

INTRODUCTION

An estimated 20.8% of births in South Africa occur in KwaZulu-Natal with around 90% of these occurring within the public health sector.

In the provincial public health sector there has been a 10.9% increase in the number of births over the past 5 years from 159 070 live births in 2017/18 to 176 478 in 2021/22. Over this period there has been no change in the proportion of sick or low birth weight babies requiring admission to our neonatal services or in the status of neonatal beds in the province. The resulting increase in admissions has been further aggravated by a shift to more sophisticated modalities of care which has placed additional strain across all levels of care in the health service. As a result there has been no sustained improvement in neonatal outcomes during this period with a neonatal mortality rate fluctuating around 13.0 deaths per 1 000 live births. Many of these deaths occur in district hospitals whilst awaiting admission to higher levels of care.

Given the peculiar physiology and pathology of small and sick newborn babies they have extremely specific requirements which are best met in a dedicated neonatal nursery rather than a general hospital environment. The cost of establishing such a specific unit is extremely high and the province needs to ensure optimal use of available resources before embarking on the unnecessary development of additional facilities. The present bed utilisation rate of district hospital nurseries ranges between 31.8% and 135.1% and only 9 of 37 district hospital nurseries currently have a bed utilisation rate above 80%. In contrast the bed utilisation rate in neonatal nurseries in regional and tertiary hospitals ranges from 63.3% to 139.9% with 10 of 14 nurseries having a bed utilisation in excess of 80%.

Across the province existing neonatal services, which were developed in 2013, are no longer able to meet the demand for services as:

- The annual number of births has increased;
- New modalities of care require a higher ratio of bed – 7 beds per 1,000 deliveries, not 5; and
- There has been a shift in the type of bed required with more ICU, high care and KMC beds and fewer general beds needed.

CURRENT CHALLENGES

- The province continues to experience a high number of births each year.
- This is associated with a marked shortage of neonatal beds across the province, especially in the three urban centres of eThekweni, Pietermaritzburg and Empangeni.
- The greatest shortages are of KMC beds and regional and tertiary level ICU and high care beds.
- Neonatal surgical services are restricted to just two sites – Inkosi Albert Luthuli Central and Grey's hospitals.
- Neonatal mortality remains unchanged at 13 .0 – 15.5 / 1 000 live births.
- Neonatal deaths account for over 60% of under-5 deaths.
- Deaths are due primarily to prematurity, asphyxia and sepsis.
- Most deaths occur in regional and district hospitals.
- Many deaths in district hospitals occur whilst babies are waiting for a bed in a regional or tertiary hospital neonatal ICU.

- Emergency Medical Services have limited capacity to support neonatal transfers as the only staff authorised to transfer sick newborns are those with a BTech qualification.

RESPONSE TO DATE

To date interventions to strengthen neonatal services have focussed on three areas:

1. Clinical practices:
 - a. An admission and discharge policy has been developed to support appropriate admission and discharge practices. The implementation of this policy is limited by staffing levels in the postnatal wards which have a nursing allocation based on bed rather than patient numbers.
 - b. Standardised clinical records as well as clinical bundles with clinical guidelines, implementation checklists and audit tools have been introduced to support clinical care.
 - c. Kangaroo Mother Care (KCM) is being adopted as the standard of care for all newborns.
 - d. The capacity of district hospitals to provide non-invasive respiratory support to preterm babies is being strengthened.
2. Clinical Governance:
 - a. An Essential Package of Newborn Care has been implemented to create a standardised service delivery platform throughout the province.
 - b. A District Neonatal Services policy has been developed to optimise the use of regional beds.
 - c. Every district hospital has been linked to a paediatrician for ongoing outreach support for both clinical care and clinical governance.
3. Capacity of the neonatal service:

Address the shortcomings in the neonatal services infrastructure.

 - a. Over the past 15 years 9 regional and 5 district neonatal nurseries have been upgraded.
 - b. Neonatal nurseries in 4 district hospitals have been moved into underutilised children's wards and the feasibility of doing the same in a further 5 hospitals is being considered.

WAY FORWARD

To further improve neonatal services across the province the following interventions need to be adopted, prioritised or strengthened:

1. Improve the quality and capacity of the neonatal services.
 - a. A 10-year maternity and paediatric infrastructure plan is in place and aims to:
 - i. Upgrade services in every neonatal nursery to ensure oxygen, medical air, vacuum and at least 4 electrical points at every bed.
 - ii. Upgrade neonatal nurseries in the following district hospitals:
 - GJ Crookes Hospital
 - Murchison Hospital
 - Nkonjeni Hospital
 - St Appolonaris Hospital
 - Ceza Hospital
 - Ekombe Hospital
 - Eshowe Hospital
 - Itshelejuba Hospital
 - St Andrews Hospital

- iii. Explore the feasibility of expanding neonatal nurseries into underutilized children's wards in the following hospitals:

- Appelsbosch Hospital
- EG Usher Memorial Hospital
- Hlabisa Hospital
- Mahatma Gandhi Memorial Hospital
- RK Khan Hospital
- St Mary's Hospital, Marianhill

- b. Commission additional neonatal nurseries.

