NEO FOR NAMIBIA
HELPING BABIES SURVIVE

MISSION REPORT

Mission 2023 – 3

June 6 – 25, 2023

AUTHORS
Salome Waldvogel, MD
Prof. Thomas M. Berger, MD

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1. INTRODUCTION

The 19th mission of NEO FOR NAMIBIA – Helping Babies Survive lasted from June 6 to June 25, 2023. It was the third mission for Dr. Salome Waldvogel; for the first time, she was on her own, only accompanied by our Namibian friend and driver, Isaak Boois.

Together with Isaak Boois, Dr. Salome Waldvogel drove from Windhoek to Rundu on June 7, 2023, allowing her to start her work in the unit on June 8, 2023, for a duration of 10 days. Isaak Boois returned to Windhoek by plane one day later to take care of his business and to be with his family. He rejoined Salome Waldvogel on June 16, 2023, and together they left Rundu on June 17, 2023, towards Katima. After a short break at the Riverdance Lodge near Divundu, they arrived in Katima on June 18, 2023. After working 5 days at the hospital, Dr. Salome Waldvogel flew back to Windhoek on June 23, 2023, allowing her to return to Switzerland the next day. Isaak Boois drove the car back to Windhoek.

2. MAIN MISSION GOALS

The goals of the 19th mission were:

1. To review the current situation at Rundu State Hospital and to evaluate ideas for further collaboration with NEO FOR NAMIBIA – Helping Babies Survive

2. To review the use of point of care testing (POCT) for C-reactive protein (CRP) and its impact on the use of antibiotics following its introduction by NEO FOR NAMIBIA – Helping Babies Survive at Rundu State Hospital (May 2021) and Katima State Hospital (November 2022)

3. To continue to train physicians and nurses at Rundu State Hospital and Katima State Hospital – with an emphasis on adequate indications for CPAP support, infant positioning, antibiotic stewardship, fluid/nutrition and temperature management

3. HOSPITALS VISITED

Dr. Salome Waldvogel spent 10 days at Rundu State Hospital (from June 8–17, 2023) and 5 days at Katima State Hospital (from June 19–23, 2023). During this time, she was able to work closely with the local teams, to provide teaching sessions and to supply the units with much needed equipment and consumables.

3.1 Rundu State Hospital

3.1.1 Overall impression

The Prem Unit was busy as usual. Nevertheless, progress could be recognized immediately. The team of doctors has grown with additional interns and medical officers having been appointed. Calls at night and on weekends are now covered by separate teams (one team for the Prem Unit, Maternity Ward, and Delivery Rooms; another team for the remaining units of the department of Pediatrics: i.e., General Pediatrics, IV Ward, High Care Unit,

Casualty). This new system has an obvious positive impact on patient care. Physicians are more present in the Prem Unit, and the newborns are taken care of with less delay.

Also, communication between the doctors and midwives from the Department of Obstetrics and Gynecology and the pediatricians seemed to have improved markedly. The neonatal team is now informed of deliveries with anticipated complications (e.g., premature delivery). This gives them the necessary time to prepare and leads to significantly better initial care of such babies as time is often crucial.

The local team has developed protocols for more standardized medical care. While we do not agree with all the details, we see the benefit of a more uniform way of treating the patients. Having a standard of care within a unit (known as Standard Operating Procedures or SOPs) has been shown to improve patient care in high-income countries, and the same is very likely to be true for low- and middle-income countries.

Medical documentation has improved significantly, and the templates for diagnoses, progress notes and charting for babies on respiratory support developed by NEO FOR NAMIBIA – Helping Babies Survive are used routinely.

