



PHILIPS

Healthcare Africa

Working together to transform

Healthcare in Africa



Philips improves people's lives through meaningful innovation. **We are deeply committed to supporting the transformation of healthcare in Africa**

Sharing knowledge and resources

Multi-stakeholder partnerships are increasingly seen as a necessary approach to address complex healthcare challenges. Private sector companies play an important role in such partnerships. They can contribute innovation, technology and workflow expertise, and help with capability building to improve access to affordable healthcare.

At Philips we are expanding our efforts to support the transformation of healthcare in Africa. Our experience has taught us that local ownership and responsibility are key prerequisites for durable success. Moreover, our engagement goes far beyond short-term commercial interests. Through projects across Africa, we have shown our willingness to invest in long-term results, to take and share risk, and to learn quickly in order to develop the best and most cost-effective solutions. We seek to partner with the right stakeholders to make quality healthcare available and affordable to people across the entire socio-economic spectrum.

"Access to healthcare is a key driver of sustainable socioeconomic development. In the last decade, there has been a rise in economic prosperity in many countries in Africa. Despite tremendous progress, there is still a substantial unfulfilled need for effective healthcare that is affordable, equitable and efficiently managed. Philips is deeply committed to supporting the required transformation of healthcare, and to collaborating with complementing partners."

Frans van Houten,
CEO Philips

"Many African governments will embrace the United Nations Sustainable Development Goals. These contain specific aims to significantly reduce maternal mortality and end preventable deaths of newborns and children under five by 2030. Quality of life in Africa is also still hampered by high levels of infectious disease as well as rising levels of non-communicable diseases. The scale and complexity of these challenges are difficult for any stakeholder to solve alone. By joining forces, we can combine our know-how and expertise in the fields of healthcare, technology, information systems and business processes with your insight and knowledge of local needs and priorities."

JJ van Dongen,
CEO Philips Africa

Contributing to healthcare in Africa

Philips has a mission to improve people's lives through meaningful innovation.

We believe that creating a viable and sustainable approach to healthcare in any country depends on a coordinated approach based on a holistic vision. This means addressing key issues across the entire care continuum, covering all states of health and the relationship between home and care facilities.

For us, a focus on people is fundamental. We invest time and effort to understand local African contexts and stakeholder needs before thinking about solutions. We work with partners and stakeholders to strengthen health systems at all levels – from primary to tertiary – through infrastructure improvements, access to technology,

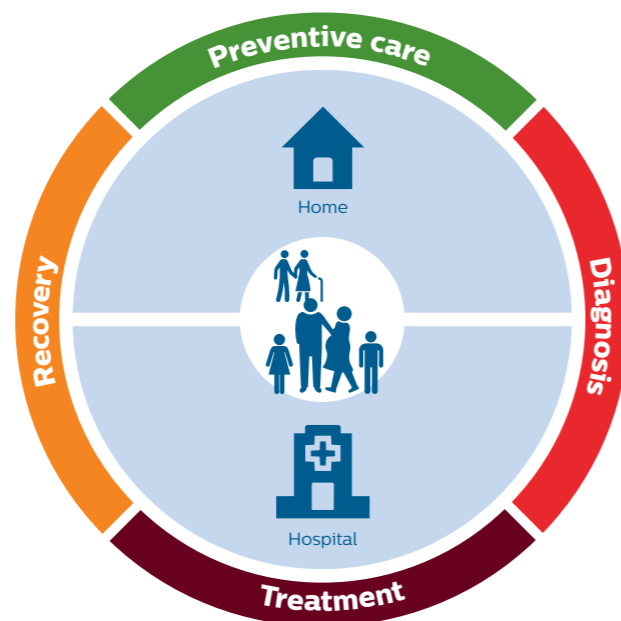
capability development, and raising public knowledge and community engagement.

We aim to provide care givers at every level with affordable, sustainable solutions, and we work with community stakeholders to gain their active participation.

Ultimately, this integrated approach paves the way for a healthier population and more cost-effective care than traditional approaches based exclusively on diagnosis and treatment.

We work with our partners **across the entire health continuum.** **We strive** to make quality healthcare available and affordable to all

The health continuum - effective, comprehensive healthcare depends on addressing stakeholder needs across the health continuum - from prevention and healthy living to diagnosis, treatment and recovery.





