

Chiesi

FOUNDATION



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NEST

Neonatal Essential Survival Technology

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The Chiesi Foundation promotes the NEST – Neonatal Essential Survival Technology – Model, a long-term program with the main objective of improving conditions of newborns, in particular unwell, sick, premature and low birth weight (LBW) neonates, in areas where almost everything is missing and where simple but well-prepared interventions could potentially save many lives.



Neonatal Essential Survival Technology

Authors and contributors

Maria Paola Chiesi, Carmen Dell'Anna, Kathy Mellor, Ezio Maria Padovani, Paul Ouedraogo, Cecilia Plicco, Michela Papotti, Linda Storari, Merran Thomson, Lucia Tubaldi, Fabio Uxa, Paolo Ernesto Villani.

NEST - Neonatal Essential Survival Technology - Project

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The Chiesi Foundation and Global Health

The Chiesi Foundation¹'s path has been marked by a profound reflection on the role and potential of a Corporate Foundation in today's complex world.

The Foundation was born in 2005 as an expression of the global company Chiesi Farmaceutici's commitment to social responsibility. The year 2014 represented an important milestone in the history of the Foundation. Indeed, in 2014 the NEST Project was born and marked a "shift in responsibility", in that the Chiesi Foundation ceased being a grant making foundation and became a more strategic tool for social change: an Integrated Foundation. An Integrated Foundation is a Corporate Foundation that has numerous strong links to the founding company, harnessing the business acumen to deliver the greatest social impact.

The Chiesi Foundation became what has been defined as a Game Changer:

*"Game-changing corporate foundations are focused on maximising long-term social impacts. They apply their resources, expertise and connections to make a difference. A core component to maximizing impact is unpacking and leveraging the relationship with the founding, parent company"*²

Based on this strategic review and as a reflection on the existing inequalities in terms of access to appropriate neonatal care throughout different regions of the world, a group of colleagues and experts within the network of the founding company decided to create the NEST Model in order to leverage the expertise of the company beyond its borders.

The Chiesi Foundation is working in the field of Global Health by promoting its mission in those settings where the company does not have an existing commercial reach. The model is implemented in partnership with various stakeholders through international cooperation projects.

¹ <http://www.chiesifoundation.org/en/>

² <https://corporate-citizenship.com/wp-content/uploads/The-Game-Changers-Corporate-Foundations-in-a-Changing-World.pdf>

The framework

At the beginning of 2016, the United Nations established 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development³. Among the SDG 3 - *Ensure healthy lives and promote well-being for all at all ages* – targets the following are present:

3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.

3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.

3.D Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

According to the WHO 2019 publication "*SURVIVE AND THRIVE. Transforming care for every small and sick newborn*"⁴, improving the quality of neonatal care is nowadays a prerequisite to achieving the health-related SDG. In order to undertake this path, to transform the quality of care, every newborn and mother must be put at the centre and receive care by specialized health-care workers and family members.

Throughout the years, significant progress has been made in reducing under-five mortality. However, progress has not been as rapid in reducing neonatal mortality rate (NMR). Babies are most vulnerable in their first 28 days of life, the neonatal period. Delivery and birth are the periods during which the risk of death for a newborn is at its highest: 1 million babies take their first and last breaths on their day of birth. Greater attention must be focused on preterm, small and sick babies who are at greatest risk of death and disability.

³ <http://www.un.org/sustainabledevelopment>

⁴ https://www.who.int/maternal_child_adolescent/documents/care-small-sick-newborns-survive-thrive/en/

Looking at the global trend, published in the 2018 report of the United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME)⁵, the global NMR fell by 51 per cent from 1990 to 2017, meaning a reduction from 37 to 18 deaths per 1,000 live births. Despite these efforts, in 2017 an estimated 2.5 million newborns died in the first month of life⁶.

Furthermore, newborn survival has been characterized by significant geographical inequalities. Indeed, in Sub-Saharan African and Southern Asian countries, the NMR registered is 27 deaths per 1,000 live births. These two regions account for almost 80 per cent of the global rate, meaning that a neonate born in those areas is nine times more likely to die than if it were born in a Western country.

