

A photograph of a woman with dark skin and hair, wearing an orange top, holding a baby wrapped in a patterned cloth. The baby is wearing a white knit hat and looking upwards. The background shows blue metal railings, suggesting a hospital or clinic setting.

**PHILIPS**

Healthcare Africa

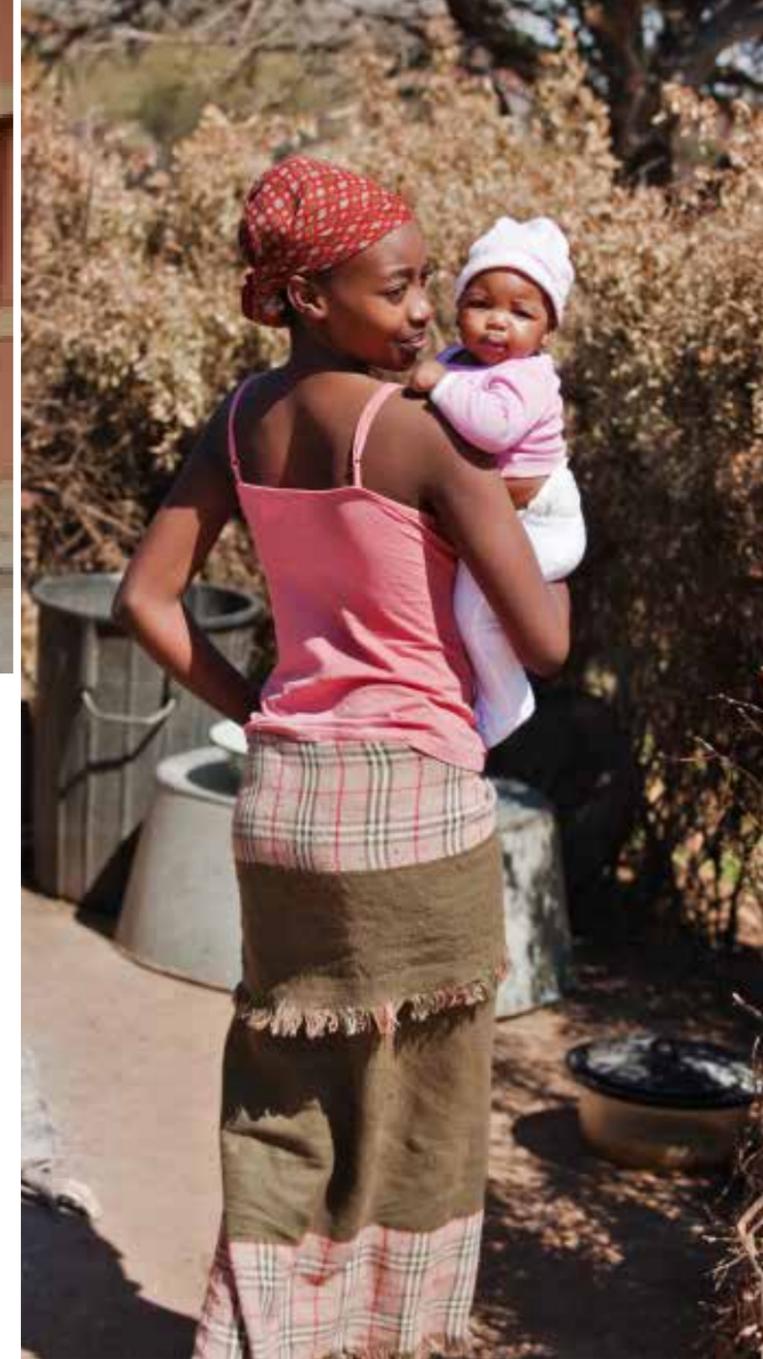
## Emergency obstetrical care

Strengthening care coordination and risk stratification

Nearly 1000 women die from pregnancy- or childbirth related complications globally every day, according to the World Health Organization (2011). That's one woman every 90 seconds. Every loss of a mother shatters a family and threatens the well being of surviving children. Evidence shows that infants whose mothers die are more likely to die before reaching their second birthday than infants whose mothers survive. And for every woman who dies in childbirth, 20 more suffer serious complications (e.g. hypertension, pulmonary edema, renal failure), injury (fistula, tearing) and infection (sepsis), a total of 10 million women each year.

- Working for the survival of mothers is a human rights imperative.
- Both the International Conference on Population and Development and Millennium Development Goals call for a 75 per cent reduction in maternal mortality between 1990 and 2015.

