

The reality of neonatal nursing in resource-limited settings

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Photo courtesy of KEMRI-Wellcome Trust Research Programme

About this brief

This brief is the first in a series based on the HIGH-Q (Harnessing Innovation in Global Health for Quality Care) project and related research on neonatal care in Kenyan hospitals. This work was carried out by the KEMRI-Wellcome Trust Research Programme and the Kenya Paediatric Research Consortium (KEPRECON), with support from the University of Oxford.

HIGH-Q is a multi-disciplinary study evaluating how the introduction of new technologies and workforce innovations influences the quality of care in newborn units (NBUs). Ethnographic and observational research has also explored the everyday experiences of nurses, the physical environment of NBUs, and mothers' experiences within these settings. Each brief focuses on a different aspect of this work.

The brief was written by members of the HIGH-Q research team.

Introduction

Neonatal nurses are the primary providers of essential care for sick and premature newborns, responsible for monitoring, feeding, administering medication, hygiene, and emergency interventions. However, in low-resourced settings like Kenya, severe nurse shortages and high patient loads result in missed care, where tasks are either partially completed or not carried out at all.

Despite global progress in reducing child mortality, neonatal mortality remains persistently high in sub-Saharan Africa, and many countries, including Kenya, are striving to meet the Sustainable Development Goal target of reducing neonatal deaths.

A significant gap exists in understanding the quality and nature of nursing care provided to sick newborns in these settings. Existing research on missed nursing care largely relies on data from high-income countries (HICs) where staffing and resources differ substantially. Additionally, the absence of standardised tools to measure missed care makes comparisons across settings challenging.

Research in Kenya: capturing the reality of neonatal nursing

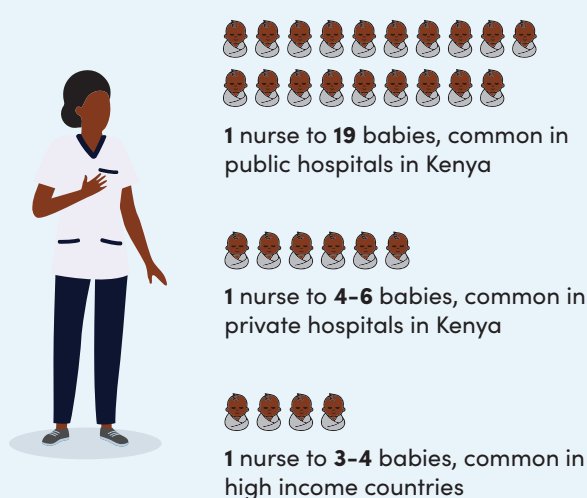
To address this evidence gap, KEMRI-Wellcome, KEPRECON and the University of Oxford – through the Harnessing Innovation in Global Health for Quality care (HIGH-Q) project – conducted several studies exploring the realities of neonatal nursing in Kenya, particularly in public sector hospitals. Research included:

- A systematic review of existing evidence on missed nursing care in Low- and Middle-Income Countries (LMICs).
- An observational study using structured checklists to quantify the nursing care provided to nearly 600 sick newborns across 8 public hospitals. Data was collected over 1,800 hours of observations across 150 shifts.
- Ethnographic research and in-depth interviews involving over 250 hours of observation and 32 semi-structured nurse interviews, which explored how nurses working in newborn units (NBUs) navigate high workloads and make real-time care decisions.

Severe nurse shortages and high workloads

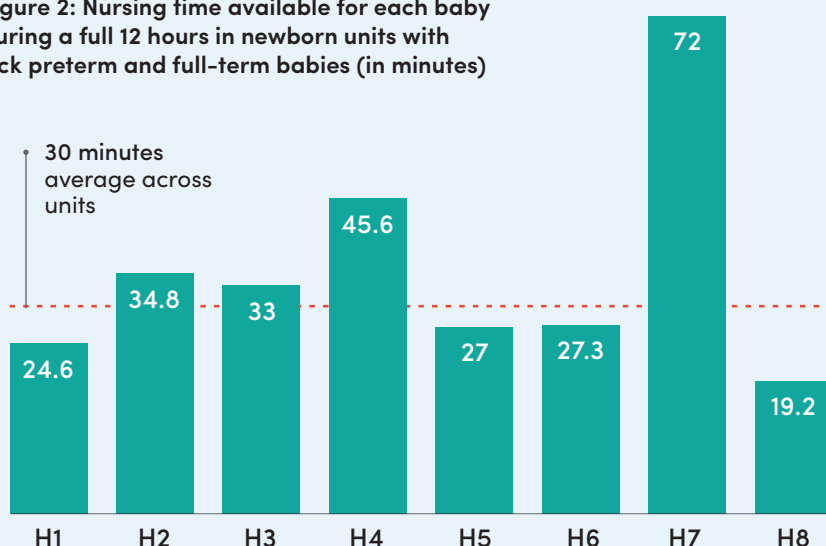
Nurse-to-baby ratios: NBUs in Kenya face extreme staffing shortages, significantly limiting each baby's care. Previous research across public, private and mission hospitals found that in public hospitals, nurses cared for a median of 19 babies per shift, with some responsible for more than 25 babies. Private hospitals fared slightly better (1:4–6), but these ratios still exceeded the recommended 1:3–4 ratio more commonly seen in HICs (Figure 1).