Focusing on Sub-Saharan African countries, although a 41 per cent NMR reduction registered from 2000 to 2017, the burden of newborn mortality remains too high. The decline in mortality rate is not enough to balance with the significant increase in the number of births, leading to a net total of approximately 1 million deaths per year.

The chances of a newborn surviving are also linked to demographic factors. A baby born to a young mother – less than 20 years old – is 1.5 times more likely to die in the first 28 days of life, while a baby born less than two years after the previous birth is 2.7 times more likely not to survive. Education represents another powerful tool for challenging mortality rate, as a baby born to a mother without an education is six times more likely to die before his/her fifth birthday.

According to the 2018 the United Nations Children's Fund (UNICEF) report 'Every Child Alive'⁷, this trend can be explained in considering two factors. Firstly, although the principle causes of newborn deaths are mostly preventable - prematurity, complications around the time of birth, infections such as sepsis, meningitis and pneumonia - they are often not treatable with a single drug or intervention, but rather by a system-wide approach. Secondly, it seems that in the past, ending newborn mortality has not been considered a primary challenge within the global agenda.

Based on these trends, UN organizations are claiming that more than 60 countries will not be able to meet the SDG target on neonatal mortality.

⁵ United Nation Inter-Agency Group for Child Mortality Estimation, 2018. Level and Trends in child mortality. Report 2018. <https://childmortality.org/reports>

⁶ <https://data.unicef.org/topic/child-survival/neonatal-mortality/>

⁷ United Nations Children's Fund (UNICEF), 2018. EVERY CHILD ALIVE. The urgent need to end newborn deaths

Particularly, UNICEF's new call for action emphasizes two necessary steps to accelerate the reduction of neonatal mortality:

- increasing access to affordable healthcare;
- improving the quality of care.

Providing affordable quality care for mothers and newborn babies requires the focus on four main pillars:

- **PLACE:** guaranteeing functional healthcare facilities, with electricity and clean water;
- **PEOPLE:** recruiting, training and retaining healthcare workers and equipping them with the required tools;
- **PRODUCT:** making available the essential lifesaving drugs and equipment;
- **POWER:** empowering women, girls and families to be treated with dignity and respect during pregnancy, birth and beyond as crucial components of quality care.

Within this framework, the Chiesi Foundation has been implementing **the NEST - Neonatal Essential Survival Technology - Model** since 2014, a long-term project aimed at improving neonatal care by defining and implementing neonatal care standards in Sub-Saharan African countries.

In order to promote high-impact and effective neonatal survival interventions and improve neonatal care, the NEST Model is developed on the concept of the appropriate technologies for the delivery of an effective newborn care system in countries and hospitals with limited resources. The word "technology" means a comprehensive set of strategies, best practices, and techniques for neonatal care. It does not refer solely to medical devices, equipment, diagnostic tools and medicines, but also to training, protocols and methods of care that need to be spread out among healthcare providers and caregivers, by adopting a systematic approach as described in the chapters below.

The NEST Model can be considered as an intervention that answers to the global calls for action for ending preventable newborn death. Indeed, the case study of the Chiesi Foundation's NEST Model implemented in Ouagadougou (Burkina Faso) is incorporated within the chapter 3 - "*Deliver the care they are entitled to*" - of the WHO/UNICEF 2019 report "*Survive and Thrive. Transforming care for every newborn*" (page 65).

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https://www.who.int/maternal_child_adolescent/documents/care-small-sick-newborns-survive-thrive/en/

The NEST Model

IMPACT AND OBJECTIVES

The impact, the NEST Project wants to achieve, is to contribute to the implementation of neonatal care standards⁸ aimed to improve the quality of care⁹ for sick, unwell, premature and low birth weight (LBW) babies in Sub-Saharan African countries.

To reach this objective, the project focuses on the creation of a **Model for Neonatal Care Units (NCUs)** in facilities suitable to take care of sick and unwell neonates in low resources settings.

While numerous international programs are targeting the safety of delivery at birth and maternal health, very few are concerned with the care of sick neonates who require specialized attention.

This is the gap that the NEST Project intends to address.

