

IDEAS that work



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Centre for Public Service Innovation
REPUBLIC OF SOUTH AFRICA



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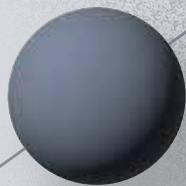
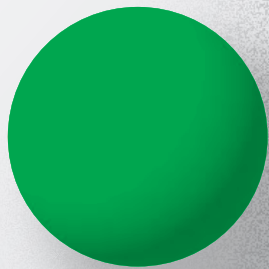
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THE CENTRE FOR PUBLIC SERVICE INNOVATION (CPSI)

The CPSI is mandated to develop innovative, sustainable and responsive models for improved service delivery. The work of the CPSI is guided by an understanding of innovation in a public sector context as "the creation and implementation of new service delivery solutions (systems, processes, methods, models, products and services) resulting in significant improvements in outcomes, efficiency, effectiveness and quality."

The CPSI facilitates the unearthing, development and implementation of innovative ideas within and throughout the public sector. It achieves this by facilitating pilot projects aimed at demonstrating the value of innovative solutions through activities that create an enabling environment within the public sector, to support and sustain innovation. The CPSI's cross-sector reach makes it a resource for the whole of government, thus bridging institutional boundaries.

Through active research and knowledge sharing platforms and products, the CPSI identifies and shares lessons and information on innovation trends nationally, across Africa and internationally. The CPSI partners with a range of individuals and institutions in government, business and communities in exciting and mutually beneficial ways. This partnership model allows us to leverage financial and/or intellectual capital in support of government priorities.

VISION:

A solution-focused, effective and efficient Public Sector through innovation

MISSION:

To entrench an innovative culture and practice in the public sector

MANDATE:

- Advance needs-driven research and development
- Unearth, demonstrate, share, encourage, and reward innovation
- Test, pilot and incubate new innovations
- Support the replication of innovative solutions
- Partner with public, private, academic, and civil-society sectors



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Government Component:
Centre for Public Service Innovation
REPUBLIC OF SOUTH AFRICA



Information Security Management System



Water Management

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FROM THE EDITOR'S DESK

WELCOME SEKWATI - *Deputy Director,
Centre for Public Service Innovation (CPSI)*

Welcome to the 11th edition of Ideas that Work – The South African Public Sector Innovation Journal

This journal serves as one of the organisation's prime knowledge sharing platforms to promote learning and sharing of insights about public sector innovation amongst government officials. The journal contributes to the development and nurturing of an effective and efficient public sector that is empowered by cutting edge knowledge and skills. This will ensure an agile public sector that is equipped to take advantage of the opportunities availed by the demographic dividend currently enjoyed by South Africa.

In an era when governments face immense pressure to either evolve or risk falling behind, the CPSI must lead in promoting the adoption and practice of innovation in the public sector. The undisputed truth is that the public sector competes with the private sector regarding provision of certain categories of services to the citizenry that are more competitive in terms of quality and service. By leveraging tech-

nological advancements, government can develop and establish reliable and secure multiple service delivery channels through which citizens can conveniently access services seamlessly without any disruptions. In this regard, we have a major challenge to improve and match that experience residing in the private sector in order to earn the trust of the citizens.

Despite the widely held restrictive view that innovation is only confined to technology, the CPSI deliberately adopts a broader perspective to include non-technological innovations that are highly effective in improving areas of service delivery, such as, human resource management, reduction of waiting times in health facilities and agriculture.

To that end, we have once again made a concerted effort to feature articles on a wide range of innovation related topics, as well as case studies

displaying diverse innovations and high impact projects across various disciplines. These articles are mostly drawn from the CPSI Public Sector Innovation Awards Programme, which run annually to unearth, showcase and reward innovative projects that have improved the manner in which various services are delivered to citizens.

Through these efforts, we are contributing towards ongoing capacity building of government officials, empowering them to bring positive change in the lives of citizens.

Therefore, this journal is testament to the wealth of expertise and knowledge residing in the public sector, positioning government to excel in innovation.

***Enjoy reading, and most importantly,
be inspired to innovate.***

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HON. INKOSI MZAMO BUTHELEZI, MP

Minister for the Public Service and Administration, South Africa

NECESSITY IS THE MOTHER OF INVENTION

● INTRODUCTION

An organisation that can use relevant, modern knowledge to solve present day challenges enjoys significant advantages over a government that uses outdated solutions to fix today's problems. We have no choice but to strive for a public sector that inspires, nurtures and adopts innovation, because failure to do so could have dire consequences for both the government and the citizens.

Private sector organisations can only survive if they innovate and diversify their product and service offering. If a private sector organisation fails to innovate, its products become less competitive and eventually obsolete. This leads to declining sales, decreased profitability and eventually bankruptcy or business closure.

Conversely, when a public sector organisation such as a government department or state-owned enterprise (SOE) fails to innovate, then the quality of basic service delivery to the people deteriorates, often leading to violent service delivery protests by frustrated citizens. Such violent protests often result in loss of life and damage to property. In the case of an SOE, clients or users take their business to alternative service providers.

I must apologise for the gloomy introduction. It was necessary to introduce the mother of invention, and her name is *Necessity*.

● INNOVATION BORN OFF NECESSITY AND URGENCY

As a newly appointed Minister in the Portfolio of Public Service and Administration, I am aware of how much of a necessity innovation is to the very critical work of government departments. However, I am also fully aware of the slow pace of adoption of new and innovative technologies in the public sector. That is why platforms such as the annual Public Sector Innovation

Conference, organised by the CPSI become indispensable in efforts to engender a culture of innovation and promote the adoption of innovative technologies in the public sector.

Technology and innovation are not the future, they are the present. They are enablers of continuous improvement and progress in society, shaping our futures.

In this regard, while this is a time to celebrate and look back at how far we have come in our innovation efforts to enhance service delivery in the public sector, it is also a moment for honest reflection, to evaluate impact made by our innovative initiatives in the service delivery ecosystem and double efforts to find effective solutions to improve delivery of public services to all citizens.

There is an urgency to improve our service delivery efforts to the citizens and be a caring and responsive public service, ensuring that no citizen should wait for six hours for medical attention, while time is wasted searching for patient files.

“Technology and innovation are not the future, they are the present.”



While cognisant of inherent risks associated with early adoption of new technologies and innovations, private sector organisations are more willing and open to adopting innovative solutions in pursuit of profit. However, in the public sector, where the stakes are a matter of life and death, adoption of new technologies is quite slow, which impacts on our agility and adaptability. Renewed effort must be put in ensuring that public sector organisations properly and adequately utilise the necessary innovative technologies at their disposal.

To those who will want to stand in the way of innovation in the public sector - *Sithi: “Sukani endleleni!”*

The public sector should learn from international best practices and forge international partnerships that can be leveraged, enabling the public sector to keep pace with international trends, in order to serve our citizens more efficiently. At the same time, we must also recognise, applaud and learn from pockets of excellence in the field of technology and innovation that exist throughout the public sector.

However, a public sector that is free of rigid bureaucratic practices that slow down decision-making and stifle innovation is necessary, to ensure high levels of responsiveness to the diverse and evolving needs of the citizenry. It is also necessary for government departments to stop working in silos to effectively address the numerous challenges facing the country.

Furthermore, when effectively harnessed, innovation is a proven enabler or missing piece of the puzzle for a public sector that is agile and flexible and thus able to deliver a better life for all. Therefore, we must advocate for a public sector that is adaptive and innova-

tive enough to meet the ever-evolving challenges of modern governments.

If there is anything to take away from this, then that should be these two words: *necessity and urgency*. An innovative public sector that can deploy new technologies to deliver improved public services to more of our people is both necessary and urgent.

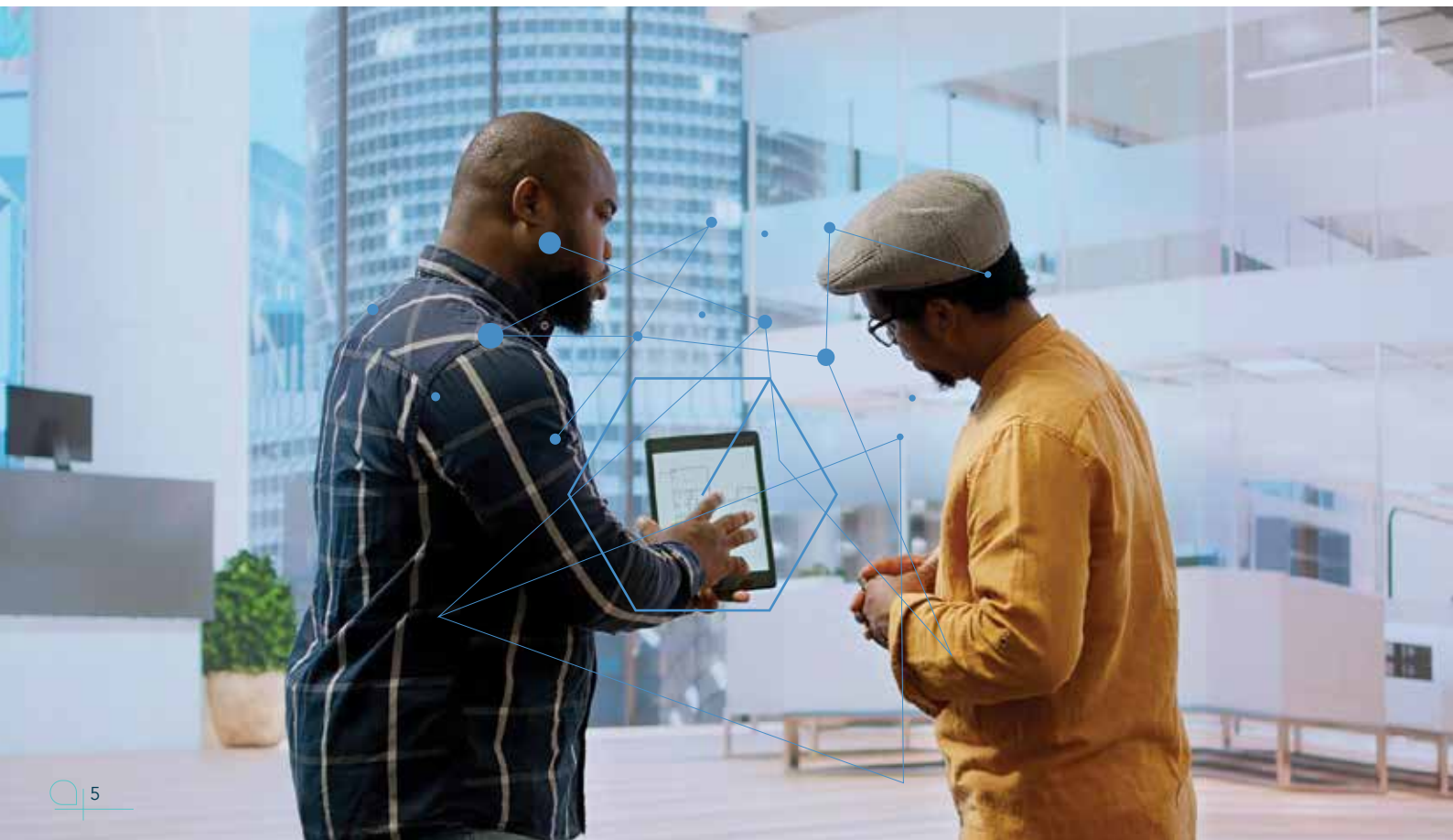
Our challenges as a nation should stimulate the kind of dialogues and ideas that leverage innovation as a key catalyst for a transformed public sector that is capable, reliable, ethical and corruption-free, professional and empowered to deliver on our developmental agenda as the state.

A best practice of effective deployment of innovative approaches to solve societal problems is the Brazilian case of combating gender-based violence and femicide (GBVF). To better understand and combat the scourge of GBVF effectively, the Brazilians mined and analysed data from police case records. The insights gleaned from the analysis informed public policy and

assisted in the conception of effective prevention strategies and mechanisms that are innovative and able to detect and prevent instances of GBVF. In this regard, South Africa can use lessons learnt from the Brazilian experience to develop effective prevention strategies and mechanisms to combat the scourge of GBVF.

● INNOVATION AS A NECESSITY FOR ENHANCED SERVICE DELIVERY

Since the inception of the new democratic dispensation and a new constitution for South Africa in 1994 and 1996 respectively, our government formed a social compact with its citizens to address inequality, poverty and unemployment that have historically been the defining trait of our nation. These interrelated, socio-economic phenomena aptly termed the 'triple challenge' cut across many areas of life and form the core of our developmental agenda, which must be addressed decisively as a developmental state.





In response, through several strategic interventions and pieces of legislation across the years, the government has put measures in place to ensure equitable access to services for all citizens across the country. One of these measures is the District Development Model (DDM).

Introduced by President Ramaphosa during his 2019 State of the Nation Address, the DDM's main objectives include enhancement of inter-governmental coordination at local, provincial and national level and establishing practical systems and mechanisms for joint planning, budgeting and implementation.

Therefore, this approach seeks to maximise impact through effective alignment of plans and resources across the three spheres of government. Furthermore, the DDM promotes creation of viable opportunities to co-design innovative solutions at the district level, where the government is in closer proximity to the citizens.

Therefore, we must collectively explore innovative ideas that can contribute to the successful implementation of the DDM, to enhance service delivery and improve the lives of our people. In this regard, a sense of urgency is essential for adopting and implementing innovative solutions within the public sector.

We dare not fail!

CONCLUSION

For our nation to overcome its formidable challenges, we require sheer determination and a shared vision. The goal of the public sector is to maximise the impact of innovation to ensure sustained delivery of services across the nation, while renewing the confidence in government's ability to improve the lives of South Africans.

Therefore, we must all work together to build a better life for all, securing a positive future for the next generations.

Again, we dare not fail!



REALISING THE TRUE VALUE OF INNOVATION – IN SERVICE DELIVERY –

Getting our Priorities Right

By **Hon. Ms Pinky Kekana, MP**

*Deputy Minister for the Public Service
and Administration*

INTRODUCTION

The adoption and practice of innovation in government operations has far-reaching positive consequences globally. In the case of South Africa, considerable work has been done in the public sector to bring about change in government using innovation and creativity.



However, despite these efforts, the general perception is that there have not been any noticeable gains, particularly in relation to implementation of Vision 2030 of the National Development Plan (NDP), whose aim is to serve as a roadmap that would put the country on a developmental trajectory, ensuring sustainable socio-economic growth and a better life for all citizens.

This suggests that initiatives that were introduced to inculcate a culture and practice of innovation in the public sector to improve service delivery have not yielded the desired effect. This under performance reflects poorly on public servants and government's ability to deliver services to citizens effectively. It also impacts on the credibility of the public sector, leading to lack of trust on government by the citizens. It is therefore imperative that we find solutions to the challenges affecting service delivery, as well as realisation of Vision 2030 targets within the set timelines. These efforts might assist in building trust between government and citizens.

CAPACITATING THE DEVELOPMENTAL STATE

Increasing the state's capacity for optimal performance and productivity must be prioritised and should be at the top of everyone's agenda, especially public servants, civil society and the private sector. The NDP identifies critical interventions needed to build such a state capable of playing a transformative and developmental role, one of which is innovation. However, it will be remiss for anyone to downplay the importance of a professional, highly skilled, competitive and knowledgeable public service that is capable to deliver meaningful and quality services to the citizens. A professional public service is the heartbeat of a functional developmental state.

Importantly, professionalising the public service and government should take place both at administrative and political levels. To this end, the National School of Government has been working diligently to professionalise the public service. However, for this important transformation to take root, there must be total buy-in from public servants at all levels, as well as all other key role-players.

REVISITING OUR PRIORITIES FOR MEANINGFUL IMPACT

South Africans are increasingly restless and desperate for solutions to the challenges they confront on daily basis. Therefore, it can no longer be business as usual for public servants, engaging in discussions that do not yield any results. Deliberate effort must be made to participate in engagements and conferences that serve as catalysts for innovative measures that can drive meaningful change, in line with government's transformative agenda that has historically been neglected.

In our pursuit for solutions, it is of critical importance that such solutions should add to economic growth and development and inspire investor confidence. Poor investor confidence stifles economic growth. This results in low GDP growth, high inflation, staggering food prices and consequently, unbearable living conditions for citizens. Therefore, some of our responsibilities as public servants include guarding against anything that undermines investor confidence because we cannot realise our aspirations of a better life for all without sustainable economic growth and development.