3.1.2 Surfactant administration

Surfactant is administered regularly, mainly by the so-called INSURE (INtubate – SURfactant – Extubate) method: following intubation (usually without or minimal sedation), surfactant is administered intra-tracheally through a feeding tube that is advanced to the tip of the endotracheal tube, and then the baby is extubated and put on CPAP. In conjunction with CPAP, this method can be very helpful for patients with hyaline membrane disease (HMD) and increases their chances of survival. As an example, the male infant shown in Fig. 1 and 2 had been treated with exogenous surfactant twice to treat HMD (i.e., surfactant deficiency) (Fig. 1). He had been born at a gestational age of about 28 weeks with a birth weight of 1'000 g; fortunately, he survived and was discharged home after several weeks of hospitalization (Fig. 2).

Fig. 1. Preterm infant (birthweight 1000 g, estimated gestational age 28 weeks) supported on a MTTS Dolphin® CPAP device following exogenous surfactant replacement therapy.

Fig. 2. The preterm infant (birthweight 1000g, estimated gestational age 28 weeks) shown in Fig. 1 above is ready to be discharged after several week of hospitalization.

3.1.3 Antibiotic stewardship

Neonatal sepsis remains a leading cause of mortality worldwide and, in case of neonatal bacterial blood stream infections, (broad-spectrum) antibiotics must be administered quickly to save lives.

Unfortunately, the signs and symptoms of early- and late-onset neonatal sepsis are non-specific, and it is difficult make a firm diagnosis at an early stage. Consequently, many babies are admitted to a neonatal unit with a diagnosis of "suspected early-onset sepsis" or "rule out early-onset sepsis". Those babies are treated with antibiotics, however, if the diagnosis can be ruled out, antibiotics should be stopped after 48 hours to decrease the use of antibiotics and avoid side effects (e.g., negative impact on an individual infant's intestinal microbiome, selection pressure leading to the emergence of resistant strains of bacteria).

Point of care testing (POCT) of CRP concentrations with the Aidian QuikRead® go device donated by NEO FOR NAMIBIA- Helping Babies Survive has greatly facilitated such an approach (Fig. 3). Only a very small amount of blood (40 µl) is required, and the result is available within 5 minutes, thus facilitating rapid decision making. While the agreed upon rules for its proper use are often followed, there is still room for improvement (e.g., strict 48-hour-interval between first and second CRP determination).

Fig. 3. Aidian QuikRead® go POCT CRP measuring device and consumables.

3.1.4 Positioning

Proper positioning of newborn infants is crucial since the position of the baby influences pulmonary gas exchange. The unit is making progress, and more babies with respiratory distress are now positioned in the so-called prone position (i.e., on their bellies) to decrease work of breathing and to avoid exhaustion. Additional pillows to facilitate proper positioning were donated by NEO FOR NAMIBIA – Helping Babies Survive. The importance of this seemingly simple nursing intervention was reenforced (Fig. 4-7). In addition, covers for the incubators were provided so that premature babies can rest peacefully without unnecessary interruptions (Fig. 8).

Fig. 4. Poorly positioned very low birth weight (VLBW) infant: no support and no boundaries are provided.

Fig. 5. Very low birth weight (VLBW) infant in prone position: with appropriate support, arms and legs are in a lower position than the head, chest and abdomen.

Fig. 6. A pillow wrapped around the baby provides a boundary to support musculoskeletal, physiological and behavioral stability.

Fig. 7. Additional pillows were brought to the unit: the gentle boundaries should be used to build a nest to provide containment and promote tactile stimulation.

Fig. 8. Blankets (left) are used to shield babies cared for in incubators from ambient light to help them rest (right).

3.2 Katima State Hospital

3.2.1 Overall impression

Within a short period of time, the Neonatal Unit at Katima State Hospital has made enormous progress. Rounds are well organized, and the impact the teaching sessions provided by NEO FOR NAMIBIA – Helping Babies Survive have had is obvious. Fluid and nutrition management is impeccable. Babies with respiratory distress are readily evaluated and put on CPAP without delay. Hyperbilirubinemia is appropriately screened for and well managed by phototherapy; consequently, exchange transfusions have become rare.