Overcrowded healthcare facilities lead to higher levels of mortality



Understanding the issues

Our work in understanding local contexts in African countries has led to a key conclusion: while each country has its specific dynamics, there are some common challenges shared by many countries.

Socio-economic issues

Although our focus is to understand and address issues related to healthcare provision, we cannot ignore the impact of socio-economic factors on community health. Effective actions require partnerships to also address challenges such as poverty, access to clean water and reliable energy, and malnutrition that indirectly impact people's health.

Access to healthcare in rural and remote areas

Sub-Saharan Africa is currently almost 40 percent urbanized¹. Many countries still have large rural populations, often in sparsely inhabited areas. Many countries have large rural populations, often in sparsely inhabited areas. These areas have a high need for primary care services, yet access is severely limited to non-existent.

Need to strengthen primary care

Even in more densely populated urban areas, primary care services are often not effectively utilized. There may be many reasons for this. In some cases, primary care facilities are not sufficiently equipped or their staff lack adequate training. A lack of infrastructure and reliability of medicine supplies and maintenance may also be a problem. Some pregnant women cannot reach adequately equipped medical facilities for health checks and delivery. Others consciously choose to give birth at home in poor hygiene conditions due to fear of being tested positive for HIV, or from a lack of healthcare awareness or conflicting traditional beliefs.

Need to improve referral systems

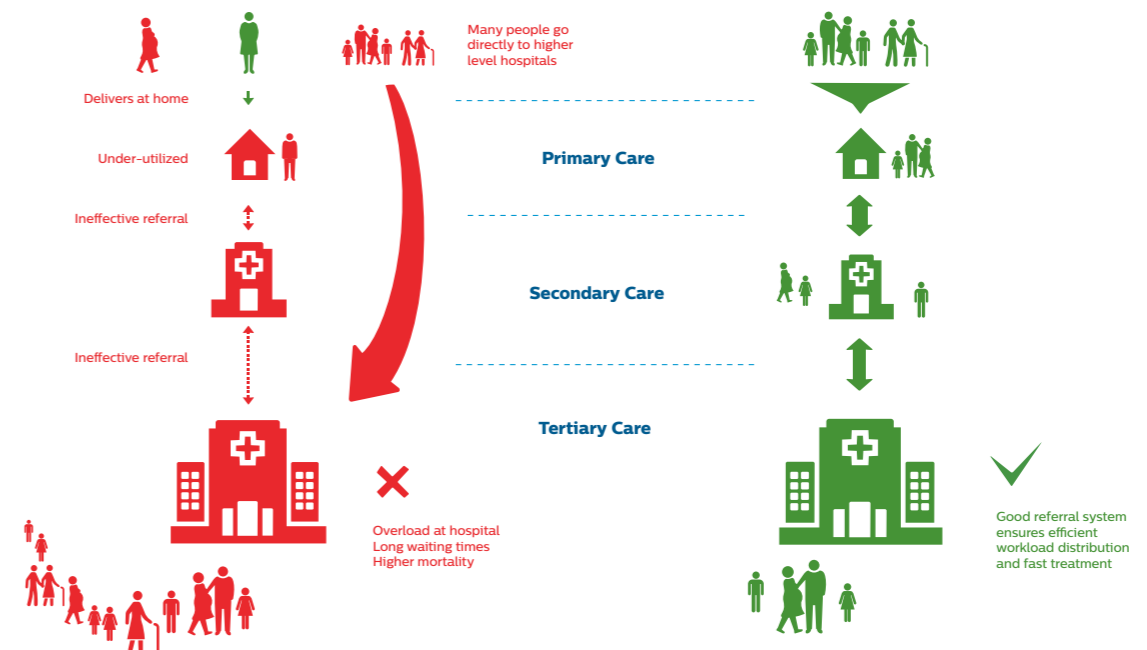
Under-utilization of primary healthcare often leads to tertiary care services becoming overloaded with non-critical cases. The result is extreme pressure on staff, long waiting times for treatment and higher levels of mortality – making it vital to find ways to balance patient loads across the entire healthcare system.

Shortages of healthcare workers

Shortages of qualified healthcare staff are chronic in many countries due to lack of funding and the time required to train sufficient healthcare professionals for Africa's growing population. A pragmatic approach is urgently needed to free up qualified healthcare workers by training non-professional care givers to share non-specialized tasks, and to extend healthcare services into communities.