Areas requiring urgent solutions include crime prevention, gender-based violence, poor access to water and sanitation, lack of proper housing and poor spatial planning, overcrowded hospitals and schools, as well as poor energy and electricity supply among other things.

The rapid population growth underpins most of these challenges, and at the heart of it all is the number of undocumented individuals who are living within the South African borders and depend on the already stretched welfare system for survival. In this regard, an updated population strategy is required to provide guidance on how to deal with these challenges.

Social grants and other similar interventions play a critical role in ensuring that citizens do not fall below the poverty line. At the same time, it must be borne in mind that such interventions are difficult to sustain and thus might not be there indefinitely. Therefore, a sustainable model that would also dovetail with our developmental agenda is required.

A CALL FOR ACCELERATED IMPACTFUL ACTION

We should all collectively find solutions to improve government performance and productivity. This should not, and cannot be deferred to long-term or futuristic plans and documents. The action must be urgent and targeted at making immediate difference to people's lives.

As South Africans, in our struggle to rediscover our vision for a better life for all, we can learn from the gallant and brave women who marched against the oppressive apartheid pass laws and stood resolutely for justice. They stood together despite their racial, religious and social differences, with a common shared agenda to liberate all women against patriarchal and discriminatory laws that sought to limit freedom of movement and employment.

Using that context as a point of reference and taking note of the staggering challenges that still exist in the country after all these years, we should find out where we have deviated from the agenda enshrined in our constitution.

South Africa is renowned for its world-class policies and strategies which are often not adequately translated into tangible outcomes. We therefore need an immediate change of mind-set to ensure that policies are translated into actionable plans and deliverables with time frames. This begins with setting clearly defined priorities that can be actioned, with visible impact and results.

For instance, South Africa faces the triple challenge of unemployment, poverty and inequality. These challenges have always been and continue to be at the top of government's agenda. Consequently, they receive significant attention during budget allocations, enabling government departments to implement parliament approved programmes specifically to address these challenges. However, not all departments meet their targets, leading to citizens who continue to experience high levels of poverty, unemployment and inequality. These gaps in implementation need to be addressed as a matter of urgency.

We need to get back to basics and recommit ourselves to the key priority areas that have previously been identified and find effective solutions to turn the tide.

We also need to prioritise programmes that address the needs of the vulnerable sector of our society, namely, women, youth and people living with disabilities to ensure socio-economic inclusion and empowerment of these groups enable them to fully participate in, and benefit from our economic growth and development.

The NDP's strategic priorities focus on building an enabling business environment for the economy to thrive and create jobs as a way of allowing our people to share the wealth of this country.

Therefore, public servants need to guard against wasteful and fruitless expenditure. It is therefore imperative that in their operations they ensure that there is equitable distribution of financial and human resources towards projects that are geared towards increasing citizens access to government services, leading to improved livelihoods. Honest and robust discussions and engagements with other players in the service delivery value chain need to be held, to encourage collaboration between the public sector and all other key cross sectorial partners, to capacitate the developmental state. Our engagement with these social innovation partners should be informed by understanding of government operations and challenges and collectively devise strategies to address them.

CONCLUSION

It is therefore incumbent upon us as public servants to ensure that we uphold the principles of transparency and accountability in every undertaking pertaining to implementing partners and how we provide services to citizens. In the true character of participatory democracy, citizens should be empowered to have a firm and broad understanding of government budgeting processes, programmes of action and other key aspects pertaining to government service delivery capacity. Additionally, citizens should be afforded opportunities to make inputs regarding the kind of services they require and how these should be delivered.

Let us leave nobody behind. Let us move with the people and make them buy into the developmental agenda of the state.

We should always keep in mind the centrality and importance of innovation and how it needs to be prioritised. Critical things such as connectivity need to be prioritised as a matter of urgency to ensure that government operates efficiently and cost effectively to service citizens.

Innovation is at the heart of our socio-economic development.



IGNITING ^{THE} INNOVATION SPIRIT IN THE PUBLIC SECTOR

By **Ms Lydia Sebokedi** - *Acting Executive Director,*
Centre for Public Service Innovation



“I begin this article by once again reaffirming the importance of innovation to humankind, not as a passing trend, but a critical necessity for human survival. Throughout the ages, innovation has enabled us to adapt and overcome numerous periods of devastations.”

A case in point is the COVID-19 pandemic that affected the global community and its aftermath. Whether it is the loss of life, the haemorrhaging of jobs, poverty and all-round deterioration of the quality of life, the pandemic turned our world as we knew it upside down and resulted in the so-called ‘new normality.’

This new normal brought with it many challenges to our everyday lives, including a new vocabulary and concepts lesser known before the pandemic, such as community spread, social distancing, self-quarantining, super-spreaders, sanitisation, PPEs etc. as part of our daily discourse.

On a positive note, the pandemic has ignited the emergence of new inventions and innovations. These new innovations came through as the world tried to mitigate and minimise the disruptions caused by the pandemic, both for survival while also restoring some normalcy amid the overwhelming chaos at the onset of the pandemic.

Closer to home, there have been many brilliant government-led innovations that sought to overcome the unprecedented challenges experienced at the height of the pandemic. In the education sector for instance, we have seen e-learning gaining more traction as schools worked tirelessly to ensure access to education remained uninterrupted.

A notable example is the replication of the Sunward Park High School e-Learning Solution which uses a suite of technologies to enable distance learning and teaching.

More COVID-19 inspired innovations emerged in various critical sectors aligned to government’s key priority areas. These commendable achievements tell a story of a public sector that has consciously and deliberately prioritised agility, flexibility and adaptability over rigidity to ensure resilience and continuity. They tell the story of how, in the face of the pandemic, opportunities to find fit-for-purpose innovations emerged, enabling continued delivery of services to citizens against all odds. We need to laud and appreciate such efforts at all times.



These examples show the importance of innovation in society and why it needs to be nurtured and promoted in the public sector at all times. It is therefore of critical importance that all public sector institutions work together and adopt a government-wide culture of innovation in all its operations, particularly in service delivery.

The work of the Centre for Public Service Innovation (CPSI) to drive public sector innovation is vital in this regard. As part of its mandate, the CPSI is entrusted with the responsibility to promote and inculcate a culture and practice of innovation in the public sector to improve service delivery. This mandate necessitates collaboration across all spheres of government, with the CPSI playing a pivotal role in supporting efforts to build an effective and efficient public service through innovation.

Therefore, our work, which is government-wide in scope, is buttressed mainly around creating an enabling, innovation-friendly environment within the public sector. The creation of this environment allows public servants to freely unleash their talent, ingenuity, and creativity to find innovative solutions to service delivery challenges encountered at the coalface of service delivery.

“We view innovation as a key ingredient and a critical enabler for service delivery improvement.”

It is a game changer for the achievement of government's key priority of creating a better life for all as envisaged in the National Development

Plan, the African Union's Agenda 2063, and the United Nations Sustainable Development Goals.

In our mission to unearth, promote, showcase and ultimately recognise and reward innovation in the public sector, we manage a variety of programmes, one of which is the Annual Public Sector Innovation Programme. The CPSI has successfully run this programme annually, even during the pandemic, underscoring the importance of innovation in our work and our determination to persistently forge ahead against all odds.

The public sector is rich with innovative ideas, and contrary to popular belief, public servants demonstrate remarkable innovation when provided with an appropriate and enabling environment. This is evident from the overwhelming number of quality innovative projects enrolled into the Awards Programme each year from the three spheres of government. More importantly, this proves beyond doubt that the spark of innovation ignited by the CPSI is spreading steadily, driving transformation across the public sector.

Our programme to replicate effective innovative solutions continues to be successful. Through this programme, the projects that have improved service delivery are identified and adapted for implementation in other areas facing similar challenges. While this highlights the importance of information and knowledge sharing in advancing service delivery, it also ensures that government resources are not wasted on re-inventing the wheel, but are redirected to where they are needed most.

It is exciting to see that through the influence of the CPSI, there is increased collaboration among government institutions to fully leverage innovation as one of the main building blocks for a capable state. We have further observed that departments are starting to build internal capacity by employing coders and developers.



A case in point is the *BIZPORTAL Project* which features an in-house solution by a former employee of the Companies and Intellectual Property Commission (CIPC), Mr Tando Luyaba, rather than opting for an off-the-shelf solution.



MR TANDO LUYABA

The Public Sector Innovation Awards Programme will continue to be a source of innovation projects for the CPSI's Institutional Support and Replication Programme, which aims to encourage upscaling and mainstreaming of these solutions throughout the public sector for greater impact, particularly in support of the District Development Model (DDM). We will continue to recognise outstanding innovations year on year, as we keep on incentivising public officials to innovate. I encourage all public servants to continue finding solutions to pressing problems through innovation, so that we can serve our citizens better.

In conclusion, let me emphasise that innovation is a key that unlocks value for governments. Innovation is not a luxury of wealthy nations, but a crucial driver of growth, development, and sustainability. It enables us to tackle challenges such as austerity and limited resources effectively. Let us embrace public sector innovation!

THE WESTERN CAPE INNOVATION NETWORK



MARCIA KORSTEN

*Former Innovation Strategist,
Department of the Premier
Western Cape*





Societies worldwide face challenges that traditional public services often struggle to address, compelling governments to seek innovative solutions. However, effective innovation cannot occur in isolation - it requires strong networks. Networking is crucial for building innovation capacity, enabling collaboration and fostering sustainable improvements. Therefore, this article highlights the Western Cape's Innovation Network, which has played a pivotal role in fostering a culture of innovation in the province. The Centre for Public Service Innovation (CPSI) presently receives over forty innovation project submissions annually from the Western Cape for the Public Sector Innovation Awards. While we cannot attribute this increase solely to the establishment of the network, there is strong reason to believe it has significantly contributed to this trend.

It is important to note that the Western Cape Government's Innovation Network is the first of its kind in the South African public sector. This approach to public sector innovation is being explored by some Western countries, including Australia and some Organisation of Economic Co-operation and Development (OECD) countries. The rationale behind this approach is the recognition that public sector organisations must develop internal and external partnerships with multiple stakeholders for collaborative, problem solving initiatives. These external stakeholders include other government departments, other organs of state and non-governmental organisations, all of which play a critical role in public sector innovation.

A network-based approach to innovation ensures that innovation initiatives are collaborative rather than isolated efforts. By fostering a culture of shared knowledge and resources, innovation networks help reduce duplication, combine strengths and maximise impact.

BUILDING THE NETWORK

With regards to the Western Cape, the impetus came from the political leadership who called for the province to integrate innovation in its service delivery operations and overall approach to governance. At the beginning of the current five-year provincial strategic planning cycle, the Western Cape Government (WCG) set innovation and culture as key themes in its strategic priorities. As a result of this focus, the WCG developed the Innovation for Impact Programme, which was assigned to a small team in the Department of the Premier in 2021. One of the key initiatives emerging from this programme was the establishment of the WCG Innovation Network to create and foster a culture of innovation within government and encourage creative problem solving for widespread impact.

The building blocks for the transversal approach to innovation started a few years ago when the Department of Economic Development and Tourism was tasked with investigating the role of innovation in the public sector and how it could be applied in the public sector. The team consulted the Centre for Public Service Innovation (CPSI) and engaged on public sector innovation and its relevance in South Africa. The takeaway from the engagement was that public sector innovation exists to make a difference in the lives of the people we serve. The CPSI advised that innovation should be seen as a tool to find solutions for continuous improvements to create better outcomes.

The initial phase of this exercise involved engaging with all government departments in the province to understand their perspective on innovation and identify potential areas of improvement within their respective areas.

Through this exploration it was recognised that government can play different roles within the innovation space such as:

Government can innovate

Government can enable innovation

Government can support innovation

Government can be a procurer of innovation

It was recognised that all these can make a difference in the development of an innovation ecosystem in the Western Cape. Focusing on an enabling and facilitating role, the team adopted an approach of forging new partnerships and leveraging existing ones. The aim was to connect various entities within the Western Cape Government with other government organisations and partners such as the CPSI, to see how they could strengthen the culture of innovation and citizen-centric service delivery.

ENABLING AND EMBEDDING INNOVATION

Four enablers have been adopted to enable and embed innovation across the province, namely :

A

PROVIDING SPACE FOR EXPERIMENTATION AND EXPLORATION

Some departments, namely, Department of Health, Department of Agriculture and the Department of Economic Development and Tourism have already created and provided these spaces.

The next space is for people from across the Western Cape government to come together to bring the lessons they have learnt, share knowledge and practice and broaden the collaboration. In exploring ways to share knowledge on public sector innovation within the Western Cape, the Western Cape Government Innovation Portal contains a lot of information on innovation, including innovation tools such as design thinking currently being refreshed with up-to date information and resources.

An innovation mapping study which is currently underway, looking to document and learn from examples of innovative initiatives has shown how rich the current innovative practices across departments already are.

B

EQUIPPING OFFICIALS WITH CAPACITY TO INNOVATE

Another objective is to equip employees in the province with capacity to innovate. This is mainly about giving them tools and training in collaboration with the Provincial Training Institute and other partners. For example, Lean Management Training and Apolitical micro-courses are offering digital transformation, gender mainstreaming etc. Capabilities are being built applying "Problem-driven Iterative and Adaptation" Harvard methodology on problem solving. Others include Behavioural Insight and Design Thinking offerings. These programmes are to encourage people to start equipping themselves so that they can start doing things differently.

C

ENGAGING DIVERSE STAKEHOLDERS FOR COLLABORATIVE, PROBLEM SOLVING INITIATIVES (INTERNAL, EXTERNAL AND PUBLIC)

One of the achievements is that every head of department in the province has nominated Innovation Champions who are already engaging actively. The role of the Innovation Champions is to share what their departments are doing with regards to innovation and share lessons learnt from other departments (and other partners). Their role includes connecting, collaborating and working on areas of change within the innovation space and the broader innovation network.

D

ENTERPRISING – ABILITY TO MOBILISE FUNDING FOR INNOVATIVE INITIATIVES

Enterprising in this context refers to the act of resourcefulness and exploring flexible governance arrangements and procurement frameworks (which keep governance principles intact) to enable innovation.

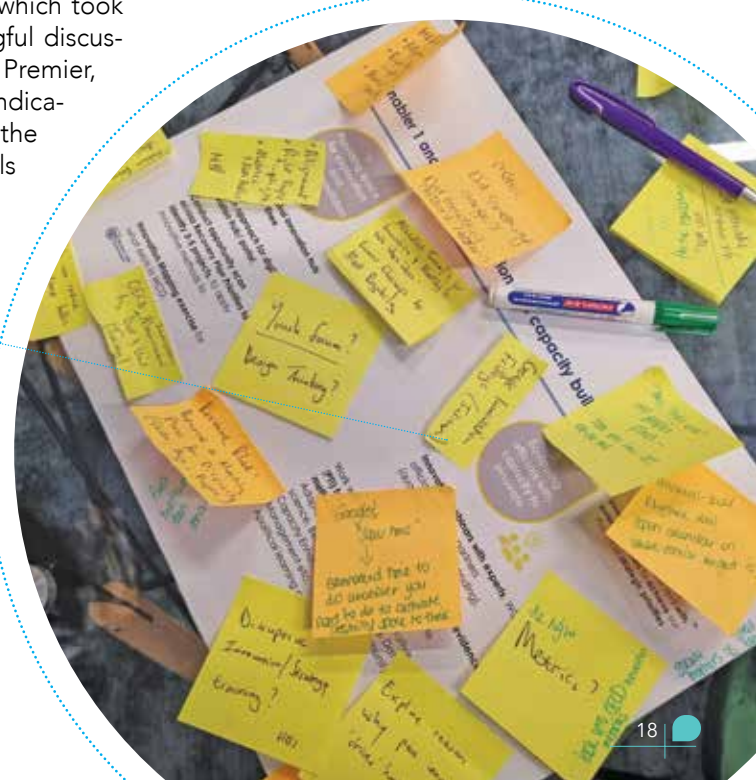




CONCLUSION

In closing, we reflect on the launch of the Innovation Network which took place in May 2022. The event served as a platform for meaningful discussions on public sector innovation. The presence of the province's Premier, Mr Alan Winde and the Director-General, Dr. Harry Malila was indicative of the importance that the provincial leadership placed on the WCG Innovation Network. Strong support from the highest levels of government is a critical enabler of success and the Western Cape stands as a clear example of what can be achieved with support from leadership.

