



Request for neonatal care equipment from Maluba Rotary Club

Background

The United Nations Sustainable Developmental Goals (3.2) has recommended member countries to reduce Neonatal Mortality Rate (NMR) to less than 12/1000 live births by the year 2030.

In Zambia however, NMR continues to be the worst performing indicator with a rise from 24 per 1000 live births to 27/1000 live births in 2014 and 2018 respectively (Zambia Demographic Health Survey 2014/2018). Most deaths occur in the tertiary referral hospitals as despite the increased awareness of emergency care for neonates as a lifesaving measure, most infants arrive late and in poor state dying in the first 24 to 48 hours of admission. Additionally, the referral hospitals are inadequately equipped to provide the much-needed treatment that is lifesaving.

ARTHUR DAVISON CHILDREN'S HOSPITAL

Arthur Davidson Children's Hospital (ADH) is the largest referral centre for all neonates coming from surrounding facilities on the Copperbelt and most of the Northern part of Zambia. The hospital has a neonatal unit that admits close to 500 babies per quarter and approximately 2000 babies per year. The neonatal mortality in 2020 for ADH was an average 30 percentage of all admissions. The commonest causes of mortality included prematurity, birth asphyxia and sepsis.

Services offered

The neonatal unit is divided into levels of care depending on severity of the illness

1. Critical Care unit that nurse babies on mechanical ventilator and on Continuous Positive airway pressure (CPAP)
2. High Care unit to nurse babies requiring nasal prong oxygen for respiratory support
3. Standard in Patient Care for stable babies requiring antibiotics, warmth and feeds
4. Five bed Kangaroo Mother Care (KMC) unit for preterm babies nursed in continuous skin-to-skin contact with the mother.

Objective

To reduce neonatal mortality from the current 30% by improving quality of care in small and sick neonates dying from prematurity, infection and asphyxia at the Arthur Davison Children's Hospital, Zambia

Justification

Strategies to reduce neonatal mortality

In order to reduce neonatal mortality due to prematurity, infection and asphyxia, interventions to prevent and treat these common causes of mortality should be implemented.

A. Prematurity

The commonest complications of prematurity that result in death include:

- **Immature lungs resulting in respiratory distress as the lungs tend to collapse**

Premature babies may therefore need help to sustain breathing. This requires equipment such as *CPAP* that splints the airway open preventing them from collapsing.

The ADH neonatal unit has limited CPAP equipment, making death due respiratory distress very common.

Mechanical ventilation is also helpful especially if the baby is not coping on CPAP. The ADH received a donation of one ventilator from the Ministry of Health and is expected to receive more.

However, ADH has inadequate (2) *cardiac/vital signs monitors* that are supposed to help monitor babies on both CPAP and the Mechanical Ventilator. The cardiac monitor helps the health care provider to increase or wean off ventilatory support from the neonate based on the response. Monitoring helps protect the neonates' brain and prevents long-term neurodevelopmental impairment.

- **Hypothermia: the skin of the premature baby is thin and results in excessive loss of body fluid and heat.**

To avoid death due to cold stress, premature babies need to be kept warm in *incubators* that provides heat and humidity.

Out of the required 10 incubators, the ADH neonatal unit has only three incubators resulting in the tiniest of babies sharing incubators. This may also predispose these babies to infection. Granted, the unit has a 5-bed KMC unit where mothers provide warmth by keeping the babies in skin-to-skin contact but it becomes a problem when the mother to the baby is not available to provide warmth or when the KMC unit is full. Additionally, in our setting with inadequate monitoring, it is recommended that babies should be moved to the continuous KMC room once off respiratory support. Intermittent KMC is done for babies on respiratory support.

Kangaroo Mother Care is a very effective low cost intervention which consist of provision of warmth by skin to skin contact of preterm baby and mother (Mother covers both herself and the baby), improved nutrition and promotion of exclusive breastfeeding, early discharge from the hospital with a view to continuing KMC at home.

Procurement of beddings (*bedsheets and blankets*) will provide continued warmth once the babies are out of the incubator.

Procurement of *reusable gowns* will help mothers in the KMC unit cover themselves especially when they have to move out of bed

Procurement of *a smart TV screen and decoder (for national news)* for use to show videos on KMC would help the mothers in KMC be entertained and learn on the different aspects of KMC

- **Infection is as a result of the immature immune system**

In order to prevent hospital-acquired infection, facilities should be available for health workers to wash their hands.

