factors driving the rise in mpox cases and highlights how stakeholders are collaborating to curb its spread. The second article explains the designation of mpox as a Public Health Emergency of International Concern (PHEIC) and provides a strong reassurance to the public, urging them not to panic but to stay informed and vigilant.

The PHEIC declaration by the Africa Centres for Disease Control and Prevention and the World Health Organization followed a surge in cases in the Democratic Republic of the Congo and neighbouring countries in August.

In the third article, we spotlight the robust collaboration between the United Kingdom Health Security Agency and the NICD, a partnership that has significantly strengthened ties between our institutions.

Additionally, we cover a variety of non-mpox-related stories, including the inaugural Alumni Symposium of the SAFETP Alumni Association and a feature from our ICT Manager on how NICD leverages artificial intelligence to enhance public health reporting.

We also take a moment to applaud the NICD staff who participated in the Comrades Marathon. Their stories of endurance, determination, and bravery are truly inspiring. We deeply appreciate your ongoing support and hope you find this edition insightful and informative. Thank you.

Enjoy the read!



in mpox cases is driven by various factors, including sexual and social networks

By Vuyo Sabani

The increase in mpox cases can be attributed to various factors. "Social and sexual networks, especially in urban areas, have been identified as key drivers of ongoing mpox transmission," said Mr Nevashan Govender, Operations Manager for the Emergency Operations Centre at the National Institute for Communicable Diseases (NICD).

Mr Govender and his team have been at the forefront of the current mpox outbreak since the first case was confirmed in May 2024. South Africa has reported 25 mpox cases, significantly higher than the five cases reported in the 2022 outbreak. Regarding the factors driving the rise in case numbers, Mr Govendor stated: "A number of different aspects have contributed to this phenomenon not just in South Africa but globally. The resurgence of international travel following the easing of COVID-19 restrictions has played a role in the global spread of mpox."

Mr Govender added that infected individuals travelling between countries have introduced the virus to new areas where it previously had limited presence.

When asked whether he expected mpox cases to rise at this rate when the first case was reported in a private laboratory in Johannesburg, Mr Govender said, "to be honest, anticipating what number of mpox cases we would see in this current outbreak in May was difficult as only severe cases were presenting for healthcare and not the milder cases."

"There were two thoughts: first, given the challenges in case investigation and contact tracing we had with the five cases in 2022, we could just see a handful of cases presenting again. Secondly, if we have had multiple introductory events and multiple contact exposures we could see 30 to 60 cases. The

idea was to plan for the worst-case scenario and respond in a way to stop it from occurring," added Mr Govendor.

The National Department of Health, together with the provincial Departments of Health, the NICD, the National Health Laboratory Service and other stakeholders, have been working together to ensure adequate capacity for laboratory testing for mpox, the development of clinical management guidelines and access to anti-viral treatment, planning for access to mpox vaccines and improving awareness and knowledge of the disease at different levels.

"Collaboration among stakeholders, including public health authorities, governments, healthcare providers, and communities, ensures a coordinated and timely response. This can help in quickly identifying, isolating, and treating cases to prevent further spread. Outbreaks often require resources such as medical supplies, personnel, and funding. Collaboration allows for the pooling of resources and expertise, ensuring that the outbreak is managed effectively and that those in need receive timely care," explained Mr Govendor.

The mpox variant in South Africa is primarily transmitted through close skin-to-skin contact. During the multi-country mpox outbreak, transmission is often linked to sexual encounters. Mpox can be prevented by avoiding physical contact with someone who has the virus. Fortunately, most people with mpox recover within 2–4 weeks.





MPOX OUTBREAK

WHO DECLARES THE VIRUS A PUBLIC HEALTH EMERGENCY OF INTERNATIONAL CONCERN

By Vuyo Sabani

The public should not panic over the declaration of mpox as a public health emergency of international concern (PHEIC) by the Africa Centres for Disease Control and Prevention (CDC) and the World Health Organization (WHO), as this is a mechanism used to improve outbreak response coordination and containment measures.

This assurance came from Prof. Adrian Puren, Executive Director of the National Institute for Communicable Diseases (NICD), following the WHO's announcement, which was prompted by the rise in mpox cases in the Democratic Republic of the Congo (DRC) and neighbouring countries.

Prof. Puren emphasised that the PHEIC would facilitate “both countrywide and multi-country coordination to ensure that we make a strong effort to prevent and not eliminate, but effectively control this particular large upsurge that we’re currently seeing in the DRC and affected countries surrounding the DRC.”