According to Korsten, "As innovation is one of our values, the WCG looks forward to continuing the innovation journey and building the WCG Innovation Network as it strives to impact positively across the province and on people's lives". Looking at the number of project entries that were entered by the Western Cape Government for the 2022 Annual Public Sector Innovation Awards, we can already see the fruits of this initiative. We hope that other provinces can replicate this initiative in pursuit of an innovative public sector in South Africa.



CITIZEN-CENTRIC DIGITAL TRANSFORMA- TION

BACKGROUND

The digital age is influencing and impacting every sphere of human existence, with various sectors of society having no choice but to evolve and adapt for the sake of progress and gaining a competitive advantage. Likewise, governments are extremely impacted by the digital era due to their fundamental role in society and their responsibility to serve the citizenry. Therefore, with technology playing a crucial role in various aspects of life, the absence of a cohesive digital strategy would certainly adversely affect any government's ability to meet citizens' expectations and needs.

ANEESA BASHA

*Acting Chief Director: Strategic IT,
Department of the Premier
Western Cape*



Prompted by challenges such as slow service delivery, lack of integration among government departments and limited access to public services for remote and underserved communities, the Western Cape Provincial Government embarked on a relentless drive to find a solution that would enable citizen-centric, efficient, transparent and accessible public services.



In this regard, the Digital Transformation Plan (DTP) was conceived as a strategic response solution to these challenges, aiming to harness the power of technology to transform public service delivery and ensure equitable access for all citizens.

INNOVATION

The DTP comprises several integrated IT strategies from 13 departments, which have been consolidated into a unified plan. The primary purpose of this comprehensive plan is to achieve enhanced digital services for citizens, embodying a 'one government, one citizen' philosophy.

The plan represents a significant innovation which compels departments to change focus from developing IT systems from a "digital for employees" perspective to "digital for citizens." By integrating IT strategies from different

departments, it achieves a service delivery driven approach to digital transformation planning. This was augmented and validated by an independent assessment which was driven by citizen feedback from over 2400 citizens, mainly from rural regions. This provided a holistic independent view of the success of this approach.

The unique nature of this method has enabled the e-Innovation Branch which is in the Department of the Premier to implement the digital government strategy successfully. This success was validated through an assessment that compared it with standards like the United Nations Online Service and the e-Government Index. When benchmarked against countries such as Estonia, Kenya, and Brazil, the strategy emerged as a leader in certain areas. This wasn't just due to quantitative achievements, but also the qualitative transformation seen among the citizens of the Western Cape.

IMPACT

The DTP has significantly improved service delivery and quality of life for Western Cape citizens, particularly in education, health, safety and housing. An exhaustive peer assessment and feedback from citizens highlights the plan's widespread reach and alignment with citizens' digital behaviours, indicating a strong and sustainable impact across various sectors.

SUSTAINABILITY

The rising demand for digital services emphasises the need for continuous innovation and readiness. Investments in broadband and digital literacy, coupled with strategic initiatives and a culture of innovation, will ensure the plan's sustainable responsiveness to changing needs, while also maintaining the relevance and effectiveness of digital services.

A significant aspect of the plan is the integration of citizen-centricity in digital service design, which ensures the continued relevance and effectiveness of offerings. At the same time, ensuring that the culture of innovation is inculcated and cemented proved to be a major driving factor and this was highlighted by bi-weekly innovation events. These sessions fuel creative ideation, allowing the Branch to adapt its services to dynamic demands. Resource optimisation is also pivotal, as evidenced by the Branch's recognition at the Public Sector Innovation Awards in 2022.

An agile development methodology ensures adaptability and rapid response to changing digital needs, maintaining the currency of the services offered. Meanwhile, stringent governance and security protocols ensure the digital ecosystem's trustworthiness and safeguard data integrity.

Together, these endeavours enhance the DTP's central coordination. They ensure that the strategy remains innovative and responsive within the province's broader digital government ambit. The momentum may enable scale beyond the province, catalysing advancements across South Africa and positioning the e-Innovation Branch as a symbol of readiness in the dynamic digital domain.

REPLICABILITY

The Interprovincial Collaboration Partnership, which started with the CIOs of the Northern Cape, Western Cape, and Eastern Cape provinces has proven that the innovative DTP is replicable and scalable. Replication in this regard involves sharing implemented digital services and use of cases studies to prevent duplication, curtail wasteful

spending, and maximize resource efficiency while adhering to guidelines. This collaborative approach promises to reshape digital services and governance across provinces, demonstrating the plan's potential for national impact.

CHALLENGES AND LESSONS

There have been several challenges that emerged during implementation, which can potentially derail efforts to transition to smart service delivery. These include aligning government services and budgeting with digital transformation needs. The Western Cape Provincial Government addresses these through centralised coordination and robust planning, emphasising the importance of incremental implementation and learning from each phase of the digital transformation process.



This gives all stakeholders an overview of what is planned, enabling them to use this information to leverage other departments requirements to solve their challenges.

Costing IT requirements tends to be challenging due to misalignment between budgeting and funding cycles and the IT planning cycle. In addition, the total cost of rolling out the digital services is not always end to end, leading to inaccurate budgeting by departments. Therefore, because of the cost implications involved in digital transformation, the Western Cape Provincial Government adopted a central coordination approach to monitor the implementation of the digital government strategy incrementally in carefully crafted phases. Based on the lessons learnt, a robust resource demand planning strategy that will cover the resource cost per activity, and track the actual hours spent on an activity to adjust decisions needs to be implemented. Furthermore, through central coordination there will be continuous learning and improvement on the planning side.

CONCLUSION

The Western Cape Government's Digital Government Strategy addresses the Fourth Industrial Revolution by transitioning to a citizen-centric service model. The Branch provides IT support at provincial level from its position in the Department of the Premier, and is therefore best placed to drive the shift to citizen centricity across all 13 departments.

The COVID-19 pandemic was a catalyst for change in terms of providing fertile ground for IT and digital transformation, with the DTP directly reflecting a commitment to innovation and service improvement, while positioning the Western Cape as a leader in digital transformation.

THE JOURNEY



OUR SERVICES



MOBILE eCENTRE



80 eCentres across the Western Cape

INFORMATION SECURITY MANAGEMENT SYSTEM



DEIDRE MARAIS

CHIEF INFORMATION SECURITY OFFICER,
DEPARTMENT OF THE PREMIER WESTERN CAPE

BACKGROUND

Following a decision by government to work towards becoming a capable ethical developmental state, many government institutions have increasingly turned to technology to improve their performance and productivity. This includes digitising their various systems and processes and adopting scientific data for improved governance.

However, while information technology brings with it many benefits, the reality is that compromised and unreliable IT systems can have major unprecedented setbacks. These include for instance:

- >> Data and privacy concerns, particularly affecting government functions such as education, health or social services which are increasingly reliant on IT systems to process sensitive citizen information
- >> Staggering financial risks following information security violation
- >> Reputational damage and unavailability of services due to unplanned downtimes

The Western Cape Provincial Government (WCG) also felt the need to embark on a digital government transformation programme to bring about a structured approach towards enhancing security governance and operations.

THE INNOVATION

The Western Cape Information Security Management System (ISMS) is a true demonstration of the province's commitment to embrace innovation. The programme boasts several strategic enablers with touchpoints across 13 departments coupled with citizen interactions. It leverages Artificial Intelligence (AI) capabilities of Microsoft and Cisco Security products, including Sentinel, Microsoft Defender and the Cisco threat intelligence.

The system assesses information security risks, establishes clear policies and processes, and ensures compliance with ISO 27 000 standards. That way, it fosters a culture of information security in line with the set information security goals. In addition, by documenting processes and continuous improvement cycles, the management system also strengthens data protection and business continuity, while continuing to build trust with the citizens through the protection of confidentiality, availability and integrity.

The underlying strategy calls for an increased dependence on IT systems enabled by a risk-based ISMS. This has transformed the threat detection and response landscape in several ways, namely:

- >> The real-time data analysis and predictive threat identification in the system has empowered the Western Cape government to pre-emptively address potential security incidents.

» The provincial government can protect digital identities by leveraging end-user behaviour analytics to learn more about their working patterns and behaviours. This also capacitates the government to adapt its responses based on insights gained through machine learnings. Furthermore, this innovative approach minimises the vulnerability exposure of the provincial government, while also enabling measures to ultimately safeguard critical assets.

» Playbooks and automation rules are implemented to allow automated responses to multiple incidents and threats that are triggered by security incidents and events system (SIEM). This frees up valuable time for resources to investigate more complex threats.

» Finally, the provincial government managed security SOC service consists of a group of engineers that monitors and respond to threats while leveraging AI enabled tools and technologies, security processes and threat intelligence from strategic partnerships. These advancements further elevate the provincial government's defence mechanisms and empowers it to maintain a robust security posture.

The Western Cape government uses the Microsoft Secure Score as one of the measurements of its security posture. The security score has steadily increased from 40% to 60% over the last 12 months.



In its pursuit of comprehensive cybersecurity, the provincial government has gone beyond conventional methods. It has also adopted KnowBe4 awareness training and performs monthly phishing simulations. By providing training to employees and simulating real-world phishing scenarios, the government fosters a security-conscious culture. This has phenomenally increased cyber awareness amongst employees and fortified its defence capacity, that way demonstrating a proactive commitment to operations and data safety and improved trust and reputation amongst citizens.

IMPACT

The integration of threat Intelligence and the successful implementation of AI-driven technologies, complemented by KnowBe4 awareness training and phishing simulations, has yielded substantial benefits for the Western Cape government. Notably, its Microsoft Secure Score has significantly increased to 60% through the meticulous implementation of security recommendations and the remediation of security issues identified by the SIEM and antivirus platforms. This improvement underscores the government's dedication to proactive risk management and alignment of security practices with approved industry standards i.e., ISO 27 000 and NIST, while also fortifying its defence capabilities.

Equally impressive is the marked reduction in the susceptibility to phishing attacks. The introduction of KnowBe4 training has cultivated a vigilant workforce capable of discerning potential phishing emails, leading to a substantial decline in clicked phishing links. This achievement speaks to the successful cultivation of a security-aware culture, empowering our employees to actively mitigate cyber threats.

Beyond the quantitative outcomes, the project has enriched the team's proficiency in leveraging advanced technologies for threat detection and response.

This hands-on experience has enhanced incident management capabilities and positioned the Western Cape as experts in the cybersecurity landscape. Moreover, the KnowBe4 training has fostered a shared sense of responsibility among employees. The "security is everybody's responsibility" campaign has promoted a collaborative environment dedicated to safeguarding digital assets of the provincial government.

A recent report from the Auditor-General of South Africa (AGSA) based on a 2023 vulnerability assessment and penetration testing of the Western Cape Department of the Premier's external infrastructure found only two vulnerabilities. One was rated as a low risk finding due to the complexity of exploitation, while the other was rated as a high-risk finding. This is a significant improvement from the previous year's audit findings since no significant deficiencies in the IT Security controls were identified. All the improvements and remediation actions detailed in this AGSA report will be implemented to further improve the security posture of the external network.

Additionally, the project has solidified the Western Cape government's reputation as a security-focused government, enhancing credibility and trustworthiness among national and provincial departments, citizens and industry partners. This positive perception strengthens relationships in an increasingly interconnected digital landscape. In summary, the integration of AI driven technologies and automation rules, together with KnowBe4 training has delivered a host of benefits, including a notable increase in our Microsoft Secure Score and Gartner IT Score for Security and Risk Management. There is a significant reduction in phishing susceptibility, enhanced expertise and elevated levels of reputation and trust in the Western Cape provincial government. These achievements underscore our commitment to innovation and security, while positioning us as a resilient and credible player in the cybersecurity arena.

SUSTAINABILITY

Ensuring sustainability of the Information Security project has been of paramount importance. The following vital measures were enacted to guarantee the lasting value of integrating AI driven technologies and awareness training:

1 CONTINUOUS VIGILANCE AND ENHANCEMENT:

An ongoing framework for vigilant monitoring has been established and is performed by the onsite IT and Security teams, as well as the SOC. In addition, regular assessments of Microsoft Secure Score, Gartner IT Score for Security and Risk Management, security controls and employee awareness levels are conducted on an ongoing basis to ensure that defenses remain robust. This proactive stance allows a swift adaptation to evolving threats and vulnerabilities.

4 REFINED INCIDENT RESPONSE:

Incident response procedures undergo continuous review based on real incidents and simulations. Regular updates and tests ensure the ability to effectively manage and mitigate security incidents, thus minimising impact.

7 STRATEGIC COLLABORATIONS:

Leveraging partnerships with cybersecurity experts and solution providers equips the department with the latest insights and technologies.

2 PERSISTENT TRAINING AND AWARENESS INITIATIVES:

There is a strong commitment to fostering a security-conscious culture in the Western Cape government, thanks to the KnowBe4 training sessions and phishing simulations which have become a culture. This consistent approach ensures that employees stay informed and vigilant against phishing threats, which in turn results in a strengthened defence.

5 AUDIT AND COMPLIANCE FOCUS:

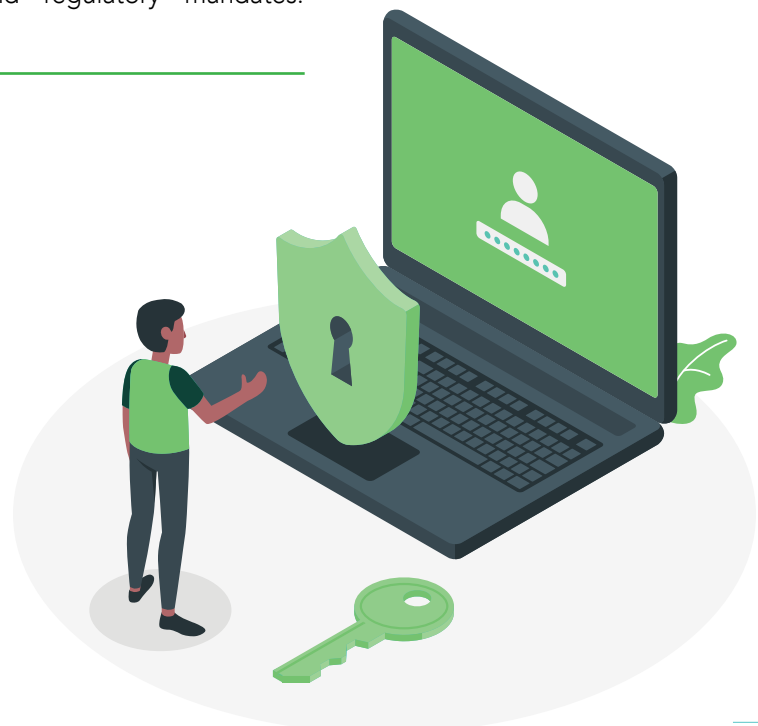
Scheduled audits and compliance assessments validate the efficacy of Microsoft Sentinel and Defender configurations and other security tools. This regular evaluation ensures ongoing alignment with security standards and regulatory mandates.

3 ADAPTATION OF SECURITY CONTROLS:

Recognising the changing nature of cybersecurity, adaptive security controls were implemented. These controls can be flexibly adjusted to respond to emerging threats, providing agility while adhering to best practices approved by the WCG Enterprise Architecture Board.

6 STAKEHOLDER ENGAGEMENT:

Transparent communication with all stakeholders has been adapted to demonstrate the commitment to long-term security. This engagement builds trust and reinforces the department's dedication to maintaining a secure environment.



“Knowledge transfer sessions and workshops would expedite the replication process and create a supportive environment for seamless integration.”

REPLICABILITY

The scalability and replicability of the ISMS within government entities is rooted in a well-defined framework that can be adapted to the various spheres of government. This approach offers a standardised yet flexible model for scaling the project, while ensuring consistent benefits across various entities. To scale, a comprehensive blueprint would be established, detailing the step-by-step implementation process of the ISMS. This blueprint would serve as a roadmap, guiding other government entities through the stages of assessment, policy development, implementation of controls and continuous improvement.

It provides a structured foundation that can be easily tailored to suit specific operational nuances. Replication involves customising the ISMS framework to align with the unique needs of each government entity. By conducting an in-depth analysis of the risk profile, compliance requirements and strategic goals, implementation can be fine-tuned for optimal effectiveness. Collaboration with stakeholders, including internal teams, security experts, the State Information Technology Agency (SITA), the State Security Agency and other regulatory bodies is essential for sharing insights and ensuring successful adaptation.

Knowledge transfer sessions and workshops would expedite the replication process and create a supportive environment for seamless integration. Additionally, showcasing the measurable outcomes of the ISMS implementation, such as enhanced risk management, regulatory compliance and incident response capabilities serves as a persuasive example of the project's impact. This evidence-based approach can encourage other government entities to embrace the ISMS framework and its benefits.

