



## Improving Lives, One Breath at a Time

**“You’ll never experience anything as beautiful as caring for a baby who needs that one chance. A baby that looks so fragile. To send that baby home 2-3 months later and follow their development, it’s overwhelming. They are beautiful, brilliant, and right on track.”**

A gasp for air followed by the telltale cry, just moments after entering the world—a newborn baby will take their first breath. For preterm infants, the struggle to catch their breath with immature lungs and learning to establish the rhythmic cadence of breathing is more than developing a new skill. **It’s a battle.**

Filled with vibrant people, culture, and natural wonders, the country of Tanzania is stunning. It is comprised of a diverse population of more than 59 million people with over 120 ethnic groups, various religious beliefs, and unique customs.<sup>1</sup> But for those living in the shadow of the majestic, snow-capped Mount Kilimanjaro—the tallest mountain in Africa—life can be grueling and often heartbreaking when it comes to bearing children.

Much of the population of Tanzania has limited access to neonatal intensive care units (NICUs) which could provide initial resuscitation and stabilization for newborns. The frequency of infant loss is high, with many mothers experiencing the heartbreak of multiple losses.

Premature infants face health challenges such as breathing problems, jaundice, growth and feeding difficulties, neonatal sepsis, and birth asphyxia that they struggle to overcome from day one. **Babies with extreme prematurity or critical illness rarely survive in Tanzania.**

Children in sub-Saharan Africa are 15 times more likely to die before age 5 than children in high-income countries.<sup>2</sup>

## The Realities of Giving Birth in Tanzania

- Neonatal diseases are the #1 cause of death in Tanzania, even above ailments such as HIV/AIDS and malaria.<sup>3</sup>
- The infant mortality rate for Tanzania in 2022 is 35.6 deaths per 1,000 live births.<sup>4</sup>
- Preterm births account for 11.1% of the world's live births, with 60% of them in South Asia and sub-Saharan Africa. In the poorest countries, on average, 12% of babies are born too soon, compared to 9% in higher-income countries.<sup>5</sup>

### Nonin in the NICU

The NICU at the Arusha Lutheran Medical Center (ALMC), located in northern Tanzania, sees preterm infants and neonatal patients fighting for life from area hospitals—some born as early as 24 weeks gestation. Providing a full range of advanced newborn support, the NICU has been able to achieve a survival rate of more than 92%.<sup>6</sup> A remarkable 73% of babies born weighing less than 1,000 grams (2.2 lbs.) survive thanks to low-tech respiratory support, thermoregulation, and proper nutrition.

**These efforts are assisted by Nonin Medical's noninvasive monitoring solutions**, which help the medical team accurately monitor each baby's oxygen saturation. The positive outcomes represent the highest level of neonatal care available in Tanzania and among the most advanced in East Africa.

“I can't overstate how much Nonin's technology has helped us.”

**DR. STEPHEN SWANSON**  
NICU Director at ALMC

As the Director of the NICU, Dr. Stephen Swanson continues to work toward improving outcomes both at ALMC and nationally for Tanzania. He attributes this success to many factors, including education and training of nurses **along with the ability to monitor his patients with Nonin's tabletop and fingertip pulse oximeters.** “I can't overstate how much Nonin's technology has helped us.”

Dr. Swanson and his team use Nonin's Avant® 9700 tabletop pulse oximeters and flexible 6000CN sensors that wrap around the infant's foot, providing actionable data. Nonin's proprietary PureSAT® technology works across diverse skin pigmentations<sup>8</sup>, which is especially critical for the safety of these precious patients.

The team at Nonin stays in contact with and provides ongoing service for the overseas NICU, and Dr. Swanson shares his successes with the Minnesota team. He says, “It is your pulse oximetry monitoring technology that alerts us to a baby's changing conditions. It's an everyday event to have 15 or 20 babies in our unit and **Nonin monitors—along with our own clinical observations—help to save lives.**”



ALMC finds a way to gather the resources they need and are proud to say that no baby is ever turned away because of family finances. The NICU receives a steady stream of doctors and government officials who are interested in the types of interventions and methods that are working to improve perinatal care.