Figure 1: Nurse-to-baby ratios



Time per patient: In the HIGH-Q work, on average, a public-sector nurse spent about 30 minutes per baby per 12-hour shift (Figure 2). This is ten times less than the average of 326 minutes per baby in HIC settings.

Figure 2: Nursing time available for each baby during a full 12 hours in newborn units with sick preterm and full-term babies (in minutes)



Data from over 1,800 hours of observations across 154 12-hour nursing shifts, involving 600 babies in eight NBUs providing high dependency care. Assuming nurses take no breaks, the figure shows the average time available to care for a single baby during a 12-hour shift. This is calculated by adding the number of hours nurses work during a standard 12-hour shift and dividing by the number of babies present.

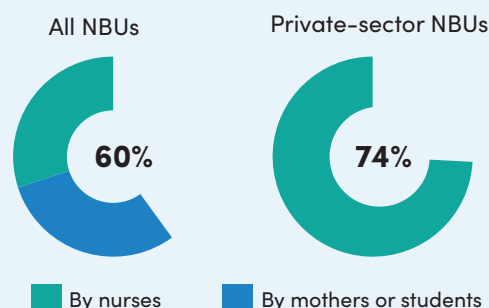
The extent of missed nursing care

To quantify missed care, researchers developed a Nursing Care Index (NCI) – an unweighted summary score of observed versus expected nursing tasks per baby. This approach offered a direct measure of nursing care delivery including missed care and who delivered it, contrasting with traditional self-reported data from nurses.

Extent of missed care: Researchers found that nurses deliver only one-third of expected care, with students or mothers providing about a third of the care. About 40% of required care was not delivered at all (Figure 3).

Missed care across sectors: Comparing public versus private-sector hospitals, private-sector hospitals demonstrated higher levels of nursing care delivered (74%) compared to an overall average of 60%, primarily due to lower nurse-to-patient ratios. In private facilities, no nurse cared for more than seven babies; in public hospitals, no nurse cared for fewer than ten. This suggests that staffing ratios, rather than institutional differences, are the primary driver of care quality. Using a threshold defined by local experts for adequate nursing care – a baby receiving at least 80% of all expected nursing tasks during a shift – only 14% of babies met this threshold, with none from the public sector.