“It’s really just to focus minds on the current problem – this particular virus was certainly part of the multi-country outbreak from 2022, but in the DRC, we’re now seeing large numbers of cases with multi-country spread and a different strain. So, the purpose is to ensure we can focus on managing this particular outbreak; it’s [PHEIC] about ensuring the necessary resources are available to tackle this problem,” said the NICD Executive Director.

This view was echoed by the head of the Centre for Emerging Zoonotic and Parasitic Diseases at the NICD, Dr Jacqueline Weyer, who said: “A public health emergency of international concern (PHEIC) is a mechanism under the International Health Regulations which is used to improve coordinated

responses for the containment of outbreaks. When a PHEIC is declared, there are increased requirements from countries to demonstrate their commitment to outbreak responses and increased access to resources for outbreaks. The latter would include support for enhanced surveillance (i.e., laboratory testing) and access to vaccines and therapeutics.”

This is the second time mpox has been declared a PHEIC. The first declaration occurred in July 2022 due to the rapid spread of mpox through sexual contact across multiple countries where the virus had not previously been reported. In May 2023, the PHEIC was lifted following a sustained decline in global cases.

Prof. Puren noted the importance of understanding how this outbreak differs from the one in 2022. “If anything, we know that the mpox strain is different from that of 2022. So, what has occurred with this particular virus? Has it changed and altered in any way? We don’t think that the transmission rates are higher, but we do know that there’s a higher person-to-person transmission rate. Are these outbreaks specific to social and sexual networks? Our focus is on providing resources, in terms of epidemiological support, in terms of prevention of transmission, and also in terms of medications and/or vaccines to try and stem and control the outbreak,” assured Prof. Puren.

Between May and September 2024, South Africa reported 25 laboratory-confirmed cases with three deaths. These are reported in three provinces: Gauteng (12), KwaZulu-Natal (11) and Western Cape (2). To help stop the spread of mpox, the public is urged to remain vigilant and report any symptoms immediately to a healthcare provider.



**NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES**

Division of the National Health Laboratory Service



The NICD Deputy Executive Dr Natalie Mayet (left) and the Head of the Division of Public Health, Surveillance and Response Dr Susan Nzenze (right) were instrumental in the NICD and UKSA mpox response collaboration.

UK HEALTH SECURITY AGENCY COLLABORATION WITH NICD ON MPOX RESPONSE

The United Kingdom Health Security Agency (UKSA) has seconded four staff members to the National Institute for Communicable Diseases (NICD) to support the mpox response. The four comprise two Risk Communication and Community Engagement (RCCE) specialists, an epidemiologist and a public health medicine specialist. The Deputy Director for NICD, Dr Natalie Mayet, shares how the partnership between UKSA and NICD came about.

How did this collaboration come about?

The UK and SA have long-standing bilateral agreements. The British High Commissioner in South Africa has supported the national Department of Health in various projects and has engaged with the NICD to explore opportunities for strengthening surveillance. Discussions commenced during the latter part of the COVID-19 pandemic, and after a visit to the NICD of members of the British High Commission, it was agreed that technical collaboration would be pursued.

What does it entail?

At the time of the announcement by Africa Centres for Disease Control and the World Health Organisation of mpox as a public health emergency of international concern, four staff were deployed to the NICD. The deployment was staggered, and remote support will continue to be provided remotely where appropriate.

What are the benefits for both NICD and UKHSA?

This is an opportunity for mutual collaboration, sharing technical expertise, identifying gaps, and exploring opportunities to build long-term capacity. The NICD collaborates with multiple stakeholders and partners. Networks are essential for strengthening public health across the globe.

Is this collaboration meant to provide support for the mpox outbreak only, or will it be an ongoing initiative?

We will leverage lessons of the mpox outbreak deployment and review opportunities for continued collaboration.

SAFETP Alumni Symposium: Advancing Knowledge and Collaboration

By Koketso Matjane and Siyabonga Mbatha

Founded to enhance epidemiological capacity at national, provincial, district, and local levels, the South African Field Epidemiology Training Programme (SAFETP) provides advanced, intermediate, and frontline professionals with training to address some of the most pressing public health challenges. In South Africa, epidemiologists face numerous hurdles, including professional development, securing funding for conferences, and finding suitable job opportunities. To mitigate these challenges, the SAFETP Alumni Association offers a dynamic network fostering mutual support, collaboration, and new funding avenues.