In summary, the scalability and replicability of the ISMS implementation across government entities depend on

a robust blueprint, adaptability, collaborative partnerships and proven outcomes. By leveraging these elements, a broader network of organisations can be empowered to elevate their cybersecurity governance, align with industry best practices and ensure long-term information security.

CHALLENGES AND LESSONS

During the implementation of the project, significant challenges were encountered, particularly the lack of employee buy-in and internal cybersecurity expertise. Addressing these issues was vital for the success of the project. To tackle this, a proactive engagement strategy was initiated. Regular communication, workshops, and one-on-one interactions with Ce-I staff and departmental Security Managers, provided a solid platform to address concerns and highlight the project's advantages. This approach gradually garnered employee support and commitment.

To tackle the lack of internal cybersecurity expertise and skills required for certain aspects of the project, strategic collaboration and engagements with industry partners were established. Leveraging their expertise and resources enabled successful navigation of complex challenges.

These solutions not only helped to deal with some of the key challenges but also fostered a collaborative environment. By valuing employee input and external expertise from managed security services contracts, the project's success was ensured and importantly, the Western Cape government's cybersecurity capabilities were strengthened.

CONCLUSION

By embracing AI capabilities from Microsoft and Cisco Security products and implementing KnowBe4 awareness training, the Western Cape government has harnessed innovation to meet critical government requirements. This approach aligns with government's priority of building "a capable, ethical, developmental state" by enhancing cybersecurity measures.

The AI-driven analysis in Microsoft Sentinel (SIEM), Defender and Cisco Intelligence serve a critical purpose of strengthening the provincial government's ability to prevent threats, while also ensuring the safety of sensitive information and supporting efficient, ethical operations. Furthermore, the adoption of KnowBe4 for IT officials and Thusong Service Centre staff contributes towards "social cohesion and safe communities." In addition, the training of IT officials using phishing simulations has fostered a security-conscious culture that extends beyond the organisation. This approach has gone a long way in strengthening cyber resilience, promoting awareness and responsible digital behaviour.

These innovative steps have not only ensured the achievement of governmental mandates, but also proactively advanced the security and cohesion of the public.

EARLY PROSTATE CANCER TREATMENT PROJECT

By **Dr. Duvern Ramiah** - Head, Charlotte Maxeke
Johannesburg Academic Hospital, Radiation Oncology



[BACKGROUND

The purpose of oncology units within public health-care institutions is to ensure that all South Africans who are diagnosed with cancer have access to oncologic treatment. Unfortunately, several medical facilities which provide a critical service are unable to function properly due to various challenges. These include, amongst others, a shortage of highly skilled staff such as nurses, radiation oncologists, medical physicists, radiotherapists, as well as lack of essential treatment equipment.

In Gauteng, Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) and Chris Hani Baragwanath Academic Hospital (CHBAH) were severely impacted by these challenges. As a result, the Radiation Oncology and Urology units at these hospitals faced extended waiting lists of patients waiting to receive prostate cancer treatment.



Traditionally, prostate cancer treatment has been administered through two primary methods. The first treatment option involved seven weeks of daily external beam radiotherapy (EBRT), while the second was a surgical procedure called radical prostatectomy, which required extended in-hospital recovery periods.

With limited linear accelerator time and surgical theatre time, patients faced treatment delays of up to five years, leading to deterioration of health in some cases.

[THE INNOVATION

Prostate brachytherapy is a more recent approach to early-stage prostate cancer treatment, following traditional methods such as external beam radiotherapy and radical prostatectomy.

In the prostate brachytherapy treatment method, radioactive seeds are inserted into the prostate to treat the cancer.

The procedure takes about one hour to complete, and patients are discharged the next day.

The procedure takes about one hour to complete and patients are discharged the next day. This reduced time is the greatest advantage regarding the prostate brachytherapy treatment procedure. In contrast, the radical prostatectomy treatment procedure takes four to five hours. However, the success rate in the brachytherapy treatment method is equivalent to the other treatment modalities for early-stage prostate cancer, and cures over 90% of patients.

When the brachytherapy prostate cancer treatment was first introduced in South Africa, it was available exclusively in private healthcare institutions. Public healthcare institutions could not implement the treatment due to a lack of relevant skills and the perceived cost of the radioactive sources or “seeds.” However, with new team members joining radiation oncology, this skills deficit in public healthcare institutions became a thing of the past.

The brachytherapy treatment procedure cannot be regarded as an innovation as it was adopted from other parts of the world where it had been in use since the early 2000s. What makes the project truly special is its disruptive nature. Disruptive innovation expands access to a technology by people who would not have had access in the past. In this case, it is safe to say that prostate brachytherapy has disrupted prostate cancer treatment, giving more men access to prostate cancer treatment.



PROJECT IMPLEMENTATION

The programme was first piloted at CHBAH as a joint initiative between CMJAH Radiation Oncology (RO), CHBAH Urology with support from BD Africa in July 2021. At the time, CMJAH was temporally closed due to a fire incident that disrupted operations. As a result, the CMJAH Radiation Oncology department decided to use the opportunity to partner with CHBAH Urology (as there is no Radiation Oncology there). The aim of this partnership was to introduce RO, train their staff and assist with the long prostate cancer waiting list. The plan was to eventually scale the prostate brachytherapy programme to CMJAH in 2022.

Following the success of the pilot at CHBAH and its implementation at CMJAH, the programme was then extended from an annual intake of twenty five patients to fifty patients who would receive the lifesaving prostate cancer treatment.

It is envisioned that the program will be accelerated as more staff become familiar and proficient at administering prostate brachytherapy.



IMPACT

Prostate cancer accounts for a considerable number of deaths among men in South Africa. This is exacerbated by general inaccessibility of oncologic treatment facilities, the scarcity of highly skilled radiation oncologists, medical physicists, radiotherapists and treatment equipment in the country.

Another major challenge in cancer treatment is that while early-stage cancer patients have the best prognosis, many individuals tend to seek medical help when the cancer is already at an advanced stage. On the other hand, due to the long waiting lists, patients who seek help early experience treatment delays until their cancer is less curable or incurable.

The prostate brachytherapy programme is making a significant positive impact on prostate cancer treatment. It provides men with prostate cancer an alternative to traditional prostate cancer treatment modalities such as the external beam radiotherapy or traditional surgery. In addition, due to its comparatively quicker treatment time, backlogs of patients waiting for treatment are reduced. This reduction in waiting times also benefits men who are ineligible for the brachytherapy procedure, to receive both radiotherapy and surgery quicker.



[SUSTAINABILITY

A sustainable project is one that can withstand numerous challenges such as resources and skills shortage, factors that might otherwise lead to its failure.

The introduction of the prostate cancer brachytherapy treatment at the two sites mentioned above was conducted in partnership with BD Africa, a multinational company which produces the radioactive sources or “seeds” for the brachytherapy procedure.

The company sponsored the seeds for the first twenty patients at CHBAH and twelve patients at CMJAH. Once it was proven that this treatment provided an overall cost saving compared to the pre-existing traditional prostate cancer treatment methods, CHBAH committed to funding of the seeds for a further fifty patients to receive treatment annually. It is hoped that CMJAH will follow suite.

As discussed above, treating prostate cancer with brachytherapy is cost-effective. There are many areas in which savings are realised, including theatre time, hospital stay time, medical personnel time (nurses, oncologists, urologists, radiotherapists etc.), including the treatment of patients who are resistant to other expensive hormonal and chemotherapeutic agents which runs into thousands of rands per month.

Historically, the oncology department lacked the necessary skills to provide this service, however with the appointment of the new head of radiation oncology and a medical physicist- both experienced in brachytherapy, the procedure is performed regularly, with colleagues that are trained to ensure the long-term sustainability of the project.

[CONCLUSION

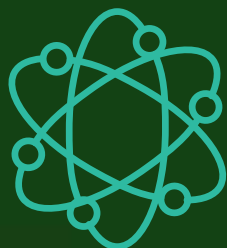
The initial challenges included shortage of staff skilled in the procedure, which meant that the same staff members had to perform every treatment procedure, cutting into their normal work schedule. This issue was particularly acute given the overall shortage of staff in radiation oncology. However, as the project progressed and more staff trained in how to administer the procedure, the workload became more manageable due to available additional support.

Furthermore, it has become clear that integrating this project into a structured teaching and skills transfer is essential to ensuring its long-term sustainability.



CENTRAL CHRONIC MEDICATION DISPENSING AND DISTRIBUTION PROGRAMME

By **Maggie Munsamy** – NHI Technical Specialist, Contracting, Head:
CCMDD, National Department of Health



BACKGROUND

South Africa has been experiencing an unprecedented growth in patients requiring access to long term therapies. This is driven in part by universal access to Antiretroviral Therapy (ART) and a steady increase in patients with non-communicable diseases (NCD). This has led to over extension of public healthcare facilities, creating strain on available resources, contributing towards medicine shortages, long waiting times and challenges in the quality of care provided by the National Department of Health (NDoH).

Traditionally, medicine prescriptions are manually written on paper by medical practitioners. In the public sector alone, about 3 597 facilities generate huge volumes of paper-based prescriptions, resulting in a huge administrative burden.

On the other hand, medical practitioners, including doctors and clinicians have made clinical and administration errors while writing out prescriptions, resulting in scripts being returned for correction at a cost. This led to patients being inconvenienced and compelled to go back to the facility to collect their medication on an expired script. This was further complicated by the soaring cost of duplicate prescription books. The need to go digital became a necessity.

THE INNOVATION

The Central Chronic Medication Dispensing and Distribution (CCMDD) is an initiative of the Ministry of Health to create alternative access to chronic medication for stable patients. Launched in 2014, CCMDD is a flagship programme for the National Health Insurance. CCMDD's patient-facing branding is called "dablap-meds," meaning short-cut to chronic medication.

The CCMDD programme comprises two parts. In the first part, scripts are collected from the facility either manually or electronically and dispensed.

The second part is distribution of the dispensed parcels in accordance with patients' choice either to external private contracted pick-up points (PUPs), fast lane at public facility or outreach. Patients can choose their PUP either closer to home or workplace, whatever is most convenient for them.

A nominated proxy may also collect the parcels on behalf of a patient. Patients can choose from the 3 000 contracted external PUPs or from the 3 601 public facilities. Patients can choose from a variety of PUPs, for example, smart locker, corporate pharmacies, doctors' rooms, containers and Non-Profit Organisations.

Currently 5,658,427 patients are registered and of these, 1,711,870 patients collect their medicine parcels from 3,000 contracted private external PUPs.

HOW THE PROGRAMME WORKS

The CCMDD programme was implemented in 2014 in eleven pilot districts as a National Health Insurance (NHI) initiative. Due to the positive uptake of the programme, it quickly expanded to eight provinces and all districts. Initially the programme was rolled out to primary healthcare facilities, but provinces also rolled it out to government hospitals.

Patients who are on chronic medication and are stable are registered on the programme with a six month repeat prescription. A patient collects the first supply from the facility. The remaining five repeats are then collected from the patient's preferred PUP. Each patient visits the healthcare facility twice in a year in accordance with the six months repeat prescription. This saves patients time and transport costs. However, if patients are not well, they are encouraged to visit the healthcare facility.

Additionally, the innovation digitises a patient's public health prescription at the public health facility. This is also the

first time that a prescription is written up by the healthcare facility, and that prescription is in turn dispensed at the facility and delivered to PUPs (private or public).

The platform is a web-based solution that can be deployed throughout the country, the formulary is determined by the provinces ensuring equity in healthcare. The electronic mechanism allows for duplicate prescriptions, or contraindicated medicines to be identified for adherence to treatment protocols, with an improvement in health outcomes. The contracted service provider adds additional details to the patient record about the items dispensed, namely, its date of dispatch and delivery.

A barcoded reference is attached to each parcel to allow for it to be tracked through the distribution and collection legs of the service. This makes it possible for a parcel to be tracked from the time it leaves the service provider to the time it is collected by the patients.

This information is fed to the PUPs which can be private or public for them to scan in medicine parcels, and scan out parcels as patients collect them. This is the first time that public healthcare sector patients can collect the correct parcel at the correct time at private healthcare facilities. Patients are sent SMSs, indicating that they can collect their medication and if patients do not collect within 48 hours, the service provider sends another SMS to remind the patient. Patients have seven days to collect their parcels, thereafter the parcel is uplifted.

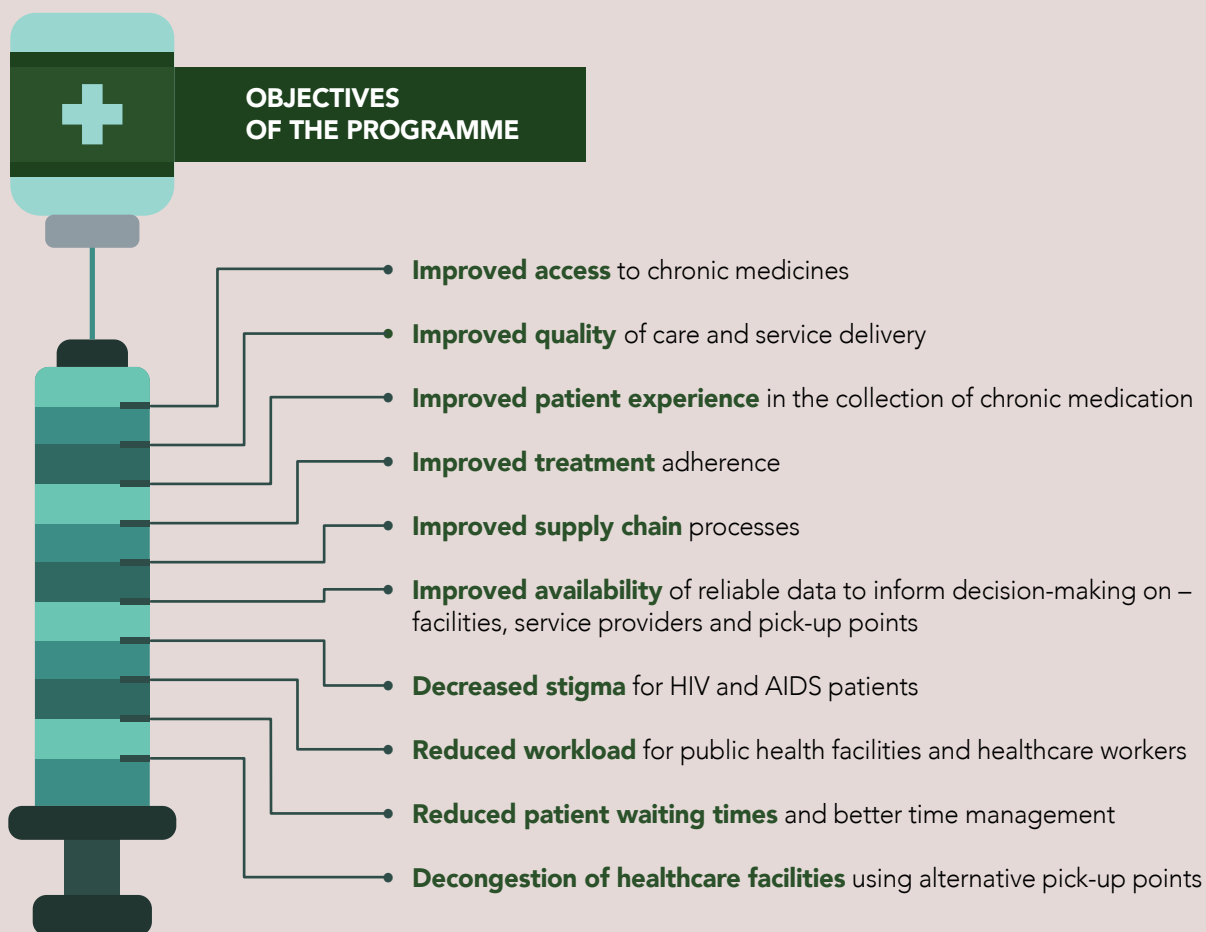
With detailed data collected at every step in the process, unfortunate mistakes such as incorrect prescriptions were eliminated, leading to benefits such as patient adherence, demand planning, stock utilisation and many others being realised.

The CCMDD programme cuts across several programmes such as HIV and AIDS, TB, Care and Support, Chronic Disease and Geriatrics.

IMPACT



Each of the challenges experienced in public healthcare were turned into objectives for the programme.