The *sinks* in the ADH unit need replacement.

Replacing floor tiles, painting the walls and frosting the windows will make the unit presentable and easier to clean.

Post disinfection, *ultraviolet light (UV light)* should be placed in the unit for some hours to acquire 100% elimination of microorganisms.

The ADH neonatal unit has no UV light

B. Asphyxia

About 90% of babies cry immediately after birth and do not need help to breath. However, At least 10% may need help by drying, stimulation and bag mask ventilation. These actions should be done under a warm resuscitaire. Post resuscitation, the baby should be nursed under a resuscitaire for ease of monitoring while being kept at a normal temperature.

The ADH neonatal unit has *two resuscitaires* out of the required five.

C. Fluid administration

Small and sick newborn babies require meticulous fluid administration to provide balance between water loss and over hydration. In order to achieve this, fluids should be administered using an infusion pump.

The ADH neonatal unit has one infusion pump out of the required 10 infusion pumps

D. Neonatal Jaundice

All babies get jaundice (yellowish discolouration of the skin) post-delivery. This is explained by break down of foetal haemoglobin during the process of formation of adult haemoglobin required for survival extra-uterine. Some babies become too jaundiced to limits dangerous for the brain and may require treatment with a phototherapy light. This light reduces the level of jaundice and prevents the irreparable brain damage preventing long-term neurodevelopmental impairment.

The ADH neonatal unit has two phototherapy machines of the required 6.

E. Milk feeds

Some preterm babies are referred to ADH neonatal unit whilst their mothers are still in the delivery facility. These babies require milk feeds as they may not afford to wait for the mothers breastmilk. The formula feeds are reconstituted and fed to the babies by the ADH staff.

A hot water boiler and a storage fridge are required to make this process easier.

Newborn Support Zambia (NSZ)

This is a not for profit organisation created in 2016 to advocate for, fundraise and facilitate training in care of the small and sick newborns. This organisation mostly comprises health workers and a few ex-NICU parents. To date, the organisation has been involved with a number of partners including Livingstone Rotary Club to equip the neonatal unit at Livingstone Central Hospital. We have also published various literature to use in the care of newborns in Zambia- Neonatal Care Protocols, Service standards for facilities offering newborn care in Zambia to mention a few. We have also been involved in curriculum development for the listed long-term neonatal training programs. In 2019, NSZ organised a fundraising walk and raised enough money to buy three phototherapy machines that were donated to Women and Newborn NICU.

We are currently working with the Lusaka Provincial Health Office in setting up Kangaroo Mother Care Units in Lusaka District. This will help decongest the NICU and reduce the nurse/doctor patient load thereby improving quality of care.

In order to help improve neonatal survival at Arthur Davison Children's Hospital, NSZ wishes to request for equipment procurement help from the Maluba rotary club. This will go a long way in helping humanity.

**ITEMS REQUESTED FOR DONATION TO THE NEONATAL UNIT AT ARTHUR
DAVISON CHILDREN'S HOSPITAL**

S/N	ACTIVITY/ITEM TO BE BOUGHT	DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
1.	Infrastructure Rehabilitation	Replacing floor tiles in neonatal ward	<i>The Bill of Quantities from the Maintenance Department at ADH</i>		<i>K50,000</i>
		Painting inside neonatal ward			K90,000
		Replacing sinks in neonatal ward			K10,000
		Frosting the windows in the neonatal ward			K75,000
2.	Beddings	Bed sheets for neonates	100	K50/metre /single bed to make 6 pieces	K30,000
		Blankets for neonates	100	K200	K20,000
3.	Equipment	Phototherapy machine in neonatal ward	06	K40,000	K240,000
		Resuscitaire for neonates	03	K300,000	K900,000
		Incubators	5	K150,000	K750,000

		Pumani bubble CPAP	10	K40,000	K400,000
		Cardiac/vital signs monitor	6	K150,000	K600,000
		Infusion pumps	10	K34,000	K340,000
		Syringe pump	5	K34,000	K170,000
		Ultra violet light	02	K50,000	K100,000
		Fridge for milk for neonates	01	K15,000	K15,000
		Hot water boiler for neonates	01	K3,000	K3,000
		Decoder for neonate care givers	01	K500	K500
4.	Items for patient caregiver	Neonate care giver gowns	100	K250	K25,000
					K3,818,500

Submitted by Dr. Kunda Mutesu-Kapembwa (Founder Member)

On Behalf of Newborn Support Zambia

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