On 13–14 May, 2024, the SAFETP Alumni Association, in collaboration with the National Institute for Communicable Diseases (NICD), hosted its inaugural Alumni Symposium. The event brought together SAFETP alumni from various programmes and featured keynote addresses from renowned public health experts. The event was a resounding success, with participants—from junior to senior alumni—highlighting the symposium's significant impact on their professional development.

In an article for the Public Health Bulletin of South Africa, alumnus Brian Brummer reflects on the symposium's achievements, noting that “the SAFETP Alumni Symposium provided a valuable platform for public health stakeholders at all levels to converge, exchange ideas, and discuss critical public health

issues affecting South Africa, Africa, and the globe.” During the two-day event, attendees engaged in in-depth discussions on a wide range of topics, including communicable and non-communicable diseases, the One Health Approach, and the critical role of the National Public Health Institutes of South Africa (NAPHISA) in orchestrating public health initiatives.

A highlight of the event was the dedicated workshop on manuscript submission, which armed attendees with invaluable skills for publishing in peer-reviewed journals. An awards ceremony concluded the symposium, celebrating the remarkable achievements of the alumni and highlighting their significant contributions to public health.

As the SAFETP project team focuses on future goals, they express a strong commitment to securing sustainable funding to amplify the association's impact.

Their plans include continuing virtual webinars, organising targeted training sessions, and hosting in-person seminars and networking events. These initiatives are designed to enhance alumni skills, support high-quality research, and expand SAFETP's influence on global public health. With these efforts, the team aims to foster a robust community of public health professionals dedicated to making a lasting difference.



Attendees at SAFETP Alumni Symposium converge to exchange ideas and discuss critical public health issues.





Science and Spirit: Eunice Jamesboy's Commitment to Public Health and Education

By Nande Harmans

Ms Eunice Jamesboy was raised in a family of seven, shaped by the values of her journalist father and seamstress mother. Faith, education, respect, and morality were deeply ingrained in her upbringing.

Her father stressed the importance of a relationship with God and the pursuit of knowledge, while her mother modelled respect and good manners, laying a solid foundation for Jamesboy's future. These values shaped her character and were integral in her relationship with her husband, leading to a family blessed with four daughters.

In 2009, Ms Jamesboy's career advanced in science. Armed with a microbiology degree, she began volunteering at the Vector Control Reference Laboratory (VCRL), Centre for Emerging Zoonotic and Parasitic Diseases (CEZPD) at the National Institute for Communicable Diseases (NICD), under the headship of Prof. Lizette Koekemoer, she transitioned from microbiology to entomology. Her passion for malaria vector control led her to the University of Witwatersrand, where, under Prof. Maureen Coetzee's mentorship, she studied malaria vectors and insecticide resistance. This marked her deep engagement with Entomology. Ms Jamesboy, who currently manages the Medical Entomology Museum (MEM) at the CEZPD, which curates a significant repository of medical important insect specimens, says she is committed to advancing public health through scientific research and education. "My current role involves research, preserving surveillance specimens, supporting disease vector surveillance and operational research, training in insect taxonomy, exhibition development, funding acquisition, and symposium presentations," said Ms Jamesboy, adding that balancing these tasks requires meticulous planning and effective team communication.


The Medical Entomology Museum has a rich history and was inherited from the South African Institute for Medical Research (SAIMR). The museum, established between 1926 -1930 by Drs Alexander Ingram and Botha de Meillon, is the largest collection of its kind in Africa. It includes over 60,000 mosquito specimens and other arthropods, preserved as pinned specimens, wet collections and slides mounted specimens. This includes more than 600 type specimens that are crucial for taxonomic and evolutionary studies.

"A career highlight for me was extracting DNA from ancient mosquito specimens. Despite challenges with degraded DNA, with the team we successfully identified species from a single leg of a mosquito," Ms Jamesboy shared humbly.

She added that managing the collection presents challenges, such as securing funding for the effective handling of this invaluable collection. Ms Jamesboy is actively seeking grants, collaborating with other institutions, and raising public awareness. She aims to create a well-curated collection that will serve future researchers and foster innovation in entomology.

Ms Jamesboy advises aspiring entomologists "to stay curious and passionate, build strong foundations, seek mentorship, and embrace technology." Her journey reflects resilience, faith, and a commitment to entomology and public health.