- i. Commission the newly renovated nursery in King Dinuzulu Hospital to support in-house maternity services and merge the existing nursery into the current KMC unit to expand available centralised KMC support in the eThekweni metro.
- ii. Commission the neonatal nursery in Dr Pixley ka Isaka Seme Hospital; retain the current nursery in Mahatma Gandhi Memorial Hospital and run the two services as a single complex.
- iii. Explore the feasibility of establishing a centralised Midlands KMC unit in under-utilized wards in Townhill Hospital, Pietermaritzburg. To do so will require:
 - 1. A ward with physical space for sleeping, socialising and ablutions.
 - 2. Equipment – beds, bedside lockers, lounge chairs, a fully equipped neonatal resuscitation unit, a pulse oximeter and biliblankets.
 - 3. Nursing staff – 1 per 6 beds per shift with a mix of professional and enrolled nurses in a 1 : 1 ratio.
 - 4. Medical cover from the neonatal services in Grey's Hospital or the Pietermaritzburg Metropolitan Hospitals Complex.

- 2. Improve access to higher levels of care.

- a. Establish tertiary neonatal services with neonatal surgical services in King Edward VIII and Queen Nandi Regional hospitals – this process has already started.

- b. Strengthen the implementation of District Level Neonatal Services.

Details are available in the District Level Neonatal Services Policy documents.

The rationale is that all babies and all neonatal beds belong to a district rather than a hospital and that babies should be accommodated in a hospital that provides the level of care that they need.

The principles underpinning this service are:

- i. Keep mother and baby together.
- ii. Admit this dyad to a hospital at the higher level that either of them requires.
- iii. Select a hospital of the correct level that is as close to the family home as possible.

- 3. Improve clinical services.

- a. Ensure better respiratory care of preterm babies via:

- i. Improved coverage of antenatal steroids for women in preterm labour.
- ii. Revised management of respiratory distress using immediate non-invasive ventilation and surfactant replacement therapy – details are provided in the following documents:
 - 1. Respiratory Distress Guidelines.
 - 2. Respiratory Distress Management Flowchart.
 - 3. nCPAP guideline.
 - 4. Surfactant Administration Guideline and Accreditation programme.

- iii. Distribute appropriate respiratory equipment to every neonatal nursery in KZN, including:
 - 1. A multimodal machine capable of providing non-invasive respiratory support (high flow nasal cannula oxygen; nasal CPAP and BiPAP) for every neonatal high care bed.
 - 2. A multimodal neonatal and paediatric ventilator for every neonatal ICU bed in the province with 50% of the machines able to provide high frequency oscillation.
 - iv. Provide supervision and support to ensure the efficient and effective use of this equipment. Staff training, standard operating procedures, outreach support and a mentorship programme are in place to support this process.
- b. Strengthen Kangaroo Mother Care (KMC).
Kangaroo Mother Care must become the standard of care for all newborn babies in all settings and not specifically for preterm babies in neonatal nurseries and KMC units. The implementation of KMC should therefore include:
- i. Term babies in the labour and postnatal wards.
 - ii. Well preterm babies in KMC units – on a 24-hour basis.
 - iii. Sick preterm babies in neonatal nursery high and intensive care beds – on an intermittent basis for at least 8 hours a day.

KMC should continue outside the health setting in the home and community for as long as the baby tolerates this – usually until around 6 weeks of age.

- c. Introduce clinical guidelines and management checklists.
As 48.5% of babies in the province are born within district level services most of these are cared for by relatively inexperienced medical officers or community service doctors.
A number of clinical bundles have been developed to assist these doctors and support better clinical care of babies outside specialist level facilities.

These bundles consist of:

- i. A clinical guideline to provide the theory behind the clinical care of each condition.
- ii. An implementation management checklist to assist in translating each guideline into practical day-to-day care.
- iii. An audit tool for some of the conditions to monitor implementation of the checklists and compliance with the guidelines.

To date clinical bundles have been developed for:

- i. Many components of routine nursing care of preterm babies such as feeding and fluid management.
- ii. Neonatal encephalopathy.
- iii. Neonatal infections.
- iv. Respiratory distress.

RESPONSIBILITIES

The following role players need to participate in the implementation of the above initiatives:

1. Provincial Neonatal Coordinator
Provide guidance, support and facilitate the implementation of all identified interventions.
2. Infrastructure Directorate.
Implement the 10-year maternity and neonatal services plan for
 The upgrading of bedside services in all neonatal nurseries.
 The refurbishment or renewal of neonatal facilities in select hospitals.
3. Hospital services and Area Heads of Clinical Departments.
 - a. Commission additional neonatal facilities in the following hospitals:
 Dr Pixley ka Isaka Seme Memorial Hospital.
 King Dinuzulu Hospital.
 Townhill Hospital.
 - b. Facilitate the implementation of District level neonatal services.
4. Area Heads of Clinical Departments and CEOs and Medical Managers of tertiary hospitals.
Establish tertiary level neonatal services including paediatric surgical services for newborns.
5. Area Heads of Clinical Departments, District Clinical Specialists and Medical Managers.
Implement clinical interventions including:
 - a. Comprehensive respiratory support with surfactant replacement therapy and non-invasive and invasive modalities of ventilation.
 - b. Clinical bundles