Maternal death and disability rates mirror the huge discrepancies between the haves and the have-nots – between those who have access to medical care and those who do not, both within a country and between countries. Some ninety nine per cent of maternal deaths occur in Africa and Asia, where the majority of women die from severe bleeding, infections, eclampsia, obstructed labour and the consequences of unsafe abortions – all of these are avoidable causes for which there are well-known and highly effective prevention and interventions solutions.



### The bottleneck

At Tygerberg Hospital (a tertiary hospital located in Parow, Cape Town, South Africa) maternal mortality and morbidity was increasing due to the Obstetric Critical Care Unit (OCCU) being overburdened with a 95% occupation rate and an increased admission rate of critically ill and ventilated patients. Due to new drainage areas Tygerberg Hospital's catchment area now includes Kayalitsha with its fast growing new low socio-economic settlements, adding more than 10.000 deliveries per year. As a consequence referrals increased by 2000 patients from which 1500 were deliveries. The bottleneck was caused by the lack of an emergency obstetrical unit for high risk pre- /post- natal cases, non-viable pregnancies and abruption UID. A dedicated "step down unit" was built to tackle this challenge.

The main problems were:

- No monitoring for at risk step down patients with Arterial lines, Central Venous Pressure's (CVP's) and epidurals.
- No monitor for ECG measurement
- No Continuous Positive Airway Pressure (CPAP) devices available.
- Nurses and midwives needed additional training

The project aims to strengthen the care coordination and risk stratification for pregnant women across the different levels of healthcare delivery (primary, secondary and tertiary level) by implementing an Emergency Obstetrical Care unit (EmOC) which is supported by a customized Philips solution.

Since we aim to bring quality of care into the community, we need to know where and how expectant mothers are treated in the different levels of the health delivery system and for which set of symptoms.

### This allows for:

- A better follow-up of mother and child pre- and postnatal.
- Early recognition and correct management of critically ill obstetric patients (treatment and/or referral)
- Increased capacity to manage high risk pregnancies and complications in OCCU
- Earlier discharge possible as critically ill patients receive effective and timely initial treatment
- Admitting to the EMOC only those patients who are in need of advanced monitoring
- Save maternal and fetal lives and prevent morbidity
- Improved collection, management and interpretation of patient data

### How do hospitals organize patient data collection and patient data-management?

A staggering number of expectant mothers and neonates are dying during transport, so we took a close look at risk stratification mechanisms and resulting referral pathways.

### Who interprets the patient data and who decides on the treatment, on what basis?

A Philips solution consists of devices (patient monitoring, fetal monitoring, ultrasound and ventilation devices), software (e-health-system), training and continuous education, a maintenance contract and coaching (quality control & quality assurance) to support the sustainability of the overall healthcare service delivery solution.

### Methods

We used the existing step-down unit infrastructure at Tygerberg Hospital. After installation of the patient monitoring equipment, (with transport capabilities and clinical decision support tools) and the fetal monitoring solutions in the EMOC unit and a central station in the OCCU, all medical staff was trained on the usage of the devices. We developed a continuous education program to tackle staff turnover and to support sustainability.

Over one year we prospectively evaluated and stratified accordingly critically ill mothers and

women with risk pregnancies, who needed emergency critical care in the EMOC. Critically ill mothers were transferred directly to the OCCU, while mothers in less critical conditions were treated or observed for a certain period of time in the EMOC. We compared patient turnover and admission rates in the maternity department before and after 12 months.

Based on the collected data we developed an "Emergency Obstetric Care unit-blueprint" which can be replicated across South Africa and in other African countries / healthcare service delivery systems.

## Conclusions

With the implementation of a well-equipped EmONC, staffed with well-trained medical personal in the former step-down unit, Tygerberg hospital was able to improve the workflow in the maternity department of Tygerbeg Hospital:

- 25% increase in Obstetrical Critical Care Unit acceptance (from 402 to 519 mothers)
- 400 mothers were directly admitted from the labour ward.
- Decreased bed occupancy from 95% to 70% in the OCCU.
- 814 mothers were admitted in the EmONC, coming from OCCU, labour ward and referral hospital ICU's.

(Early detection → Early treatment)

Tygerberg Hospital increased the early emergency and risk prevention capacity of the department. During the last 18 months there were no maternal deaths in the EmONC and the mortality rate in OCCU did not increase.

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