Sustainability of care facilities

Currently, 30-40% of medical equipment in resource-poor settings in Sub-Saharan Africa is out of service². Local public health officials often lack the financial resources to undertake the necessary upgrades and need more flexible financing plans and access to donor funding. Even when upgrades are carried out, supporting services are required to allow effective monitoring, reporting, maintenance and planning.



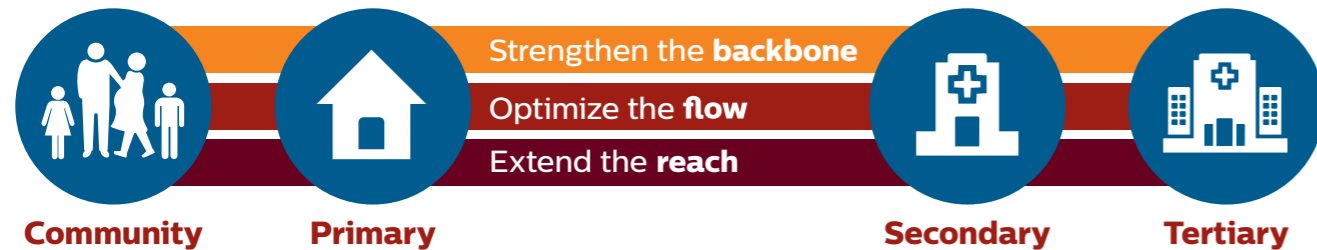
The healthcare referral system - optimizing patient referrals is key to ensuring cost-effective care provision and reducing mortality.

¹ Hove, M 2013 The Urban Crisis in Sub-Saharan Africa. Stability, 2(1): 7, pp.1-14, DOI: <http://dx.doi.org/10.5334/sta.ap>

² Perry L and Malkin R. Effectiveness of medical equipment donations to improve health systems: how much medical equipment is broken in the developing world? Med Biol Eng Comput. 2011. 49:719-22.

Our **three-step** strategy

We have developed a **three-step strategy** to work with partners and other stakeholders towards improving access to effective healthcare in Africa. This approach enabled us to create effective service delivery programs (Advanced Care Services, Community Care Services and Community Life Centers) that can address the requirements of virtually every healthcare context, and can improve the connections and flows between all levels of care.



Our **three-step strategy** provides a framework for optimization at every level of care. Our service delivery programs (Advanced Care Services, Community Care Services and Community Life Centers) enable us to deliver on the strategy.

Step 1

Strengthen the **backbone** of the healthcare system

The first step is to ensure that healthcare facilities in any referral system are functioning efficiently, reliably and sustainably. For this, we support upgrading of facility infrastructure. We provide equipment and technology to address crucial gaps in diagnosis, treatment and management, and train staff and specialists to provide quality care.

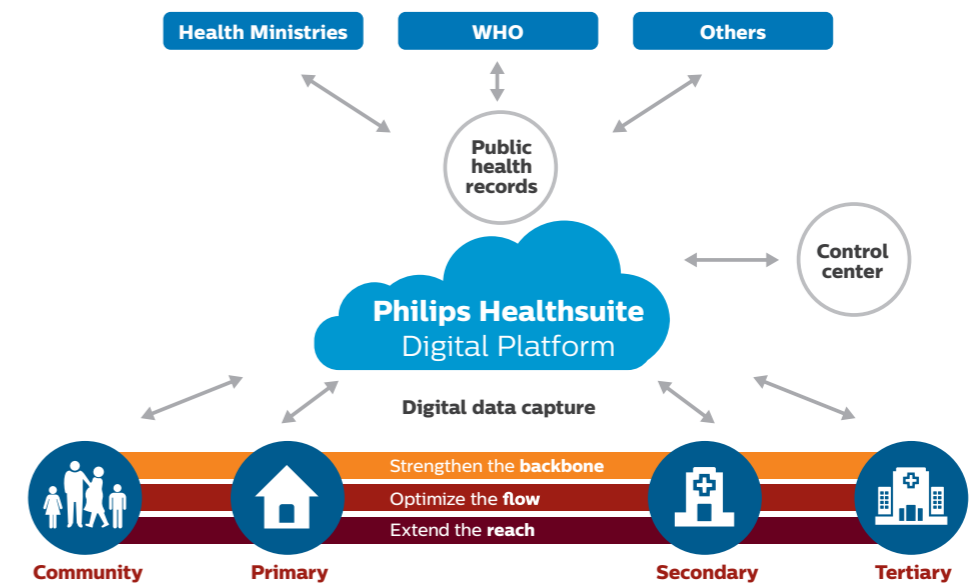
Together, our complementary service programs can address healthcare needs from the community level to tertiary care.