The Crucial Role of AI in the NICD:

Insights from IT leader
Mr Gloseije Bazolana



“At the NICD, AI brings benefits such as more efficient surveillance, better decision-making, and an increased ability to prevent and respond to disease outbreaks.”

Mr Gloseije Bazolana

By Laura De Almeida

The National Institute for Communicable Diseases (NICD) plays a vital role in public health management, specifically in monitoring the Notifiable Medical Conditions (NMCs). To optimise outcomes, the integration of Artificial Intelligence (AI) applications within this framework has become indispensable.

According to the Acting Head of Information Technology (IT) Mr Gloseije Bazolana, in NMC surveillance, AI works to detect duplicate cases, improve classification accuracy, and efficiently allocate resources. The aim is to boost real-time analysis, predict duplicates, and streamline case management. However, Mr Bazolana says challenges arise in merging varied data sources, ensuring AI accuracy and reliability and managing the computing demands of extensive data analysis.

“Unlike traditional methods, AI vastly improves NMC surveillance by quickly analysing real-time data to detect emerging health threats, allowing for faster and more targeted interventions,” adds Mr Bazolana. AI analyses complex data to identify risk factors, transmission patterns, and the effectiveness of control measures in disease outbreaks, while machine learning models predict outbreak trends

and simulate the impact of various intervention strategies, thereby informing more effective public health policies.

The Acting IT Head says that effectively using AI requires collaboration across departments such as data analytics, IT, epidemiology, and public health. “Regular communication, shared goals, and interdisciplinary teams ensure efficient development and distribution of AI tools, considering diverse perspectives,” said Mr Bazolana. Essentially, the objective is to predict and manage disease outbreaks by combining different data sources and fostering global collaboration through shared AI platforms.

Using AI responsibly and ethically requires clear guidelines, ongoing evaluations for accuracy and fairness, and the involvement of diverse stakeholders. At the NICD, AI brings benefits such as more efficient surveillance, better decision-making, and an increased ability to prevent and respond to disease outbreaks. Despite challenges, incorporating AI into public health surveillance marks a significant leap forward in managing and mitigating public health threats.



Training & Development

Enhancing Global Gonococcal Antimicrobial Surveillance Through Whole Genome Sequencing

Dr Etienne Muller, a Principal Medical Scientist at the Centre for HIV & STIs at the NICD, attended the Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP), Whole Genome Sequencing (WGS) training course at Örebro University Hospital, Örebro, Sweden (11-15 March 2024). The course aimed to decentralise gonococcal WGS activities of EGASP to individual countries to enhance the capacity for early detection and reporting of *Neisseria gonorrhoeae* antimicrobial resistance (AMR) and detecting the emergence of novel mechanisms of resistance to new antibiotics for gonorrhoea at national and global levels. The EGASP is a collaborative effort involving WHO, the US CDC, and WHO Collaborating Centres in Sweden and Australia. Its goal is to strengthen sentinel surveillance for gonococcal AMR in selected countries. Aligned with the WHO Global AMR and Use Surveillance System (GLASS), EGASP uses standardised, quality-assured testing to monitor trends in *Neisseria gonorrhoeae* susceptibility, enhancing data quality and comparability across regions. The programme is also expanding to include WGS of gonococcal isolates and molecular AMR prediction to further improve its effectiveness.



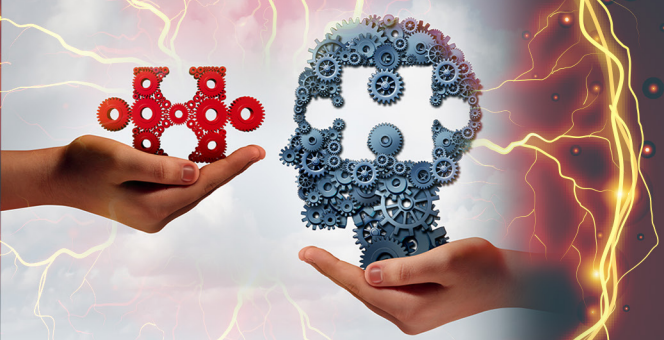
Regional HIV-1 Drug Resistance Troubleshooting and Best Practices workshop in Nairobi, Kenya

Ms Mondalisa Kalimashe participated in a Regional HIV-1 Drug Resistance Troubleshooting and Best Practices workshop in Nairobi, Kenya, from 24-28 June 2024. The workshop addressed the challenges many countries have faced with HIV drug resistance testing since the pandemic. Its primary focus was on identifying best practices and troubleshooting country-specific issues. Participants included representatives from core genomic sequencing laboratories across Africa and Asia, specifically from PEPFAR-supported countries or regions. The workshop aimed to build a collaborative community dedicated to advancing HIV-1 drug resistance testing and implementing tailored improvement plans. These plans will incorporate quality monitoring indicators such as amplification and sequencing success rates, instrument downtime, lot-to-lot testing verification, staff competencies, external quality assurance panels, and turnaround times. The CDC will develop a dashboard to track these quality indicators for each participating country.