An external evaluation by the NHI in August 2019 indicated that “the strong political leadership and will behind CCMDD contributed towards its successful implementation. CCMDD was scaled up beyond target and the consistent monitoring of the programme contributed to the availability of reliable data to support its continued roll-out. The findings suggest that CCMDD is overwhelmingly believed to be the NDoH’s most successful intervention implemented during phase 1 of the NHI. The noteworthy success of CCMDD is understood to be linked to the strong and visible leadership behind the programme.”

There are numerous studies on CCMDD exploring various aspects of its design, implementation and impact. A paper published in 2022 on tracking adverse drug reactions (ADRs) and medication errors in CCMDD revealed that “adverse reactions were low and about one in seven patients reported ADRs under TLD. Medication errors were low, possibly due to effective quality control measures.”

Patients have supported the programme since inception and requested to be enrolled into the programme.

monthly basis to relevant individuals only. Sensitive reports containing patient information are protected and circulated to certain individuals only. Reports that need handling are sent daily via the system Application Programming Interface (API) to prescribers who are registered and have access to the system.

The service providers send data via the API to the electronic system. Manual prescriptions are sent via email or via delivery. Access to the electronic platform is a controlled environment. There are various levels of access to the system e.g. A PUP can only see their PUP information and they still need valid log in detail. On the administration side all SLAs are managed through the system.

CONCLUSION

The CCMDD electronic system was developed for prescribing, including formulary and treatment protocols, parcel management for PUPs including administration of PUPs and reporting. Reports are developed for the various levels, from national, provincial, district, facility and funder level. These reports are circulated on daily, weekly and



NEW REVOLUTIONARY GLAUCOMA TREATMENT

— Developed in South Africa —

**DARREN PARKER**

Senior Contributing Editor,
Creamer Media



A South African medical innovation company Liquid Medical has developed a groundbreaking ocular implant called the OptiShunt that uses a simple concept to revolutionise glaucoma treatment.

The development of the OptiShunt was funded and supported by the Health Unit of the Technology Innovation Agency (TIA) – an entity of the Department of Science and Innovation (DSI).

The TIA Health Unit aims to accelerate technological innovation in healthcare

by developing and commercialising health products and services in South Africa, to increase access to healthcare, reduce healthcare costs, enable local manufacturing and reduce imports, while developing and nurturing health innovation skills.

The OptiShunt was conceptualised by ophthalmologist and Liquid Medical CEO, Dr Daemon McClunan after observing the problems caused by glaucoma in patients in rural Northern Cape.

OptiShunt is 50% more effective than the current gold standard in the treatment of Glaucoma.



Traditional glaucoma devices drain excess ocular fluid by creating a fluid-filled blister on the surface of the eye, called a bleb. However, blebs are uncomfortable, associated with a high risk of complications and failure, and require lifelong patient monitoring and management by healthcare professionals.

Therefore, traditional glaucoma surgery is one of the least cost-effective and most quality of life impacting ophthalmic interventions.

Glaucoma is a leading cause of irreversible vision loss worldwide. In South Africa, vision loss is one of the prevalent disabilities and accounts for 32% of all cases. Glaucoma is caused by a build-up of fluid pressure in the eye, resulting in irreversible damage to the optic nerve.

The OptiShunt uses a unique mechanism that creates a self-regulating system, which in turn provides highly effective pressure control, while avoiding the complications and costs associated with traditional devices.

It is designed to limit unsightly bleb formation and the complications that could arise.

Vision loss often results in unemployment and loss of income, which leads to increased hunger and, ultimately, lower standards of living. Approximately

97% of visually impaired individuals are unemployed, with 90% residing in rural communities. Additionally, South African women are 40% more likely to experience visual impairment than men.

The OptiShunt implant enables access to quality healthcare for vulnerable population groups, particularly those in the public healthcare space. This segment of the population has historically been excluded from the use of traditional glaucoma treatment devices owing to high costs.

According to TIA, tests conducted have shown that the OptiShunt is 50% more effective than the current gold standard in the treatment of Glaucoma.

"Blindness has dire personal, social, and economic impact, particularly among those at the bottom of the pyramid. The goal for TIA is to identify and support innovations that have the potential to address society's challenges. The success of OptiShunt would enable access to quality healthcare at a reduced cost with much better clinical outcomes," said TIA Health Head, Osmond Muroyiwa

The use of the OptiShunt halts the progression of blindness and affords the patients an opportunity of a better life and the ability to contribute to the betterment of their families and communities.

Furthermore, the OptiShunt will be manufactured locally and therefore presents an opportunity to create jobs, reduce reliance on imports and open avenues to export the product.

The next phase in the development of the technology is to conduct regulatory clinical trials. The company is already in the process of obtaining the necessary quality management systems, regulatory approvals and ultimately certification such as CE marking – the European Union's mandatory conformity marking – and approval by the World Health Organisation.

"By leveraging local resources and industry partners such as the TIA, Liquid Medical has reached a significant milestone of first in human clinical trials 40% faster and 90% more cost-effectively than our European and American counterparts.

"In South Africa, we have the unique opportunity to combine the innovative drive of a resource-limited setting with the groundbreaking capabilities of highly skilled professionals and cutting-edge technology," McClunan said.

This article was first published in Creamer Media's Engineering News

EXPANSION OF CLUBFOOT SERVICES AND TRAINING PROJECT

By **JOSSLYN DE KOCK** – *Chief Physiotherapist,*
Charlotte Maxeke Johannesburg Academic Hospital

INTRODUCTION

Clubfoot is a common congenital musculoskeletal disorder that causes mobility impairment. It is a deformity in which an infant's foot is turned inward, often so severely that the bottom of the foot faces sideways or even upward. The condition most often is present at birth and is caused by a shortened Achilles tendon. Even though it is a treatable condition, clubfoot is one of the leading causes of physical disability in children, particularly in low to middle income countries.

Typically, there is a lack of trained mid-level personnel to provide clubfoot treatment in Africa and there are no standard training courses.

In Gauteng, clubfoot is managed in Academic Hospital clinics which are run by Orthopaedic Surgery Departments. This placed a huge burden on these facilities which are few, while also forcing patients and their families to travel longer distances to seek treatment elsewhere.

In 2019, after an extended period of consideration, the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) Physiotherapy Department identified the lack of training in management strategies as the main cause

of poor management of patients with clubfoot. Following discussions with orthopaedic surgeons at CMJAH, it also emerged that there was a challenge of inadequate support and shortage of skills in smaller facilities within the province, which added more pressure on academic hospitals. This resulted in the establishment of the Expansion of Clubfoot Services and Training Project.

The Expansion of Clubfoot Services and Training Project initiative was started with the aim of providing training in the management of clubfoot and to empower physiotherapists to establish and support satellite clubfoot clinics in Gauteng.

The project is the first training of its kind in the Gauteng public healthcare sector. More importantly, it has improved the services provided to patients. In addition, it has strengthened the collaborative relationships between the various multidisciplinary teams (MDT) working in the hospital and as a result, ensured improved healthcare to patients.

Beyond the hospital, the project has resulted in a cordial relationship with various clinics across the country and the multidisciplinary teams based at the academic hospitals. It has also paved the way for the introduction of many new services, while also enabling the addition of more trained staff to support services that already existed. Five satellite services were established in the province as an outcome of the training.

THE CURRICULUM

The training curriculum for the Expansion of Clubfoot Services and Training Project comprised two parts, namely, a theoretical component and a practical component. One theory session was organised for all trainees to attend together and thereafter each trainee had to attend a minimum of four practical sessions individually.

Following completion of the training, an impact report was compiled and submitted to the training coordinator.



PROJECT IMPACT

The project has been highly impactful, making it possible for many patients to receive treatment closer to their homes at the satellite sites rather than travelling long distances on a weekly basis.

In addition, while some patients still have to travel longer distances to big centres for more advanced procedures or for devices not offered at their local site, this would not be as frequent as it used to be. Most importantly, the project brought much relief to both patients and their caregivers in terms of finances and time.

Of critical importance is the increased accessibility for patients, enabling them to receive timely treatment. This has had significant impact on many patients whose lives have been improved. If clubfoot is treated early, children are assured the opportunity to lead fulfilling lives, with the potential to earn an income, support their families and contribute meaningfully to society in the future.

Therefore, proper management of clubfoot has a far-reaching impact that extends beyond patients and their families.

It has a positive impact on the community and reduces burden on the health services provincially and nationally.

CHALLENGES AND LESSONS LEARNT DURING IMPLEMENTATION

When projects are implemented, challenges inevitably arise and if not effectively managed, can significantly disrupt progress. With the Expansion of Clubfoot Services and Training Project, one of the major challenges was the sudden and unexpected onset of COVID-19 and its unrelenting and inevitable restrictions in 2020. As a result, the training programme had to be suspended.

Another significant challenge was a fire that broke out at CMJAH, necessitating the relocation of the clinic to a different facility to continue with its services without interruption.

Despite these difficulties, the challenges were eventually overcome, enabling the programme to proceed successfully.

LESSONS LEARNT

Several important lessons emerged from the implementation of the Expansion of Clubfoot Services and Training Project, offering valuable insights for future initiatives. One key takeaway is that achieving significant impact does not always require complex or large-scale interventions. In this project, critical skills were effectively transferred through a relatively simple training programme.

Another crucial lesson, particularly for those seeking to replicate the service in other clinical settings, is the importance of partnerships and collaboration. The project successfully established key partnerships with various stakeholders, including orthopaedic surgeons, to address the surgical needs of patients.

Finally, what also emerged was the importance of having a well-structured plan supported by follow up measures and appropriate monitoring and evaluation tools that are relevant to the objectives of the training, as well as its anticipated outcomes in clinics settings.

If clubfoot is treated early, children are assured the opportunity to lead fulfilling lives, with the potential to earn an income, support their families and contribute meaningfully to society in the future.



SUSTAINABILITY AND REPLICABILITY

The satellite clinics remain fully functional in their respective areas, with a strong potential for long-term sustainability. This is largely attributed to the ongoing training programme. The rationale is that as more members of the Multidisciplinary Team are trained, the number of qualified personnel at clubfoot clinics will increase. This, in turn, may lead to the establishment of additional satellite services, or at the very least, strengthening of existing ones.

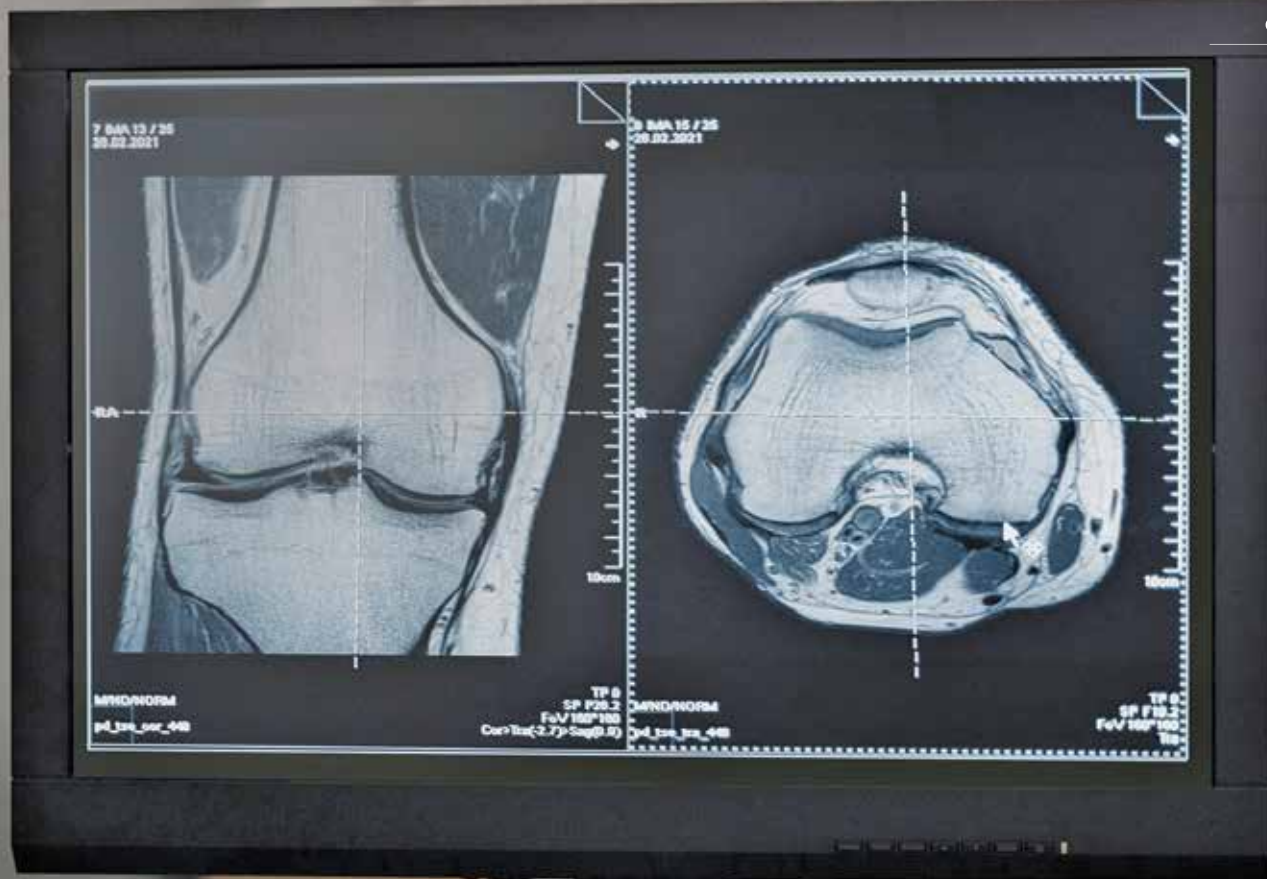
The next training will target a larger group of diverse professionals from the Multidisciplinary Team including physiotherapists, occupational therapists, podiatrists and orthotists.

The decision to partner with STEPS has also proven invaluable in ensuring the sustainability of the project. STEPS Charity, a non-profit organisation (NPO) is a non-profit support organisation that improves the lives of children born with clubfoot in Southern and East Africa. Founded by Karen Mara Moss in 2005 after the successful treatment of her son who was born with clubfoot by Dr Ponseti in Iowa, STEPS provides support to parents. Through partnership with the Gauteng Department of Health, STEPS also provides specialised boots at a reduced cost to patients suffering from clubfoot.

In conclusion, sustainability and replicability of the Expansion of Clubfoot Services and Training Project is dependent on thorough planning and genuine passion to ensure its continued success.

This project is replicable. However, its replicability is highly reliant on the following key STEPS:





MULTIDISCIPLINARY PACKAGE OF CARE FOR [LOWER LIMB REPLACEMENT] ARTHROPLASTY PATIENTS



By **Prithi Pillay-Jayaraman** - *Former Deputy Director, Chris Hani Baragwanath Academic Hospital, Gauteng Health*

✦ BACKGROUND

In South Africa, extensive waiting lists for arthroplasty patients remain a significant challenge, with a substantial amount of money required to address it.

The situation worsened following the onset of the COVID-19 pandemic, leading to cancellation of elective surgeries.

At Chris Hani Baragwanath Hospital (CHBAH), it would take as long as two years for patients to receive arthroplasty surgery as per the waiting list registry kept at the unit. Not only did

this attract negative media attention but inevitably became a major political concern.

In response, the orthopaedic physiotherapists at Chris Hani Baragwanath Hospital (CHBAH) developed a solution in the form of a multidisciplinary package of care.

THE INNOVATION

The Multidisciplinary Package of care solution which the orthopaedic physiotherapists at Chris Hani Baragwanath Hospital developed is by its nature an indisputably innovative solution. It provides lower limb replacement arthroplasty patients with a comprehensive package of care that is supported by extensive research and an extensive stakeholder survey.

In designing the solution, the physiotherapists adopted a multi-pronged approach that includes patient-directed ward exercise and prehabilitation, as well as post operative rehabilitation which are offered regularly through face to face appointments and remotely through a telehealth service. The telehealth service is particularly beneficial during post-operative rehabilitation as it ensures continuity of care to patients without them incurring major travel expenses to hospitals. In this way, it supports the government's Batho Pele principles by prioritising patient centred care.

The project has been implemented in various phases since 2018. The first phase involved testing out prehabilitation as a concept in fracture patients and using standardised notes. This earned the project a category award and the first runner-up award in the 2020 CPSI awards. The second phase introduced a hybrid approach to treatment of patients which included the face to face therapy and a 'distance' or telehealth approach.