Reinforcing the capabilities of primary care centers and embedding them into their communities is fundamental. By transforming primary facilities into **'Community Life Centers'**, we strengthen the link between primary care and the community. Beyond basic primary care, these centers can deliver preventive care, diagnostics, advice, learning, access to clean water and electricity, and support socio-economic

development. And we work to build engagement, trust and utilization by the local community.

At the next level, our **'Community Care Services'** focus on streamlining patient referrals between the community, primary care centers and secondary care facilities. They also implement effective but affordable life-saving emergency care solutions in primary and secondary facilities. We also train Community Health Workers (CHWs) and equip them with mobile monitoring equipment to perform basic maternity diagnostics in people's homes. They can submit diagnostic data via a mobile platform to professionals at healthcare centers for potential advice and intervention. In combination with our Community Life Centers, this service provides effective gatekeeping by referring complex cases to higher levels of care. The results are a strong, positive impact on community health and re-balancing of workloads across the healthcare network.

Our **'Advanced Care Services'** help higher level tertiary and secondary hospitals decide on how to equip themselves to deal with complications, surgery and emergencies. The solutions we propose are based on a deep understanding of advanced care environments and optimization of equipment choices, and work and patient flows. We also offer coaching and training of medical staff and technicians. Plus, we partner with banks to provide financing assistance where required.



The Philips Healthsuite digital platform enables seamless data flow across all levels of care, and the generation of consolidated data records for strategic use and planning use by Public Health Institutions.

Step 2

Optimize the **flow**

A second step is to optimize the flow of resources, information and patients. Our modular e-Health system provides efficient workflow management and exchange of information between departments and care professionals across the healthcare system, as well as providing crucial reporting to system-level policy makers to enable better planning and decision making.

Poorly coordinated referral among different levels of care leads to a congested healthcare system, a waste of scarce resources, and often higher mortality rates. Our e-Health system addresses these issues. It handles workload distribution both inside care facilities and across the health continuum, enabling care givers at every level to integrate their diagnosis and treatment. They can make sound referrals, resulting in a well-managed flow of patients and optimal use of resources. This reduces the overloading of tertiary and secondary care facilities with people who bypass primary care

centers and go directly to higher level hospitals. A key factor in managing an effective health system is making aggregated data collected at various levels of care available to health system policy makers and planners. This allows better long term decision making, resulting in more effective healthcare investments. The cloud-based Philips Healthsuite digital platform introduces a new era of connected care for patients, healthcare providers and policy makers. It provides a flow of the right level of information in a secure and accessible way to all stakeholders in the healthcare system.

Step 3

Extend the **reach**

Thirdly, it is essential to ensure that patients can access healthcare professionals, who are often in short supply and overloaded. We focus on smart task-sharing as a way to free up experienced health workers for complex tasks, and remote solutions to improve access to specialized care.

Delivering quality care to people at all socio-economic levels depends on the availability of capable healthcare staff at every stage of the care continuum. Our medical devices and continuous training help with this. We enable CHWs to take over certain non-specialized services (task-sharing) without compromising safety. They can provide basic diagnostics, treatment, awareness creation and referral services. In doing so, they guide women to safer deliveries in care facilities instead of unsafe home delivery. In addition, our e-Health modules can extend the reach of doctors and specialists through remote consultancy and treatment with no travel required.

What can we offer?

We have developed an integrated portfolio of complementary offerings, consisting of five highly modular solution packages designed to address our three-step strategy. Each of the packages contains customizable technology applications and services. This creates flexibility in our service delivery programs to provide solutions that meet the specific requirements of different healthcare contexts.