The local team of health care professionals, especially the nurses, are eager to learn and very motivated. At the same time, the number of infants admitted to the unit continued to increase and the nurse-patient ratio is often critically low: for example, during the stay of Dr. Salome Waldvogel, there were 19 patients in the unit who were cared for by only two nurses per 12-hour-shift. Given this high patient census, the work the nurses accomplish is impressive. There are now dedicated physicians for the unit (Dr. Cristy Victor, Dr. Sharon Mungofa) with an obvious positive impact on patient care.

3.2.2 Respiratory support

While the use of CPAP has greatly increased, the use of exogenous surfactant to treat preterm babies with hyaline membrane disease is still used infrequently because only a few doctors have the skills required to safely perform an INSURE procedure.

With smaller and more immature babies surviving, additional MTTS Dolphin® CPAP devices are needed (currently, there are two units available). For the most immature babies, the smaller and softer prongs of the MTTS Dolphin® CPAP are clearly preferable to the ones used with the Pumani® bubbleCPAP. In addition, they are easier to place and, as mentioned in previous mission reports, the use of heated and humidified air is very important for longer CPAP runs to avoid upper airway obstruction by dried secretions.

The baby shown in Fig. 9 with a birth weight of only 800 g and estimated gestational age of 28 weeks and had required prolonged support with the MTTS Dolphin® CPAP and survived to discharge. In fact, she is one of the smallest babies ever having survived in Katima!

Fig. 9. Successful care of an extremely low birth weight (ELBW) infant (birth weight 800 g) at Katima State Hospital: support with CPAP (left), ready to go home (right).

3.2.3 Antibiotic stewardship

As described for Rundu State Hospital, the use of antibiotics has decreased in Katima State Hospital as well. The Aidian QuikRead® go is used daily, and antibiotics are correctly stopped after two negative CPR results (< 10 mg/l). However, the second CRP is often done with a delay (e.g., on day of life 4 instead of day of life 2), leading to unnecessarily prolonged courses of antibiotics. This was reemphasized by Dr. Salome Waldvogel during her stay, and nurses were asked to continue record relevant data for patients who get tested.

3.2.4 Infant positioning

Overall, babies are well positioned (Fig. 10) and not a lot of teaching was required to address this topic. Additional pillows and covers for the incubators provided by NEO FOR NAMIBIA – Helping Babies Survive will hopefully support good nursing practices.

Fig. 10. The Pumani bubbleCPAP device that uses Hudson prongs with patient tubing attached to a hat on both sides of the head: prone positioning can still be done!

3.2.5 Admissions of outborn infants

The mortality risk of outborn babies (home deliveries, small hospitals, or health centers) remains high. Since the Zambezi region spans four countries (Namibia, Botswana, Zambia, and Zimbabwe), some patients are transported over long distances and often arrive with considerable delays and, consequently, in poor conditions.

Fig. 11 shows an example: this patient was born at an estimated gestational age of 32 weeks, developed increasingly severe respiratory distress, and arrived from a health center in Botswana on day of life 2. Despite immediate administration of surfactant and support with CPAP following admission to the neonatology unit (Fig. 11), the baby died one day later.

Fig. 11. Consequences of delayed access to care: this very low birth weight (VLBW) infant transferred to Katima Hospital from Botswana on day of life 2 did not survive.

4. FUTURE DIRECTIONS

The 20th mission of NEO FOR NAMIBIA – Helping Babies Survive will take place in November/December 2023. Prof. Berger and his wife Sabine will carry out that mission. In addition to Rundu and Katima, they plan to also visit the government hospitals in Swakopmund, Walvis Bay, and Oshakati. Very likely, they will be accompanied by Dr. Kundai Mapanga, a Namibian doctor they had met years ago when she was working as a medical officer at Rundu State Hospital. She is currently getting additional pediatrics and neonatology training in Ireland. She has expressed an interest to join the board of our NGO.

A big thank you to our donors

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