NICD Hosts Third Annual United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM) Basic Training Course 2024. Training experts from 15 countries!





Training & Development

Principles, Strategies, and Tools for Advancing Biorisk Management Training 29 July - 2 August 2024

This workshop targeted senior Biorisk Management practitioners from Southern Africa, Africa CDC-designated regional Biorisk Management and Biological Waste Management subject matter experts (Af-RSMEs), and representatives from other centres of excellence who are instrumental in the execution of the Africa CDC Regional Training and Certification Program for Biosafety and Biosecurity Professionals (RTCP-BBP). The purpose of the workshop was to highlight mentoring, project management, and risk communication as critical skills for advancing Biorisk Management in South Africa and the Southern Africa Region.



The workshop was attended by subject matter experts from Southern Africa and from Africa CDC designated regional centres.

Biorisk Management Documents and Resources to address BS & S Gaps – Session 1 Course Period: 5-8 August 2024

The course brought together Africa CDC-designated regional Biorisk Management and Biological Waste Management subject matter experts (Af-RSMEs), who are currently serving as mentors, with the purpose of highlighting documents available as resources and guidance for evaluating, implementing, and improving biorisk management systems.



The workshop was attended by experts from various countries.

Biorisk Management Documents and Resources to address BS & S Gaps – Session 2 Course Period: 12-16 August 2024

The course brought together Level 1 certified professionals in Biorisk Management and Biological Waste Management, under the Africa CDC Regional Training and Certification Program for Biosafety and Biosecurity Professionals (RTCP-BBP), with the purpose of highlighting documents available as resources and guidance for evaluating, implementing, and improving biorisk management systems.



Training attendees were exposed to various resources and techniques to evaluate and implement biorisk management systems.

Achievements



Mandla Nyembe's Determined Journey to the Comrades Marathon Finish Line



Mr Mandla Nyembe, from the Centre for HIV and STI, was so determined to partake in this year's Comrades Marathon, and despite suffering both hip and hamstring injuries in the lead-up to the race, he was undeterred. Mr Nyembe says his passion for running drove him to push through and continue training despite the setbacks. As if that was not enough, Mr Nyembe suffered another injury early in the race due to potholes. This year's Comrades Marathon was a gruelling "up run", with the demanding uphill course from Durban to Pietermaritzburg. However, his unwavering passion for running kept him going, and he persevered to the finish line. Mr Nyembe remarkably improved his time, completing the marathon in 9 hours and 57 minutes, surpassing his previous record. The NICD extends heartfelt congratulations to Mr Nyembe for his outstanding accomplishment at the Ultimate Human Race!

Conquering the 'up run': Dr Shane Redelinghuys' Remarkable Comrades Marathon Experience

Dr Shane Redelinghuys from the Centre for HIV and STI shared his Comrades Marathon experience. "This year's Comrades Marathon was my first ever 'up run' (from Durban to Pietermaritzburg). I was a little unsure of what exactly to expect, as I had run the 'down run' the past two years. I knew we were in for a lot of climbing; running over hills is one of my strengths, but nothing can prepare you for those very long, steep, rolling hills on Comrades day. The Comrades start is always bittersweet. You have to be there very early and wait in the cold, but nothing beats the experience of singing the national anthem with about 20 000 runners. The 'up run' did not disappoint in its surprises on the day. It had a lot of ups and downs (pun intended here), but it was very reassuring having my family supporting me on the route and encouraging me. In the last kilometre (86th km), I knew I wanted something badly but was undecided on what it was—an ice cold beer, litres of cold water, comfort food, or a dextrose/saline drip. I played it safe and got them all. Looking back, I have so much gratitude for the health and ability to run the Comrades. It is such a privilege to toe the start line." The NICD proudly congratulates Dr Redelinghuys for completing the race with an impressive time of 8 hours, 55 minutes, and 10 seconds!