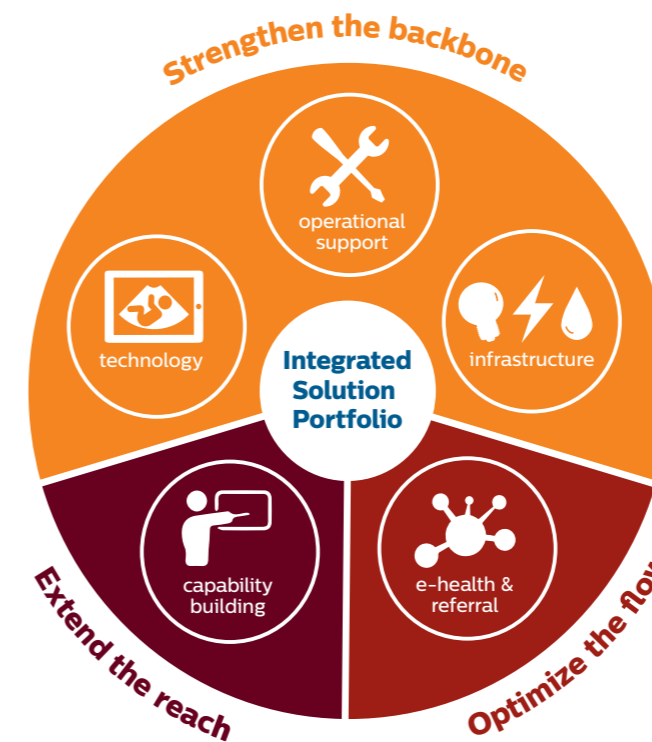
Assessment

Identify priorities

We always begin with a thorough assessment to identify priorities. This leads to clear recommendations and an agreed plan for the development and implementation of the most appropriate solutions for each care context. The assessment not only addresses clinical requirements, but also the needs of non-clinical stakeholders such as community representatives, health policy officials and financial administrators. This approach is important to ensure buy-in, trust and engagement of all key stakeholders.

Address financing needs

We can assist customers with different financing options that meet their needs when required. Philips Medical Capital LCC has established strategic relationships with reliable financial partners (banks, private equity funds, and development finance institutions) to support customers with competitive sources of capital for financing equipment or smart leasing solutions.



Integrated solution portfolio - five modular solution packages facilitate flexibility, cost-effectiveness and speed for all of our service delivery programs.

Integrated solution portfolio



1. Technology

Philips has extensive experience in delivering technologies that enable effective, efficient and affordable healthcare. Our solutions address the needs of care givers across the entire healthcare system – from hospitals to homes. The technology portfolio and training modules cover a wide range of modalities including ultrasound, X-ray systems, Magnetic Resonance Imaging (MRI), Computed Tomography (CT), patient monitoring and anesthesia. We also equip CHWs with mobile devices that allow them to perform basic diagnostics, treatment and data collection in people's homes.



2. Operational support

Our operational support services provide maximum reliability and efficiency. Some equipment can be monitored remotely through the use of technology. This enables preemptive maintenance and planning of long-term upgrades. By monitoring equipment and facility utilization, we can offer advice about workflow and service optimization in clinical care environments.



3. Infrastructure

If required, we can address gaps in infrastructure and provide turnkey solutions for fully functional facilities based on local healthcare service needs. This can include design of facilities, energy saving lighting, smart solar power, water purification and environmentally friendly waste processing, depending on the need.



4. E-Health & referral

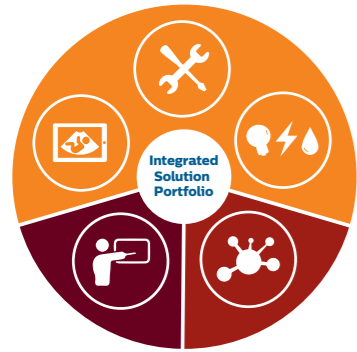
Our modular e-Health system is a cloud-based digital platform called the Philips Healthsuite. It enables efficient healthcare delivery workflow, patient referrals and even remote diagnosis and treatment. Furthermore, it offers user-friendly tools for data collection, data analysis and data sharing between all levels of care ranging from individuals at home, health professionals, as well as healthcare system-level policy makers.



5. Capability building

Capability strengthening is a key factor in improving healthcare delivery. Our clinical training and coaching modules continuously develop capabilities of all care professionals (from doctors and nurses to ambulance workers) through a recognized diploma certification scheme. We also provide training to non-professional care givers, such as CHWs. This frees health professionals from basic tasks that can be reliably delivered by trained non-professionals.