The telehealth concept became the second runner up in the 2021 CPSI awards. Patients who access this package of care services receive comprehensive information in various formats, namely, verbally, digitally (web-based content, podcasts) and via their mobile phones. Through these channels they are taught physical exercises to prepare for surgery and learn other necessary skills.

To ensure operational excellence, therapists conducted extensive research and designed a Standard Operating Procedure (SOP) for each phase. The data collection methods dates back to 2015. The use of standardised templates for data collection highlighted a need for primary prevention by physiotherapy, dietetics and podiatry services at community level aimed at reducing the need for arthroplasty. This innovative package of care is a multidisciplinary approach which focuses on preparation as well as primary prevention.

IMPACT

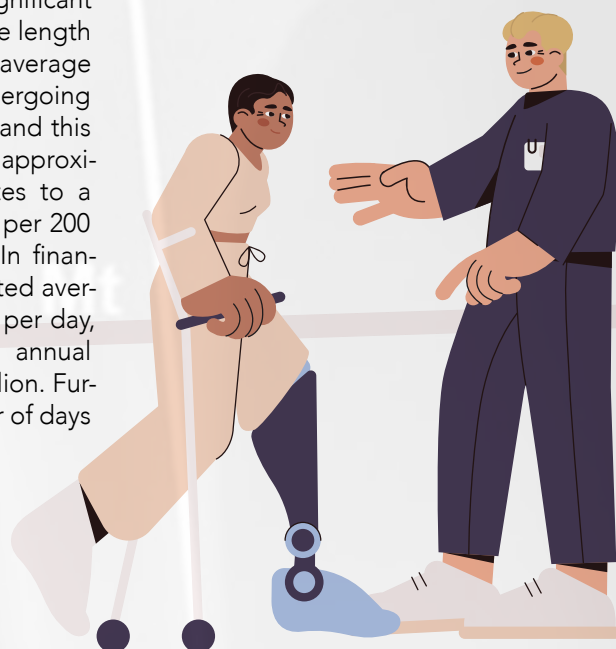
The multidisciplinary package of care project can be seen as preparation for National Health Insurance (NHI). It demonstrates the importance of physiotherapy and other collaborative clinical services to provide impetus for early identification and intervention. The project has also provided data for community health prevention, with a vision of addressing the anticipated increase in the demand for replacement arthroplasty in the coming years. Furthermore, it also offers strategies for delaying and preventing the need for arthroplasties.

The project has achieved remarkable success, with 90-98% of patients attaining desirable post operative outcomes. Additionally, it has had a significant impact on costs by reducing the length of hospital stay. In 2013, the average hospital stay for a patient undergoing arthroplasty was thirteen days and this has since been reduced to approximately 5.5 days. This translates to a saving of five days per patient per 200 patients operated each year. In financial terms, based on an estimated average cost of R1 500 per patient per day, this reduction equates to an annual saving of approximately R1 million. Furthermore, reducing the number of days

patients stay in hospital indirectly helps in prevention of secondary complications and directly increases the number of patients who can undergo surgery.

The project has created substantial opportunities for skills development, professional growth and capacity building for physiotherapists within the department. It has opened an opportunity for therapists to research, attend courses and develop technological training programmes aimed at enhancing service delivery. This is to ensure an improved, efficient and comprehensive service. In addition, peer training has been introduced, facilitating broader dissemination of information at both district and provincial level. The success of the project will therefore be reinforced by ensuring competent human resources.

A 2019 study by Hester van Biljoen examined the financial and physical constraints that patients face when accessing government healthcare services. Patients expressed concerns regarding the cost associated with travelling to healthcare facilities, as well as the time-consuming nature of navigating hospital's structural system. The integration of telerehabilitation as part of the package of care has significantly improved access to care, with patients expressing satisfaction with savings on money and time.



SUSTAINABILITY

The project has already gained the support of the Gauteng Provincial Management (GPMDC) portfolio to facilitate training of physiotherapists through workshops. The next step is

to obtain approval for it to be implemented as a provincial mandate and guideline for the management of all patients awaiting arthroplasty. This will be achieved through collaboration with the management of the Oral Health and Therapeutic Support Services.

The program will be introduced to other multidisciplinary healthcare professionals with various aspects presented at various forums to ensure ongoing support and sustainability across the province.

The orthopaedic physiotherapy team at the Chris Hani Baragwanath Hospital (CHBAH) created a standard of practice, protocol and practical videos to provide orientation through training to all staff rotating into adult orthopaedic wards. This practice will ensure sustainability of the service. Each year, a CPD slot is reserved to orientate all new physiotherapy staff to these practices at CHBAH. The orthopaedic doctors meet every morning to discuss their surgical intervention for admitted patients.

At the beginning of each year, physiotherapy staff conduct several meetings to present orthopaedic physiotherapy services offered at CHBAH to new orthopaedic interns. This is being done to maintain the stakeholder buy-in for referrals and a collaborative approach to care. A service evaluation of this package of care has been done as a PHD study in 2020.

REPLICABILITY

The arthroplasty package of care project has opened the door for its adaptation and implementation at different levels of care, from clinics to tertiary hospitals all over South Africa. The project can be extended to include other fields of healthcare such as doctors, nurses, psychologists, social workers etc. It has huge potential for playing a role in health promotion, prevention and primary healthcare- feeding into the vision of the National Development Plan 2030. Consequently, collaboration with Dr Ulla Plenge from Groote Schuur Hospital for implementing a better care bundle was initiated. Dieticians, podiatrists, occupational therapists and nurses were all invited to contribute content to develop an information booklet.

The project has achieved 90-98% of patients attaining desirable postoperative outcomes and reduced average hospital stays from 13 days to 5.5 days.

These measures will ensure increased access for patients and will mimic a package of care services provided by the National Health Insurance (NHI) in developed countries.

Dr Romy Parker from the University of Cape Town has donated self-efficacy resources for use in the project and this will assist in raising efficacy and educating the public. The implications for the creation of national, district, facility and community eHealth systems are therefore vast. The hybrid model of care comprising both face to face and tele-rehabilitation creates access to a similar service as in an urban area, eliminating the gap that exists because of social determinants of health. Training on the content, data collection and various aspects of the project was provided to therapists from clinics, district hospitals, regional hospitals and tertiary hospitals.

CHALLENGES AND LESSONS

Organisational limitations, such as limited resources or staff shortages were common inhibitors to the implementation of this project and the continuity of interventions. Intrinsic limitations such as patients' fears of possible joint damage during pre-operation exercises and extrinsic barriers such as pain hindered compliance to rehabilitation and pre-operative physiotherapist. During the implementation of this practice, the need for stakeholder engagement became more apparent. Also, continuous engagement with doctors ensured that suitable patients were referred. Another lesson that emerged was the value of continued training and dissemination of the arthroplasty package of care protocols to other physiotherapists working in the province, as this was essential for implementation of this protocol.

There are over 5000 patients needing this service who will have to access the clinics in the cluster and other regional and district hospitals. Improvements to the effectiveness and

efficiency of the South African healthcare system is dependent on standardisation of care given to all patients at different levels of care. Therefore, training for the implementation of the package of care was done to key lead hospitals as a pilot. Training in various phases was done with the first provincial training on 2 September 2022, followed by a second session on 29 March 2023. The aim is for the project to be implemented throughout the country for an integrated approach and the first step towards that is the publication of a proposal for scoping review. This information is contained in a paper published in the South African Journal of Physiotherapy about all the evidence-based literature related to this concept. Submission of another paper on the results of the scoping review will be done once the assignment has been completed.

This programme demonstrated that it was cost effective, practical and sustainable with such merit that the senior leadership in the province is in the process of adopting it. The entire province is now undergoing training to entrench it as a standard of care.

CONCLUSION

The arthroplasty package of care project is consistently improving the health care delivery system by focusing on access, equity, efficiency, quality and sustainability. Through its brand-new approach to service delivery with ripple potential in providing equitable access to health services, the project supports the National Development Plan in providing universal health coverage.

The scarcity of suitably qualified staff, skills shortage and operational challenges, such as long patient waiting lists are some of the major issues affecting the government health sector across several provinces. Management continues to face mounting criticism regarding the prolonged waiting time patients have to endure, often while experiencing severe pain, while awaiting surgery.

This program directly addresses some of these challenges. By using a hybrid method to deliver the service the project has phenomenally increased access for arthroplasty patients. The concept has also enhanced patient compliance. The component of health education improves patient confidence by emphasising safety precautions, that way increasing citizen productivity and less reliance on healthcare systems.

The project also improves health systems performance using an integrated package of care approach. This is in support of the District Development Model to accelerate, enhance and integrate service delivery. This is ultimately in support of the government's priority of building a capable, ethical and developmental state.

The project also supports the National Development Plan 2030 (NDP) in its quest for a health system that is people-centred focusing on access and equity. In addition, it assists patients to live a better quality of life, to be productive and to contribute to their communities which, in turn, culminate in a better Africa and the world in line with government priorities.

Finally, of critical importance is the fact that the project is aligned to the key priority of ensuring the improvement of health care.

In addition, the project also laid much emphasis in addressing the Patient's Rights Charter. In its development, it first took into consideration "value for money." Secondly, it sought to achieve identified therapeutic goals.

Going forward, it will also provide input into the Integrated Disability Management and Rehabilitation Pathways of Care Framework and Strategy for Disability and Rehabilitation Service in South Africa.

HEARING AID REPAIRS CLINIC

By **Ndabenhle Ben Mkhwanazi**

Chris Hani Baragwanath

Academic Hospital

BACKGROUND

The right to health for all people means that everyone should have access to the health services they need (WHO, 2021).

The Charlotte Maxeke Hearing Aid Repairs Clinic was established at the Charlotte Maxeke Johannesburg Academic Hospital (CHBAH) approximately fourteen years ago. The clinic is part of the hospital's Audiology Department and operates on Mondays only, offering walk-in services primarily to assist

patients with hearing loss problems and those with malfunctioning hearing devices.

Initially, the clinic had its own fair share of challenges which adversely affected its ability to provide services to patients. Patients were at times placed on extended waiting lists often having to wait for four to six weeks before they could receive audiological services.

In addition, with the onset of the global coronavirus pandemic, the South African government implemented regulated lockdown periods to prevent and reduce the infection rate. As a result of these restrictions, patients had limited access to services such as healthcare (WHO, 2020).

To remedy this situation, the clinic introduced many changes including adapting its service provision in line with the latest advancements in hearing device technology, ongoing evidenced-based audiological research and patient centred care models.

THE INNOVATION

Charlotte Maxeke Johannesburg Academic Hospital is one of the few institutions that recognised the need to implement a walk-in service for patients who present hearing device challenges.

In their attempt to solve the problems related to the provision of audiology by the clinic, there was a great need for audiologists to think differently so that they create systems that would enable patients to access essential services needed for them, to continue with their daily living activities.

As a guiding principle, the audiologists believed that "every healthcare worker's responsibility is to ensure that the correct measures are followed to ensure a healthy and safe work environment for all personnel involved (CDC, 2020b)."

The American Speech Language Hearing Association (ASHA), (2020), strongly recommends that audiologists discuss options of providing services to patients to ensure a healthy and safe environment in terms of infection control.

The adaptations introduced benefited patients in several ways. Most importantly, patients could still enjoy face to face sessions with audiologists and other medical practitioners at the hospital safely. In addition, other alternative forms of telehealth services were made available to patients. For instance, patients could access troubleshooting videos which would help them to resolve minor problems with their hearing devices if they were unable to get to the hospital due to the restrictions.

Also, of significant importance is that patients were no longer subjected to long waiting times, as they could freely walk in to access audiological services without an appointment. Upon arrival at the clinic, patients are immediately assessed and managed accordingly, thus reducing the burden of having to be placed on an extended waiting list.

Following surveys that were conducted with patients attending the clinic, valuable information was obtained which resulted in positive improvements such as the introduction of support groups and succession planning related to the future of the clinic. Furthermore, more research continues to be conducted because of the uniqueness of the service being offered and its absence at many other levels of healthcare.

IMPLEMENTATION

The innovation actively promoted education, skills and health.

As part of the implementation, audiologist introduced a complete range of adaptations to improve the system. These included queue management, personal protective equipment (PPE), infection control, COVID-19 screening, telehealth and stock control of hearing devices and consumables. However, they ensured that the clinic continued to adhere to its original frameworks.

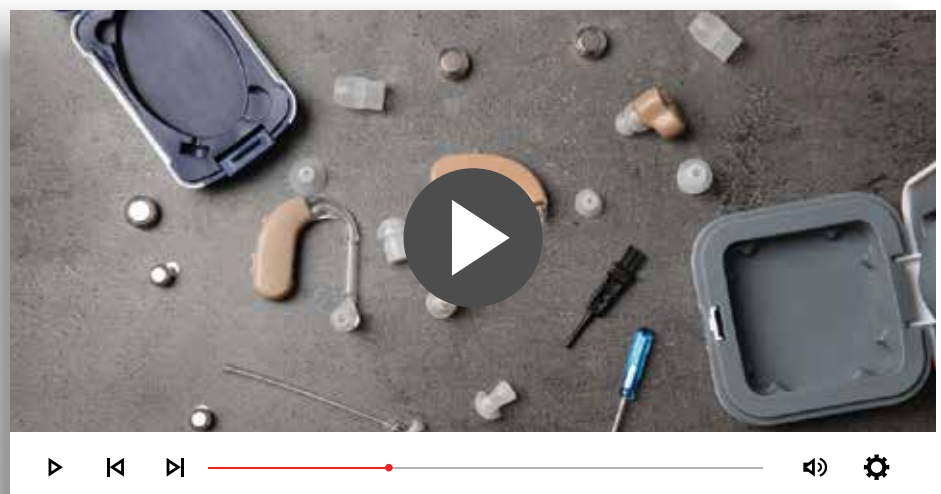
In addition, audiologist developed some hearing aid repair troubleshooting videos with an in-depth demonstration on how to troubleshoot hearing aids independently. These videos were sent to patients or their caregivers via various digital platforms, to help them troubleshoot their malfunctioning hearing aids independently without visiting the clinic.

This afforded patients the opportunity to develop new technical skills to repair their own hearing aids. These new skills are now being applied in the current support groups where patients teach each other how to perform minor repairs on their hearing aids.

Health promotion pamphlets were also distributed to patients who opted to access face to face interaction with the audiologists despite the lock down limitations. These pamphlets contained vital and research-based information regarding ear care as well as healthy hearing practices.

IMPACT

Since the Hearing Aid Repairs Clinic operates as a walk-in service, it enables patients to attend the clinic without any appointments. The clinic is therefore one that advocates for improved service delivery by increasing access.



Example of an instructional video of how to trouble shoot

The COVID-19 pandemic forced the clinic to alter the way services were provided. A range of service delivery options were explored and tried and of these, asynchronous tele-rehab was the best fitting mode of service delivery. Accordingly, patients could access services without being physically present at the hospital.

Patients were monitored telephonically and a telephonic form was developed in order to record the outcomes of the telephonic session. In this way, patients who needed assistance with their hearing devices were given quality service without the typical face to face interaction. This was then measured by a survey conducted with patients in the clinic which yielded comments justifying the impact of this service.

CHALLENGES

There have been numerous challenges within this clinical journey. The major challenge being patients arriving on additional days and times where clinicians are not allocated to the clinic or are not readily available. Although attempts were always made to accommodate patients by increasing clinical slots and times particularly during the COVID-19 pandemic, staffing limitations, space restrictions and limited resources have made this accommodation challenging.

According to a study that was conducted in a government hospital in Tshwane, Gauteng, on the maintenance and utilisation of government fitted hearing aids, it was found that most government hearing aids were poorly cared for and not maintained properly. Finance, multilingualism and distance are some of the factors that affect hearing aid care (Sooful, Van Dijk, and Avenant, 2009).

However, these identified challenges were not experienced at the walk-in service at CHBAH.

The hearing aid repair walk-in service aligned with the importance of continuing service delivery even during a global pandemic. "Audiology services are critical for individuals with communication disorders, which include hearing loss, vestibular disorders and other auditory disorders", as mentioned by (ASHA, 2020).

The most valuable lesson learnt during this clinical journey has been via input and engagement with patients through surveys during the COVID-19 pandemic.

SUSTAINABILITY AND REPLICABILITY

This clinical service has the potential to be replicated at other hospitals and clinics. To date, no known public health institution in the Johannesburg South Region provides this service using this exact same model. Evidence shows that other institutions have reported that they only provide the service on an appointment basis. Since these

identified challenges are a national priority, other public health institutions can also use this information to help guide them in tailoring their existing services in order to accommodate patients' specific needs.