Figure 3: Proportion of nursing care delivered



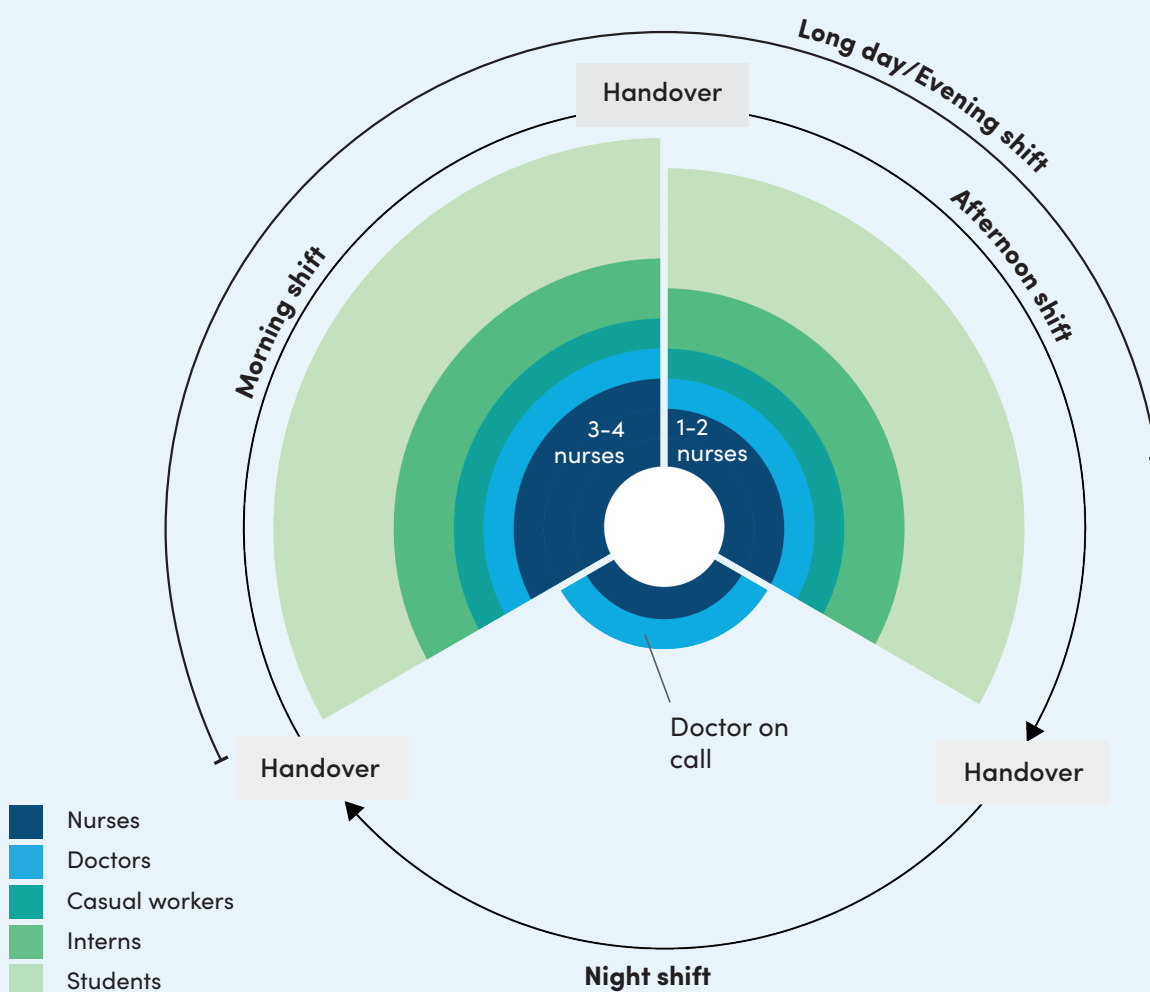
Shift patterns in NBUs: a 24-hour snapshot

Neonatal nurses' work is organised in shift patterns, each designed to manage different workloads and care tasks throughout the day.

- **Morning shift:** 7.30am–2.30pm, ~6 hours
The busiest shift, focused on medications, ward rounds, admissions/discharges, referrals, vital signs and incubator care. Staffing is highest at this time with typically 3–4 nurses.
- **Afternoon shift:** 12.30pm–6.30pm, 5–6 hours
A slower-paced shift mainly handling feeding, fluids, documentation, vital signs, discharges and continued treatments. Staff numbers reduce to 1–2 nurses, supported by students and a small medical team.
- **Long day or Evening shift:** 7.30am–4.30pm, 9 hours
This shift overlaps the above shifts and is often assigned to ward in-charges who have managerial responsibilities. However, staff on this shift contribute about a third of their time to direct patient care delivery.
- **Night shift:** 6.30pm–7.30am, 10–12 hours
The longest and least staffed shift, often consisting of just 1–2 nurses and an on-call doctor. Responsibilities include medication administration, monitoring, vital signs, last office, and handling emergencies. Support staff, such as nutritionists and students, are absent, leaving nurses more vulnerable to unexpected events.

The daily routine follows an established sequence of tasks despite overwhelming workloads. However, night shifts are particularly challenging due to lower staffing and fewer resources. The period between 4.30pm to 6.30pm has the worst staffing, often one nurse per shift, a consequence of the overlapping shifts.

Figure 4: Shift schedules and staffing levels in newborn units



Coping strategies

Given the intense workload and resource limitations, nurses in Kenya's NBUs have developed a range of practical and collective coping strategies to manage stress and maintain care delivery. These strategies were observed through ethnographic research and help to explain how nurses adapt to the challenges in their daily work.