Examples of effective Philips solutions for all levels of care



Community



Primary



Secondary








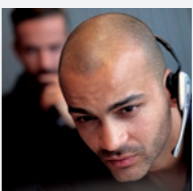



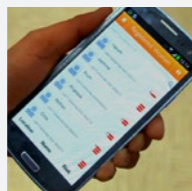
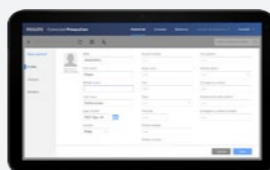
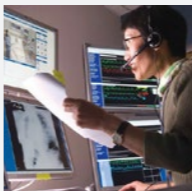


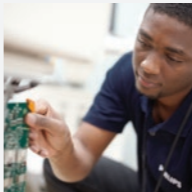

Tertiary

Strengthen the **backbone**

Optimize the **flow**

Extend the **reach**



 <p>Backpack with mobile devices enables CHWs to offer basic diagnostics and referrals</p>	 <p>Mobile ultrasound makes diagnostics accessible and affordable</p>	 <p>Networked vital signs monitoring offers crucial patient information to care givers</p>	 <p>The advanced care portfolio offers many modalities including ultrasound, X-ray systems, MRI, CT, patient monitoring and anesthesia</p>
 <p>Electronic patients registration, inventory management and equipment maintenance support efficient operation</p>	 <p>Remote equipment monitoring allows for maximum reliability and optimal upgrade planning</p>		
 <p>Clean water is essential for primary care clinics and communities in low-resource settings</p>	 <p>Solar powered solutions can provide reliable electricity supply</p>	 <p>Facility workflow analysis and design can enhance efficiency of care provisions</p>	
 <p>Mobile obstetric monitor (MoM) allows pregnancy checks, data capturing and consultancy in the community</p>	 <p>eHealth systems can manage referrals and electronic data records</p>	 <p>Remote support is used by professionals to offer consultancy to MoM operators in the field</p>	 <p>eHealth workflow and patient management modules provide efficiency and cost saving</p>
 <p>Training for health professionals as well as CHWs/CHVs creates staff motivation and efficiency</p>	 <p>Training local technicians for reliable support reduces down-time</p>	 <p>Continuous training and updates for specialists enables world-class advanced healthcare</p>	

Some initiatives that make a difference



1 EGYPT
The Women's Health Outreach Program (WHOP) in Egypt uses Philips technology to screen thousands of women for breast cancer.

2 GHANA
The Philips 'Touching 1 Million Ghanaian Lives by 2020' initiative was launched in Accra. Philips cooperated with the Ghana Ministry of Health (MoH) to provide ultrasound machines to ten healthcare facilities, together with support and training for staff. This cooperation makes preventative screening available to pregnant women to support the MoH in its goals of reducing maternal and infant mortality.

3 UGANDA
Imaging the World and Philips collaborated to provide access to basic antenatal ultrasound at the Nawanyago Health Centre III. This program also features tele-radiology: mobile ultrasound units being taken into rural areas, with compressed images being sent

electronically to experts at tertiary care centers

4 KENYA
In partnership with the Kiambu County Government, Philips opened Africa's first Community Life Center (CLC) aimed at strengthening primary health care and enabling community development in Githurai, Kenya. Philips has trained 50 CHWs to extend the services of the CLC into the community with basic diagnostic and data collection services

5 KENYA
Philips Africa has established an Innovation Hub in Nairobi, which will be the center for developing innovations 'in Africa-for Africa', covering healthcare, lighting and healthy living.

6 TANZANIA
Philips has supported the Ministry of Health and Social Welfare to improve the standard of healthcare in 98 hospitals across the country. This partnership was renewed in 2012 for another 5 years

during which Philips will work to maintain and upgrade equipment in more than 100 hospitals.

7 ZAMBIA
Philips collaborated with the Zambian Ministry of Health and MeduPros-S, an international medical training company, to deliver ultrasound and x-ray equipment technology and staff training for 64 hospitals of various levels across the country. Dedicated educational and 'train-the-trainer' programs were set up to create a sustainable ultrasound and X-ray practice.

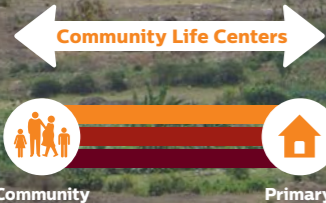
8 ZIMBABWE
Philips conducted clinical training workshops in the Mbuya Nehanda Maternity Hospital, Harare. The workshops covered fetal monitoring, infant warming, jaundice management and clinical ultrasound for midwives, maternity nurses, obstetricians and ultrasound practitioners.

9 NAMIBIA
The World Health Organization (WHO) selected Philips out of

four companies as the provider of equipment, services and training and education to the "Program for Accelerating the Reduction of Maternal & Child Mortality (PARMaCM) in Namibia, which was founded by Ms. Pohamba, the first lady of Namibia. The program is a partnership between the Ministry of Health and Social Services (implementing partner), the WHO (technical support management), and the European Union (funding).