The project can be replicated and scaled further across other audiology departments in public hospitals. The original framework and ongoing adaptations of the project can be introduced to other health institutions that have the necessary physical, financial and human resources at their disposal.

Research that was conducted in the Hearing Aid Repairs Clinic has provided new information on how service delivery can be further refined, in order to ensure quality and holistic patient centred care. The findings of this research study will assist us in re-evaluating current practices. Additionally, these findings can aid with the compilation of new guidelines and protocols that aim to address the challenges identified by patients in the public health sector.

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THE GLOBAL GREEN AND HEALTHY HOSPITALS STRATEGY

BY **TSHEPO MOKHADI**

*EHP/Global Atlantic Fellow/Futurist,
Bongani Regional Hospital*

⊕ INTRODUCTION

Climate change, chemical and water contamination, wastewater and air pollution are some of the elements that can exacerbate diseases globally. These environmental health (EH) problems are placing increased pressure on already overstretched healthcare systems, thus diminishing their capacity to respond effectively.

In South Africa, everyone has the right to an environment that is not harmful to their health or wellbeing, (Constitution: Act 108 of 1996). EH is the essential health component without which people are exposed to numerous risks. The profession is forward looking in nature as it focuses on preventative aspects of human health (HPCSA, 2019).

Environmental Health Practitioners (EHPs) work with elements of safety, health and suitability of environments. Their scope includes water quality, food control, waste management, health surveillance, prevention of communicable diseases, vector control and environmental pollution control.

TSHEPO MOKHADI

EHPs have the potential to play an important role in helping communities adapt to climate change health impacts, however, effective coordination of these efforts requires further understanding of their roles in implementing climate change related adaptation strategies at community level.

⊕ THE INNOVATION

The Global Green and Healthy Hospitals (GGHH) is a global network that aims to create an international community of hospitals, health systems and organisations committed to reducing the health sector's environmental footprint and advocating for policies that promote environmental and public health globally.

The GGHH addresses healthcare challenges by using innovation, ingenuity and investment to transform the health sector and create a healthy future for people and the planet. The Global Green and Healthy Hospitals Sustainability Agenda sets out to support existing efforts around the world to promote greater sustainability and environmental health in the health sector, thus strengthening health systems globally.

⊕ IMPACT

In terms of service delivery, GGHH has its foundation in a comprehensive framework of the following ten interconnected goals for the health sector, to address and promote greater sustainability and environmental health.

**1 LEADERSHIP:
PRIORITISATION OF
ENVIRONMENTAL HEALTH
BY LEADERSHIP AS A
STRATEGIC IMPERATIVE**

Demonstration of leadership support for green and healthy hospitals. This is done in order to create long-term organisational culture change, encourage widespread hospital worker and community engagement and influence public policy that promotes environmental health.

**2 CHEMICALS:
SUBSTITUTION OF
HARMFUL CHEMICALS
WITH SAFER ALTERNATIVES**

Improve the health and safety of patients, staff, communities and the environment, by using safer chemicals, materials, products and processes, even exceeding the requirements of environmental compliance.

**3 WASTE: REDUCTION,
TREATMENT AND SAFE
DISPOSAL OF HEALTHCARE
WASTE**

Protection of public health by reducing the volume and toxicity of waste produced by the health sector, while implementing the most environmentally sound waste management and disposal options.

**4 ENERGY: IMPLEMENTING
ENERGY EFFICIENCY AND
CLEAN, RENEWABLE
ENERGY GENERATION**

This goal's focus is on reducing reliance on fossil fuel energy in order to improve and protect public health. It also seeks to foster energy efficiencies as well as alternative renewable energy use, with the long-term goal of meeting 100% of energy needs through on-site or community renewable energy sources.

**5 WATER: REDUCING
HOSPITAL WATER
CONSUMPTION AND
SUPPLYING POTABLE
WATER**

A critical aspect of this goal is the implementation of a series of conservation, recycling and treatment measures to reduce hospital water consumption and wastewater pollution. It also calls for the establishment of the relationship between potable water availability and healthcare resilience to withstand physical, natural, economic and social disruption, while promoting public environmental health through provision of potable water for the community.

**6 TRANSFORMATION:
IMPROVING
TRANSPORTATION
STRATEGIES FOR PATIENTS
AND STAFF**

This entails developing transportation and service delivery strategies that reduce hospitals' climate footprint and their contribution to local pollution.

7

FOOD: PURCHASING AND SERVING SUSTAINABLY GROWN, HEALTHY FOOD

This goal seeks to reduce the environmental footprint of hospitals while fostering healthy eating habits among patients and staff. It also promotes access to locally and sustainably sourced food in the community.

8

PHARMACEUTICALS: APPROPRIATE PRESCRIPTION, SAFE MANAGEMENT AND PROPER DISPOSAL OF PHARMACEUTICALS

The goal's focus is on reduction of pharmaceutical pollution by reducing over-prescription practices, minimising inappropriate pharmaceutical waste disposal, promoting manufacturer take-back and ending the dumping of pharmaceuticals as part of disaster relief.

9

BUILDINGS: SUPPORTING GREEN AND HEALTHY HOSPITAL DESIGN AND CONSTRUCTION

The goal seeks to reduce healthcare environmental footprint, while making hospitals healthy places to work and visit, by integrating green building principles and practices into design and construction of health facilities.

10

PURCHASING: BUYING SAFER AND MORE SUSTAINABLE PRODUCTS AND MATERIALS

This goal promotes sourcing of sustainably produced supply chain materials from socially and environmentally responsible vendors.

Since its adoption in the Free State in 2016, the GGHH strategy has undoubtedly made a remarkable impact in transforming healthcare practices to reduce their ecological footprint in favour of sustainable environmental health.

Membership on the GGHH network offers a wide range of benefits, namely:

- **GGHH Connect:** This is a multilingual online hub that members use to access GGHH tools and resources. GGHH Connect is organised around the ten GGHH goals, with an online community for each goal area.
- **Tools and resources,** space for members to meet to ask questions, share experiences, and collaborate.
- **Guidance Documents:** These are comprehensive technical guides providing tools, case studies, actions and strategies for GGHH members to work on to reduce their environmental footprint. Guidance documents are currently available for energy, water, waste and buildings.
- **Experts -** who are available to answer questions, provide advice, point members to resources to inform their work in each of the ten GGHH goals.
- **Case Studies -** used as examples of best practice to showcase members' successes. The GGHH encourages members to share among each other for learning and mutual growth. A case study template is available on the website.
- The GGHH website contains a library with case studies that are drafted and edited by GGHH staff.

A lot of evidence showing improvements and benefits of joining the GGHH network has been published as case studies under the green hospitals net and the Free State Health Research portal. Some of the most recently published papers include:

- The Financial Implication of COVID-19 pandemic on Medical Waste generated at Bongani Regional Hospital.
- Water quality evaluation of water sources from Bongani Regional Hospital.
- An assessment based on improving indoor air quality (IAQ) and ventilation at the Bongani Regional Hospital.
- The financial impact of Integrated Pest Management (IPM) strategy at Bongani Regional Hospital.
- A web-based hospital waste management pilot at Bongani Regional Hospital.

Prior to the incorporation of the entire system into the GGHH connect system, the project strategy started as a waste information system and later included more environmental health (EH) functions (ten goals) to fit the scope of EH in a hospital environment. The system has now evolved into a flagship project called the EHIS (Environmental Health Information System).

CHALLENGES AND LESSONS LEARNT**During the implementation phase of the GGHH strategy, several lessons emerged:**

The GGHH is a project of Healthcare Without Harm (www.noharm.org) which serves as an umbrella that brings ongoing healthcare sustainability efforts from various parts of the world, together with a common vision

and under a common framework. In addition, it highlights best practices and inspires their replication and adoption.

The strategy amplifies the ongoing important work going on around the world, including places that are in less visible regions around the world, while offering tools and resources to facilitate the implementation of sustainability practices by hospitals, health centres and health systems. The strategy also provides a mechanism for members to measure their outcomes and report on their achievements.

Lastly, through the membership network for hospitals and health systems, members engage as peers while advancing the vision of the GGHH.

+ SUSTAINABILITY

The GGHH brings together hospitals, health systems and health organisations from around the world under the common goal of reducing the environmental footprint of the health sector, as well as contributing to improved public and environmental health.

The framework and roadmap to reach this goal is provided by the GGHH Agenda and its ten interconnected sustainability goals for hospitals and health systems to work towards achieving.

Following the launch of the Healthcare Climate Challenge at the Paris Climate Conference in 2015, the GGHH Network is increasingly working to mobilise the healthcare sector to reduce its own carbon footprint, become more climate resilient and exert leadership to help every society transition to a low carbon energy future. To support members in their efforts to implement initiatives and projects related to the ten agenda goals and the Healthcare Climate Challenge, GGHH offers access to exclusive and innovative tools and resources, events, webinars and more.

The GGHH Guidance Documents for sustainability action provide a comprehensive and global view into the GGHH sustainability goals. Written and reviewed by leading experts from around the world, each guidance document introduces a specific GGHH sustainability goal and covers the countless opportunities within the topic area for GGHH members to act to reduce their environmental footprint.

+ REPLICABILITY

The implementation phase of the GGHH strategy is replicable and can be achieved through membership. There are four categories of GGHH membership, namely, hospitals, health systems, health facilities and health organisations.

- Membership is free of charge. In order to join, potential members complete and submit a letter of intent to join GGHH in which they commit to working towards achievement of at least two of GGHH's ten goals. Once a health institution has become a GGHH member, everyone working at that institution gains access to all the tools and resources available at GGHH.

+ CONCLUSION

As the largest sustainable network in the world, the Global Green and Healthy Hospitals (GGHH) has made remarkable strides in representing interests of hospitals, health systems and health organisations committed to reducing the health sector's environmental footprint. It also continues to play a transformative role by advocating for policies that promote environmental and public health globally.

The GGHH strategy continues to demonstrate the critical value of innovation, ingenuity and investment in transforming the health sector and creating a healthy future for people and the planet, thereby addressing pressing healthcare challenges.

Furthermore, through its agenda, the GGHH recognises the existing efforts globally to promote greater sustainability and environmental health in the health sector to strengthen health systems.



THE AUTOCLAVE WASTEWATER RECYCLING PROJECT



By **Mr Denton Smith** - Groote Schuur Hospital,
Western Cape Department of Health and Wellness

THE AUTOCLAVE WASTEWATER RECYCLING PROJECT WON THE 2023 PUBLIC SECTOR INNOVATOR OF THE YEAR AWARD

BACKGROUND

The Groote Schuur Academic Hospital, like many other medical facilities in the country, uses autoclave machines to sterilise surgical equipment. Unfortunately, these machines, of which there are eight in the hospital's Sterilisation Department, are highly water intensive and utilise large quantities of water per cycle.

Hospitals, by their very nature are substantial consumers of many commodities and natural resources, including potable water. This poses a significant challenge, particularly in a water scarce country like South Africa where every drop of water needs to be preserved.

The gravity of this situation and the disastrous effects associated with it became more palpable in the recent drought experienced by the Cape Town Metropolitan Municipality, which necessitated an urgent intervention.

THE INNOVATION

The Autoclave Wastewater Recycling Project at the Groote Schuur Hospital involves reusing wastewater generated through the sterilising process of surgical instruments, with the primary aim of reducing the overall water consumption of the hospital. A closed loop water recycling process is used to cool down discarded water so that it can be reused.

The system operates as follows:

The autoclave machines require a supply of cold potable water to sterilise equipment. This water is converted into condensed steam within a high temperature vacuum or environment that is required to sterilise surgical instruments. Typically, the hot water is discharged into the sewer system after the sterilisation process. However, this innovation directs the water through an aftercooler into holding tanks from where it can be reused repeatedly

during subsequent cycles. Due to its simple design, the system requires very little maintenance. It is also easy and cost-effective to install. Depending on the size of the installation, the return on investment may be realised within a few weeks to a year.

RELEVANCE

The project reduces the overall running costs of a medical facility by reducing the consumption of potable water. It is also easy to install and maintain and is easily replicated anywhere throughout South Africa and even the African continent at large, using available material.

Of critical importance, this project continues to demonstrate that medical facilities can still sterilise surgical instruments despite water supply constraints.

In addition, it contributes to the reduction of the carbon footprint of the medical facility, as each 1 kilolitre of water saved equals 0,149 kgCO₂e (carbon dioxide equivalent).

This in turn, contributes towards South Africa's efforts to achieve NetZero goals.

IMPACT

The Autoclave Wastewater Recycling Project has enabled the Groote Schuur Hospital to save just over R11 million over the last four years of operation in reduced usage of municipal supplied water. The calculation is based on the averaged municipal tariffs which include the cost of the potable water supply as well as the costs associated with the sewerage. As an added bonus, it has resulted in a reduction of roughly 32 tones of CO₂e for the hospital.

The financial savings made it possible for "excess funds" to be redirected towards the upgrading of wards and purchasing of new healthcare technology equipment to further improve the overall patient stay experience. Further benefits to the Groote Schuur Hospital include reduced hospital autoclave down time, as well as increased reliability of these machines. The increased reliability and availability have in turn resulted in a continuous and reliable supply of ready to use, sterile surgical instruments to operating theatres. The system itself has proved to be robust, reliable and without unplanned break downs.

SUSTAINABILITY

The entire system is designed from readily available parts that can be sourced locally in any part of South Africa. These parts consist of copper pipes, plumbing fittings, simple circulation pumps, an intercooler (effectively a truck radiator with an electric fan attached), some water storage tanks and basic electrical controls. The system was designed for simplicity of installation and maintenance.



Ease of obtaining "off the shelf" parts for the installation as well as the maintenance played a huge role in the design of the system. In terms of maintenance, the system requires a weekly visual inspection to ensure that all its parts function correctly, typically conducted when water meter readings are taken. In addition, a once a year annual service is required. The average running costs for the system (electricity costs and the annual service) is not more than R30 000, whilst the savings achieved are in excess of R2,8m.

It is noteworthy that the savings realised at the Groote Schuur Hospital will significantly exceed savings at smaller institutions, as scale has a direct impact, meaning that the larger the institution, the greater and more rapid the savings will be.

REPLICABILITY

The Autoclave Wastewater Recycling Project is extremely easy to replicate because of its simple design. Consequently, the project has been implemented in several hospitals in the Western Cape, namely, George, Somerset and Karl Bremmer hospitals as well as some of the Mediclinic and

Netcare Hospitals where it continues to function without any challenges, while also saving these institutions money.

CHALLENGES AND LESSONS LEARNT

The only challenge faced was the location of the intercooler and the water storage tanks, which was easily overcome by changing the design of the pipe layout to custom fit the intercooler and align it with the placement of the tanks. In some cases, it was important to consider the load bearing capacity of the surface supporting the tanks. This was dealt with by installing smaller tanks, providing plinths or spreading the load further apart.

CONCLUSION

Since implementation at the Groote Schuur Hospital, the Autoclave Wastewater Recycling Project has saved the hospital an average of 1 million litres of water per week or 52 million litres of potable water per year. Also, of critical importance, it has contributed to the reduction of the hospital's carbon footprint by 8046kgCO₂e.



SMART AGRICULTURE BOXES

BY NONHLANHLA DOOKA

Mpumalanga Department of
Agriculture, Rural Development,
Land and Environmental Affairs

Climate change has become a major global concern. Once a subject of academic debates and postulations, now it has become a reality with many countries experiencing unusual devastating weather patterns, ranging from cyclones and widespread floods to long spells of drought and record breaking temperatures.

One of the most affected areas is food security, with developing countries which account for the largest proportion of the world's population expected to be the worst affected. This challenge compounds the numerous difficulties these nations are already facing.

A case in point is Mpumalanga, one of the nine provinces of South Africa, whose agricultural sector and communities have had to contend with numerous challenges because of climate change.

This prompted the provincial Department of Agriculture, Rural Development, Land and Environmental Affairs to urgently look for a solution specifically addressing the two Sustainable Development Goals, namely goal 1 (*no poverty*) and goal 2 (*zero hunger*).

THE INNOVATION

As its name suggests, the Smart Agriculture Boxes Project features as its key innovation a revolutionary portable, water efficient and versatile device called the Smart Agriculture Box. Designed to promote water conservation, each box is equipped with a 28-litre reservoir, enabling self-watering for two to three weeks. This significantly reduces the need for constant manual watering which is particularly critical in regions where water scarcity is a pressing issue due to climate change and erratic rainfall patterns. By optimising water usage, the Smart Agriculture Box helps farmers conserve water resources and adapt to environmental challenges.