⁸ a “standard” is defined as “a description of what is expected to be provided to achieve high-quality care” 7 United Nations Children’s Fund (UNICEF), 2018. EVERY CHILD ALIVE. The urgent need to end newborn deaths

⁹ Quality of care has been defined by the WHO as “the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred”

Therefore, the project focuses on four aspects that reflect the four abovementioned pillars highlighted in the UNICEF 'call "Every child alive"¹⁰:

- The presence, in the hospitals, of a dedicated area, a NCU, for the care of newborns (PLACE);
- The presence of essential basic products, essential drugs and equipment for newborn care, and a set of protocols and guidelines for their correct use. The equipment should be characterized by a degree of complexity, technology, cost and required maintenance, adequate to the local context. (PRODUCTS);
- The development of comprehensive and tailored training programs for the Neonatal Care Units staff, with specific attention payed to the role of the neonatal nurse (PEOPLE);
- The empowerment of mothers and families is also crucial, as essential and active participants to the care of newborn babies (POWER).

The project is developed by taking a context specific approach, since the target group of countries includes territories with diverse healthcare facility characteristics and levels of financial and human resources.

Empowerment of local staff is key, not only for understanding the context and for better targeting the interventions, but also to increase motivation and satisfaction of the healthcare providers. Therefore, the project foresees full involvement of hospital staff to discuss and test training programs, technologies and equipment suitable for the context. Finally, the staff is also key to empower and involve the mothers and families in the care of their newborns.

¹⁰ United Nations Children's Fund (UNICEF), 2018. EVERY CHILD ALIVE. The urgent need to end newborn deaths.

The following chart shows what NEST aims to achieve:

Quality improvement approach and local capacity building



DATA COLLECTION AND MONITORING

Guarantee an essential level of quality newborn care, in particular for sick, premature and low weight neonates, at birth, in the neonatal care unit and during the follow up at home.