1. Patient categorisation and prioritisation

With high patient loads and limited staffing, nurses relied on a classification system to allocate care, grouping newborns into three categories:

Category A	Critical: Newborns requiring oxygen, CPAP, IV fluids, resuscitation, or close and continuous monitoring, receiving priority nursing attention.
Category B	Stable but requiring care: Infants needing scheduled feeds, medications, or phototherapy, receiving routine but less frequent monitoring.
Category C	Recovering: Babies preparing for discharge or on accommodation, often receiving minimal direct nursing care.

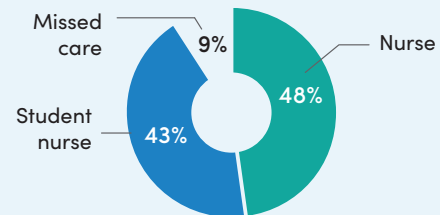
Despite this structure, nurses informally adjusted their focus within these categories, prioritising the sickest infants in Category A based on real-time assessments of who required the most urgent care. As a result, some stable but vulnerable babies received less frequent monitoring, and routine care tasks – such as feeding and diaper changes – were occasionally missed.

Nurses focused on immediate clinical tasks, such as administering medications and managing acute conditions, while deprioritising less urgent but important aspects of care, including mothers' education, communication, and emotional support (Table 1).

2. Task shifting to mothers and students

Nurses routinely delegated basic care tasks to students and mothers to compensate for staffing shortages. In public hospitals, students and mothers assisted with care including monitoring vital signs, feeding, hygiene, repositioning, and administering medication (See Figure 5 for example). This delegation was often informal and lacked supervision, raising concerns about care quality and consistency.

Figure 5: Administration of intravenous (IV) medication by nurses and student nurses



3. Collective coping strategies

The ethnographic research highlights additional collective coping mechanisms specific to LMIC settings beyond prioritisation and task shifting:

Informal staffing arrangements: Minimal oversight allowed nurses to adjust work informally, covering delays or absences and supporting colleagues. While this eased stress, it also introduced inconsistencies in care practices and occasionally undermined nurse-to-baby ratios, especially at the start and end of shifts.

Improvisation: Severe resource shortages led nurses to reuse single-use equipment, redistribute supplies between wards, and modify standard procedures to fit available resources. These adaptations helped sustain care but also compromised safety and reinforced systemic inefficiencies.

These strategies enabled nurses to sustain care under challenging conditions and maintain a sense of professional pride – particularly by meeting peer expectations. However, they also normalised inefficiencies that masked deeper health systems issues such as chronic understaffing and inadequate resource allocation.

Table 1: Task prioritisation: what gets done vs. what gets missed

What nurses do	Nursing tasks (sickest babies)
Almost always (>90%)	Patient handovers, clinical assessments before a shift
Sometimes (30–90%)	CPAP prong and oxygen flow check, phototherapy care, pulse oximetry, handwashing, intravenous medication, patient-caregiver communication
Rarely (5–30%)	Attend ward rounds, temperature, pulse rate, respiratory rate, oxygen therapy check, oral medication
Almost never (<5%)	Cleaning baby, linen change, weighing babies, diaper change, cord care, turning babies, cup feeding, nasogastric tube feeding

Conclusion

Severe staffing shortages and high patient loads in public-sector NBUs in Kenya lead to significant missed nursing care, with critical interventions often delayed, incomplete, or left entirely undone.

With limited time per baby, nurses adapt through prioritisation, task shifting, and collective coping strategies, but these measures come at the expense of care consistency, patient safety, and holistic nursing practices. Task shifting and task sharing to students and mothers is essential to maintaining care delivery but remains largely informal and lacks structured supervision, raising concerns about care quality and patient safety.

The research suggests that we must prioritise increasing nursing staff numbers to improve neonatal care and make effective use of more advanced technologies in NBUs in Kenya.

To reduce missed care and improve neonatal survival in resource-limited settings the following structural changes are needed:

- Increase nurse staffing in NBUs to ensure adequate care for each baby.
- Consider opportunities to formally delegate basic non-clinical tasks to a cadre of ward (care) assistants to ease the burden on nurses (see Brief 3).
- Improve access to and proper use of medical technologies to optimise care delivery.
- Future research on the most effective levels of nursing staff numbers to impact positively on care quality is needed.

Sources

This brief draws on both published and unpublished research, as well as presentations delivered at conferences and workshops. Key sources include:

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