The reward for their determination and efforts is being able to send a baby home.



“The ability to put a sick baby on a monitor, then act on reliable measurements and intervene before it’s too late — it’s one of the things that contributes to our survival rate.”



**92%  
Survival Rate**

In 2021, the NICU cared for 340 babies with a 92% survival rate for these high-risk patients; remarkably, their rate is considerably higher than many other hospitals across the country.

Their smallest survivor was born at a tenuous 25 weeks of gestation and only 1.3lbs (612 grams).

**DR. STEPHEN SWANSON** is an MD, DTM&H, FAAP, American Board Certified in Pediatrics, Infectious Diseases, Tropical Diseases, ALMC Consultant Pediatrician, and Medical Director, NICU. Dr. Swanson works as a pediatric and infectious disease physician and serves in the care of children at Arusha Lutheran Medical Center and Selian Lutheran Hospital in Tanzania. He is developing one of the most innovative, low-technology Neonatal Intensive Care Units in Tanzania.

**NONIN MEDICAL** has developed reliable technologies and manufactured durable noninvasive patient monitoring devices for healthcare professionals and consumers since 1989. Nonin pulse oximeters, cerebral and tissue oximeters, sensors, and software deliver dependable performance day after day—even in challenging environments. With a longstanding commitment to health equity, Nonin is committed to ensuring the accuracy and consistency of its pulse oximetry readings for all patients, inclusive of their skin pigmentation, age, gender, condition, or location in the world, backed by clinical studies and real-world use.

**ARUSHA LUTHERAN MEDICAL CENTRE (ALMC)** is one of Arusha’s newest zone referral hospitals. Located in the center of downtown Arusha, ALMC offers general and specialty care in many areas. The ALMC NICU provides a full range of newborn support, including overhead warmers; temperature-regulated, humidified incubators; phototherapy lights and fiber optic blankets for treating neonatal jaundice; and respiratory support. Arusha Lutheran Medical Centre’s NICU annual budget is less than the cost of treating a single baby in an American NICU for three weeks. Most of this NICU care is provided for free or heavily subsidized rates.



“You have  
given me love.”

**MOTHERS** in the ALMC NICU



### References

1. Chiteji, F. Matthew , Bryceson, . Deborah Fahy , Ingham, Kenneth and Mascarenhas Adolfo C. (2021, March 19). Tanzania. Encyclopedia Britannica. <https://www.britannica.com/place/Tanzania>
2. Child Mortality. UNICEF DATA. (2022, January 20). Retrieved May 20, 2022, from <https://data.unicef.org/topic/child-survival/under-five-mortality>
3. Centers for Disease Control and Prevention. (2022, February 8). CDC in Tanzania. Retrieved May 17, 2022, from <https://www.cdc.gov/globalhealth/countries/tanzania/default.htm>
4. Tanzania Infant Mortality Rate 1950-2022. MacroTrends. (n.d.). Retrieved May 17, 2022, from <https://www.macrotrends.net/countries/TZA/tanzania/infant-mortality-rate>
5. Vogel, J. P., & Chawanpaiboon, C. (2018, October 30). Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. The Lancet. Retrieved May 17, 2022, from [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(18\)30451-0/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(18)30451-0/fulltext)
6. 2021 ALMC Data
7. Bickler, P. MD, et. Al. (2005) Effects of Skin Pigmentation on Pulse Oximeter Accuracy at Low Saturation. Anesthesiology Vol. 102, pp 715-719.
8. Nonin Medical, Inc. Data on File. (2011) SpO2 Accuracy Validation of Pulse Oximetry Systems During Motion and Non-Motion Conditions of Induced Hypoxia as Compared to Arterial Blood CO-Oximetry. Report ID: QATR7967. Clinimark Laboratories, Boulder Colorado.

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