10 SOUTH AFRICA
Philips and the University of Johannesburg (UJ) have set up a high-tech Medical Simulation Lab to support clinical education and training.

11 SOUTH AFRICA
Philips established a public-private partnership with the University of Stellenbosch to co-develop emergency maternal care solutions for the Tygerberg Tertiary Care public hospital in Cape Town.



Implementation example

Bringing 24 / 7 access to primary care in Kenya

Githurai-Lang'ata Community Life Center: partnering to strengthen primary care and enable community development



Githurai, in the east of Nairobi is a typical example of rapid urbanization with about 150,000 residents from various backgrounds and income levels. Such communities face many infrastructure challenges: access to clean water, reliable energy supply, and adequate primary and secondary health care services.

Low-income pregnant women are most affected by poor access to primary care in such settlements. Some cannot afford to reach well-equipped hospitals for health checks and delivery. Others choose to give birth at home in poor hygiene conditions despite maternity care being available for free in Kenya. This may be to avoid being diagnosed with HIV or due to a lack of awareness of health issues, or belief in traditional customs.

In this project, Philips provided hardware and services to increase access to high quality primary care, transforming an under-utilized and poorly equipped health care facility into a thriving community hub: the Githurai Lang'ata Community Life Center (CLC).

Developed in collaboration with the County Government of Kiambu and the Githurai community, this pilot project has delivered medical devices and training, work and patient flows, laboratory equipment, refrigeration, diagnostics & IT applications – all supported by reliable solar power, efficient indoor and outdoor LED-lighting, and a clean water supply. Launched in October 2014, this pilot is the start of a broader partnership with the Kiambu government and other counties who want to establish further CLCs in 2015.

“This co-operation is reflective of the kind of partnerships we seek to participate in with the private sector that results in uplifting the lives of our communities.”
H.E William Kabogo, Governor of Kiambu County

“Business is looking good. Sales have gone up. I have started selling medicine bottles. I buy them at kshs 10 for 3 and sell them at kshs 10 for one. My business has gone up because the number of patients coming to the facility has increased.”
Waithera, small trader operating outside the Community Life Center facility.

Githurai-Lang'ata CLC: immediate benefits for the community

Although too early for a complete assessment, benefits already include:

- A dramatic increase in patient numbers
- Solar street lighting and 24-hour opening for safer nighttime access
- A five-fold increase in requests for family planning
- New commercial activities emerging along the street to serve the CLC's patients and visitors.



Implementation example

Reducing maternal and infant mortality in South Africa

Achieving joint goals by improving emergency care and referrals system

In 2009, there were 333 maternal deaths per 100 000 new born babies in South Africa.¹ Most of these deaths could have been avoided with greater access to health care, early risk identification and proper emergency care. Fast growing townships like Kayalitsha, in the Western Cape, face such issues daily. This results in an increasing demand for healthcare that causes challenges for nearby Tygerberg Hospital, the biggest tertiary hospital in Cape Town.

In 2012, Philips and Tygerberg Hospital initiated a capability building pilot project for management of high-risk pregnancies and complications in childbirth at the Obstetric Critical Care Unit (OCCU), and to improve throughput in the maternity department. Philips customized a 'step down unit', an Emergency Obstetrical Care unit (EmONC), with patient and fetal monitoring, ultrasound and ventilation devices for resuscitation, an e-health system, training and continuous education for medical staff, and equipment maintenance.

This was a first step in reducing maternal and infant mortality while delivering high quality, affordable care. It is based on more efficient referrals via a network of local and national partnerships, and interventions at different levels of health care delivery. Other actions have included the creation of a 2-bed EmONC at the Worcester Hospital (secondary care) and improvement of primary care referral services from the Ceres Hospital, supported by trained CHWs. The Gauteng Department of Health, Philips and University of Johannesburg have also jointly created specialized Mother & Child Care Ambulances and trained 'specialist retrieval teams' that direct critical patients to the right level of care.