The project supports a dense planting system, maximising space utilisation and contributing to high crop yields. The close spacing of plants maximises the use of available space, allowing for the cultivation of a considerable number of crops in a limited area.

This not only boosts production but also reduces weed prevalence, as the dense foliage helps suppress weed growth. The increased crop yield has the potential to improve food security and generate more income for participating households.

Each Box is constructed using recycled plastic that is treated with a UV stabiliser, ensuring durability and ability to withstand harsh environmental conditions. This durability ensures the longevity of the box, allowing for long-term use and maximising its impact. Furthermore, the project encourages resourcefulness by promoting the use of recyclable materials and empowering individuals to create their compost and replicate the self-watering system using available resources, such as used buckets and homemade structures.

The project incorporates mobility as an innovative aspect of the Smart Agriculture Box, ensuring that the box can be easily moved by two people, providing flexibility in protecting crops from adverse weather conditions, or relocating them to areas with better exposure to sunlight. This adaptability is valuable in regions where extreme weather

events and changing environmental conditions pose challenges to traditional farming practices.

Another remarkable aspect of the agricultural box is its versatility. This makes it more compatible with a wide range of crops, including leafy and root vegetables. This adaptability enables farmers and households to diversify their produce and explore different market opportunities, potentially increasing their income and overall resilience.

Finally, through the use of technology applications, the initiative not only exposes farmers and other key users to technology but also empowers them with knowledge about modern farming and climate-smart practices.

RELEVANCE

The project addresses food insecurity and poverty by empowering vulnerable households with the means to grow nutritious food and generate income through high crop yields, directly supporting the government's goal of reducing poverty and hunger.



The project further contributes to economic growth and job creation in the agricultural sector by providing an opportunity for both young and commercial farmers to enhance their productivity and income through sustainable agriculture.

Another key strength of the project is its promotion of climate resilience and environmental sustainability. The water-efficient design and climate-smart practices reinforce resilience against climate change impacts, aligning with the priority of building climate resilience and promoting environmentally sustainable practices.

It also contributes towards rural development and social cohesion through empowerment of rural communities, improving livelihoods and fostering collaboration among farmers.

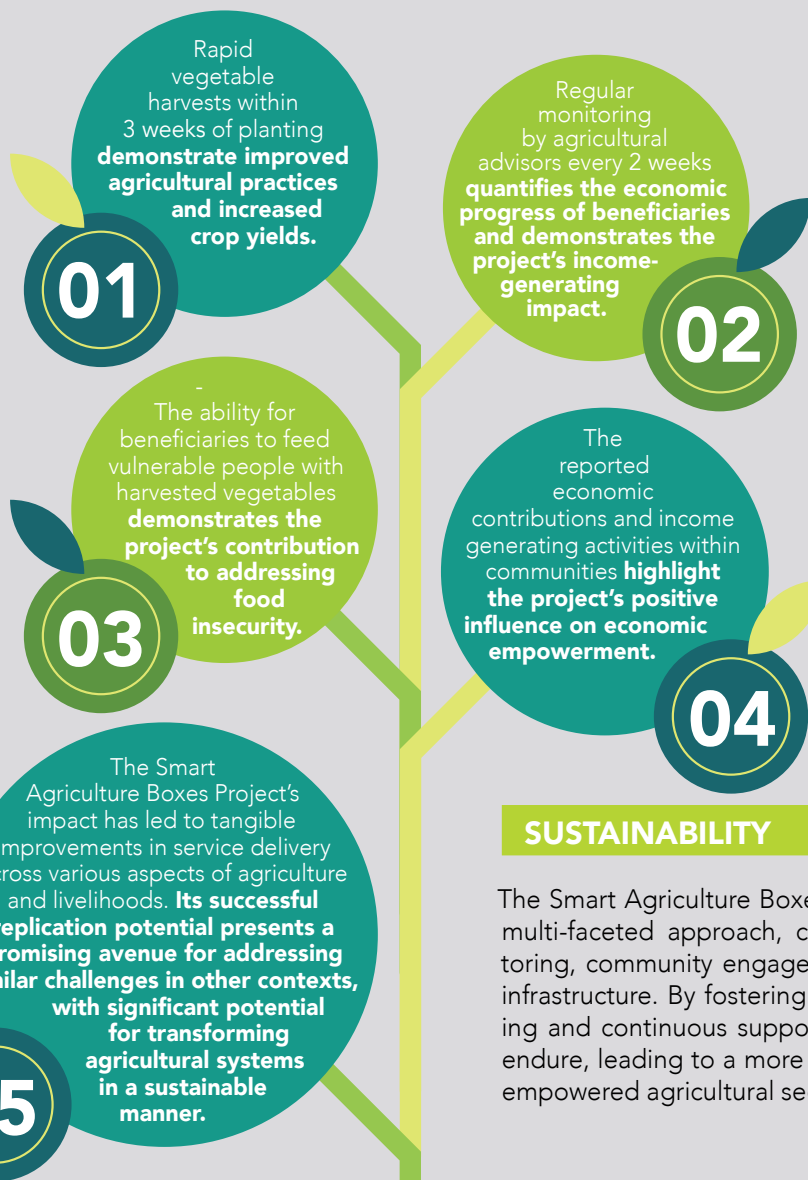
The innovation demonstrates technological advancement in agriculture, proving that innovative solutions can address complex challenges and improve agricultural productivity. Through its educational components, including training programmes and a mobile application, the project enhances participants' skills and knowledge in sustainable farming practices, thus contributing to skills development and knowledge sharing.

Therefore, the use of locally available materials and efficient water usage aligns with resource management goals, ensuring accessibility to vital resources for sustainable agriculture.

IMPACT

The Smart Agriculture Boxes Project has yielded significant service delivery improvements, revolutionised agricultural practices, thus positively impacting vulnerable households, young farmers and communities in Mpumalanga.

QUANTITATIVE EVIDENCE



The project has reached the following numbers to quantifying its broad reach and beneficiary base:



SUSTAINABILITY

The Smart Agriculture Boxes Project's sustainability is rooted in its multi-faceted approach, combining training, partnerships, monitoring, community engagement, resourcefulness and long-lasting infrastructure. By fostering a sense of ownership, knowledge sharing and continuous support, the project ensures that its benefits endure, leading to a more resilient, food-secure and economically empowered agricultural sector in Mpumalanga.

REPLICABILITY

Due to its high impact and relevance, the Agriculture Smart Boxes Project has experienced exponential growth in several key areas, namely:

- The project was replicated in churches across the province, enabling communities associated with these institutions to benefit from the innovative farming approach. This expansion broadened the project's reach and impact. Furthermore, it extended to traditional authorities in communal areas within the province. By involving these local leaders, the initiative gained critical support, fostering increased community engagement and participation.
- The innovative approach used in the Smart Agriculture Boxes Project was integrated into Fortune 40 young incubation projects, including a project that involved people living with disabilities.
- Due to its success, the project attracted interest from other provinces who visited Mpumalanga to learn from the initiative. This knowledge sharing approach facilitated the project's expansion to other eight provinces, contributing to its replication and impact nationwide.

The project's replication and expansion highlight its adaptability, scalability and potential for transformative change in agriculture through fostering of partnerships, community engagement, and knowledge exchange nationally.

ADAPTATION FOR REPLICATION/SCALING

Adaptations might involve tailoring the projects' design and practices to suit the specific needs, resources and environmental conditions of different regions.

CHALLENGES AND LESSONS

During the implementation of the Smart Agriculture Boxes Project, several challenges were encountered, leading to valuable lessons and insights for improved replication. Key challenges included adapting to local diverse contexts, demonstrating the effective reuse of resources and influencing positive farmer behaviour. These challenges became the basis for engaging communities to foster adaptability and innovation. The one critical lesson that emerged from the entire process emphasises the importance of education, partnerships, innovation, adaptability and sustainability in providing agricultural interventions to ensure food security.

A HARVESTS OF ACCOLADES

This groundbreaking initiative has garnered much deserved recognition on various prestigious platforms, highlighting its innovative solutions and significant impact.

- **Continental Africa Public Service Day, Zimbabwe:**
Recognition: Winner; 1st Runner up for Best Innovation Category
- **Centre for Public Service Innovation Award, South Africa:**
Recognition: Winner in the category Citizen-Centric Innovation Harnessing Non-ICT Solutions
- **AAPAM Annual Round-table Conference Livingstone, Zambia**
Recognition: Gold Award

LOOKING FORWARD: A REPLICABLE MODEL FOR GLOBAL IMPACT

The Smart Agriculture Boxes Project's modular design and adaptability make

it a powerful tool for addressing agricultural challenges beyond South Africa's borders. Its replicable nature and focus on local needs and resources positions it as a valuable model communities facing similar challenges can replicate.

CONCLUSION

The Smart Agriculture Boxes initiative in Mpumalanga is a particularly important high impact venture that addresses food insecurity, poverty and climate change. Innovative practices like dense planting and self-watering systems empower farmers, leading to rapid harvests, higher yields, and improved livelihoods. By enhancing food security, water conservation and fostering community collaboration, the initiative ensures sustainable agricultural practices. Its success signifies a transformative model, emphasising localised solutions and technology-driven farming.

This initiative represents a scalable, replicable approach with implications for global agricultural sustainability. It is a highly effective smart agriculture innovation that is pushing back the frontiers of poverty from all corners of the province.

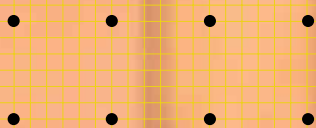
The innovation aligns seamlessly with key government and provincial priorities, making a substantial contribution to multiple developmental agendas.

The project resonates with the National Development Plan (NDP) and its focus on poverty reduction, food security and sustainable resource management. Furthermore, the project's goals align with the Sustainable Development Goals (SDGs) related to no poverty, zero hunger, decent work and economic growth, climate action and partnerships for the goals. The project's emphasis on empowering vulnerable communities is in line with the African Union's Agenda 2063, namely, to promote inclusive development and poverty eradication.

– SIBONGILE MONGADI –

A trailblazer committed to restoring pride and dignity to people living with physical disabilities

“I come from a family of eight children. Both our late parents did not have much formal education and were self-employed and had to work very hard to make ends meet.”



▶ INTRODUCTION

In South Africa, many people continue to live with physical disabilities due to limited access to prosthetic limbs. Disabilities may be congenital—present from birth—or acquired as a result of accidents, such as falls, motor vehicle collisions and workplace injuries. They may also arise from diseases such as diabetes, which frequently leads to gangrene, or from violent crime, which remains prevalent in the country. The likelihood of obtaining a prosthetic limb is further hindered by their scarcity and high cost.

In many societies disability is still stigmatised and people living with disability face many challenges, some of which rob them of their independence and dignity. For children, disabilities can create barriers to accessing education and schooling, while for adults it often leads to limited opportunities in the job market, contributing to the disproportionate high unemployment rate and rampant poverty amongst people with disabilities.

However, there is hope on the horizon, Sibongile Mongadi's endeavour to help give amputees their independence and dignity back, while also improving their life conditions in general needs to be applauded.

▶ WHO IS SIBONGILE MONGADI

Sibongile Mongadi is a young entrepreneur who hails from the sprawling township of Soweto in South Africa.

When asked what inspired her interest in prosthetics and orthotic limbs for people living with physical disability, Sibongile recounted a personal experience involving an interaction with an amputee at a health facility in Johannesburg. A natural entrepreneur, she immediately recognised an opportunity to make a positive impact in the lives of amputees.

Determined to realise this noble ambition she worked extremely hard, and later founded her own company, Uku'hamba Prosthetics and Orthotics (Pty) Ltd.

Sibongile Mongadi states, "I come from a family of eight children. Both our late parents did not have much formal education and were self-employed and had to work very hard to make ends meet." However, this did not stop her from pursuing her dreams. She continues, "Today I am a multi-award-winning young female entrepreneur. I have represented my country, South Africa, across the African continent and internationally. I am a role model in my community."

Sibongile's selfless work and achievements did not go unnoticed. Over the past few years she earned recognition from many business sectors, namely:

2018

- Top 25 Amex Emerging Social Innovator across Africa
- Top 100 TYI Young Innovator in the SADC region finalist

2019

- News24 Next young Nelson Mandela of the future
- Top 100 South Africa Shining Stars in Science and Technology
- Top 50 South Africa Inspiring Women in STEM
- Africa Female Innovator of the Year

2020

- Top 200 Mail & Guardian Young South Africans under Health category
- Global Digital Female Leader in Innovation
- Levers n Heels Top100 African Women in STEM fighting COVID-19
- NYDA Young Trailblazer
- Top100 Most Young Influential South Africans

2021

- Tropics Top500 Most Influential Africans in the World
- CIO 100 Africa Green-Edge Award Winner

2022

- PAWES Awards STEM 2022

According to Sibongilei, a person's background should not determine their future.

“You should not dwell on the past. Every challenge you encounter should serve as an opportunity for empowerment.”

Uku'hamba Prosthetics and Orthotics (Pty) Ltd is a South African 100% Black, youth and women-owned healthcare manufacturing company that has been operating since 2020. Uku'hamba is in the bio-manufacturing and tech healthcare industry and produces prosthetics and orthosis for people living with physical disability.

Sibongile speaks highly of her team, stating, "We are a group of young individuals with a background in digital fabrication and industrial product design."

2021

- GAP Gauteng Township Economy 3rd place Winner
- IF Global Entrepreneurial Disruptor
- Top 100 First watch Entrepreneurship finalist
- Africa Youth Awards African Youth of The Year Female Finalist
- Social Innovation Summit 3rd place Winner

We are engineering graduates and we are also surrounded by a powerful board of advisors." Recognising the increasing demand for prostheses and orthosis devices which always exceeds supply and associated with high cost implications, particularly amongst underprivileged people, Sibongile and her team investigated the use of 3D technology to produce prosthetic limbs and orthosis at low cost using affordable material.

Sibongile explains, "Ukuhamba Prosthetics is customer driven. We leverage digital technology for faster production, better fit, sustainability and affordability of prosthetic limbs and orthosis for less privileged amputees, including those living with physical disabilities in South Africa and around the world."

Since its inception in 2020, the name Uku'hamba Prosthetics and Orthotics (Pty) Ltd has become more synonymous with high quality prosthetic limbs and orthotics solutions. According to Sibongile, "Uku'hamba Prosthetics and Orthotics (Pty) Ltd creates aesthetically pleasing prostheses and orthoses that allow amputees and those living with physical disabilities to display their prosthetic proudly thus changing the way others view disability. Sibongile believes Uku'hamba products and solutions are more than a tool. "They allow amputees and those living with physical disabilities to regain mobility, giving them the opportunity to overcome their disability at a practical and psychological level", she says.

FUTURE PLANS AND ASPIRATIONS

Sibongile affirms that Uku'hamba Prosthetics and Orthotics (Pty) Ltd will continue to work hard in pursuing its mission of providing custom-made, water-resistant, high-quality and cost effective prosthetics and orthotics in the shortest possible time, thus demonstrating the improvement of quality of life, functionality and contribution of

those living with physical disability in the economy of the country. Through its work, Uku'hamba strives to empower and inspire confidence among people living with physical disabilities.

As a customer-driven company, Uku'hamba Prosthetics and Orthotics (Pty) Ltd is determined to grow its footprint as a manufacturer of prosthetics and orthosis to restore pride and dignity in people living with physical disabilities. This is in line with the company's key values, namely:

- Excellence
- Innovation
- Integrity and Honesty
- Collaboration and
- Customer Satisfaction

When asked about her entrepreneurial journey, Sibongile Mongadi reflected that her career has been anything but

tedious or uninspiring. "I am surprised at how much I have enjoyed it and the progress I have made. In fact, my entrepreneurial journey of less than two years seems more like 20 years," she says.

Looking back, Sibongile never imagined that she would reach her current level of success, particularly in an industry that is known for its male dominance.

From the onset, she dedicated her career to developing prosthetic limbs that could be widely and cost-effectively manufactured. "My mission," she says, "is to ensure prostheses are made available to anyone in need, greatly increasing the independence of amputees who might otherwise be unable to afford them. Given how fulfilling the work can be, it has not felt like a sacrifice to me," she concludes.



To all the young women aspiring to start their own ventures, Sibongile has this advice to give:

“Embrace the lessons learnt from the journey of your becoming and never give up. Most importantly, put in the work and trust the process.”





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