"The results of the pilot at Tygerberg have been extremely positive. Together with Philips, we have tested a blue-print of the ideal obstetric critical care unit for all levels of hospitals in South Africa." **Dr Eduard Langenegger**, Head of the Obstetric Critical Care Unit at Tygerberg Hospital

"First-world healthcare is within our reach if we can get appropriately trained staff with the right equipment to the right patient at the right time. This partnership between University of Johannesburg, Philips and Gauteng Department of Health aims to do just that." **Dr Craig Lambert**, Head of Emergency Medical Care at University of Johannesburg.

Philips and Tygerberg Hospital EmONC pilot project: measurable outcomes

Increased emergency and preventive care capacity at the Tygerberg Hospital have led to earlier interventions and better outcomes, including:

- Sustained reduction in mortality rates from 6% to 0% over the 18 month test period through creation of the EmONC and training of personnel
- Shorter stays, reducing bed occupancy from 95% to 70% in the OCCU through improved patient flow in the maternity department.

¹ Bradshaw et al. 2012. South African Journal of Obstetrics and Gynaecology, Vol 18, No 2.



Advanced Care Services



Creating a center of excellence in Egypt

Upgraded Critical Care Center serves as a model of tertiary care



Care of critically ill patients is resource-intensive, and 15–20% of hospital budgets are typically spent in the Intensive Care Unit (ICU).¹ Care must be taken then to assure services are optimized to the fullest extent.

The Critical Care Center at Cairo University Hospital was founded in 1982 and provides complete cardiac services for the monitoring and management of critically ill patients. The center is well known in Egypt as one of the best places for the management of acute patient care and its unique ability to deal with cardiac crises. After being in operation for almost 30 years, a comprehensive review a few years ago concluded that the center required innovation and updated technology and services to maintain its leadership role in critical care provision.

In 2011, Philips was chosen as a partner to collaborate with the Amer Group in Egypt to renovate, expand and update the Critical Care Center, which includes the general ICU and acute coronary care unit. The capacity was expanded from 20 beds to 70. A variety of the latest cardiac solutions, ranging from interventional catheter labs and echo ultrasound, to patient cardiac monitoring were installed. Philips supplied world class equipment and delivered a range of complementary services which included staff training and maintenance services to allow for efficient use and long term reliability.

“We received very good training support, which is important and one of the main reasons why our choice was Philips. They offered the most updated technology, combined with strong service and maintenance.” **Professor Alia Abdelfattah**, professor of Critical Care Medicine and Chief of the Critical Care Medicine Department at Cairo University Hospitals, Egypt.

Rejuvenating a critical care center: results

Today the Cairo University Hospital Critical Care Center stands again as a center of excellence within Egypt. The improvements led to:

- A tangible increase in the service and clinical quality
- Faster diagnostics. Instead of attending to 10 to 15 patients each day, the center can now accommodate 20 to 25.

¹ Curtis JR, Cook DJ, Wall RJ, Angus DC, Bion J, Kacmarek R, et al. Intensive care unit quality improvement: a ‘how-to’ guide for the interdisciplinary team. *Crit Care Med* 2006; 34:2111–2118.

The benefits of collaborating with us

Philips has a proven track record and expertise in building long-term public-private partnerships to transform healthcare systems. Our modular and flexible portfolio of highly effective products and services covers the entire health continuum, supporting and enabling:

- Awareness and preventive care, encouraging healthier living
- Early referral through basic diagnosis in the community, and faster diagnostics in healthcare centers
- Continuous training, coaching and development of staff and other care stakeholders
- Well-equipped healthcare centers, with cost-effective treatment

- More efficient patient flows and workflows
- Monitoring that reduces recovery periods in care centers and allows safe recovery at home
- Cost-effective infrastructure upgrades and operational support

Our commitment is to building local capability and sound business models that result in resilient health systems. With a legacy of over 100 years, Philips is one of the world's most trusted brands for innovation and quality. We do not only pursue profit, but strive for thought leadership, excellence and making a meaningful difference.

Building partnerships in Africa

We are continuing to build partnerships in Africa with recognized and reputable partners that share our mission to improve the quality and accessibility of care across Africa.

Philips in Africa works very closely with the Philips Foundation, which has global innovation partnerships with UNICEF and the Red Cross (led by the International Committee of the Red Cross and the Netherlands Red Cross). This collaboration benefits from a global reach of over 190 countries.

Philips and the African Medical and Research Foundation (AMREF) have entered into a shared-value strategic partnership model designed to bring about a structural improvement in the healthcare infrastructure and healthcare provision on the African continent.

For more information

To further explore possibilities for cooperation towards healthcare solutions that work in Africa, please contact

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