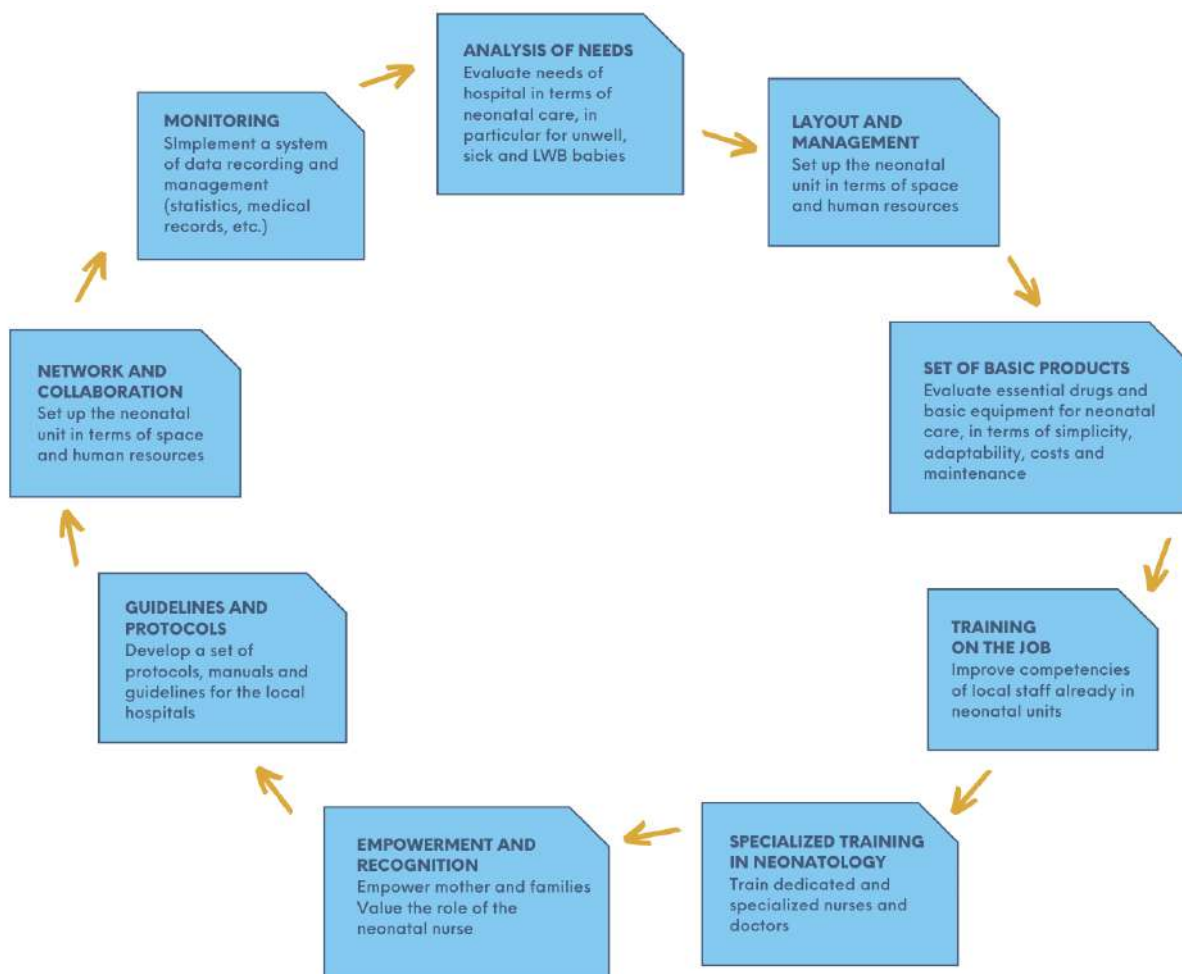
MODEL AND ACTIVITIES

Within the framework of the NEST, the Chiesi Foundation intends to improve the conditions of unwell, sick and small neonates and to develop effective newborn survival interventions in countries with limited resources. Essential needs of the neonates can be schematically described as follows:

- WARM – thermal protection
- SWEET – nutrition
- PINK – respiratory support
- SAFE – hygiene

To face these needs, it is firstly necessary that the local healthcare staff are trained and qualified, with specific competencies for the care of newborns. Secondly, a NICU should be organized with appropriate layout, equipment and staffing. Thirdly, standard procedures and protocols must be established in each neonatal hospital setting. In all this, the role of the mother and the family shall remain central in the care of the newborn.

The following chart describes the steps for the development and the implementation of the NEST Model:



COLLABORATIVE MODEL

To face such a complex issue with a comprehensive perspective, the Chiesi Foundation searches potential partners within both the private and the public sectors. It also leverages its network of international neonatologists and healthcare professionals with long-lasting experiences in low resource neonatal settings.

Indeed, the development of the NEST Project is based on a **collaborative model**, involving both groups of technical experts (e.g. neonatologists, nurses, etc.) to support the scientific aspects of the project, and non-profit organizations and private sector with expertise in the field.

The most important and direct partners for the implementation of the interventions are the local hospitals which decide to embrace NEST.

Since 2016, the Chiesi Foundation has also been collaborating with Birthlink, a UK charity which provides support and education to nurses and midwives in disadvantaged countries, where maternal and newborn care is severely compromised by lack of education and resources. The partnership between Birthlink and the Chiesi Foundation is aimed at developing the neonatal care training package addressed to neonatal nurses in low resource settings.

Together with Birthlink and other key players both European and American, that advocates for the rights of neonates such as COINN – Council of International Neonatal Nurses, the Chiesi Foundation aims to achieve the NEST objective and assists those hospitals and the local staff, who decided to start the NEST journey, in the implementation of pilot interventions to improve neonatal care in their neonatal units (*see chapter 'Implementation'*).

The Chiesi Foundation is also collaborating with the World Health Organization (WHO), particularly the Medical Office for Newborn Health, on key objectives of the Project such as the definition of neonatal care standards for sick neonates and the development of a roadmap for neonatal nurses.

IMPLEMENTATION

The NEST Project, started in 2014, has a long-term perspective. The project targets stable healthcare facilities, where there is an existing NCU or a room suitable to hospitalize sick neonates, and where it is possible to record the progress and improvement in the quality of newborn care. Moreover, through the NEST Project, the Chiesi Foundation aims to support the management of those healthcare facilities willing to create a new neonatal care unit from scratch by providing guidance for all aspects related to the proper building and setting up of the unit.

The NEST Project pays attention to the transferability of the interventions and to the involvement of governments, institutions and local communities, to guarantee the long-term sustainability of the neonatal care system. Currently the NEST Project is in the pilot phase. Successful experiences in the neonatal settings, where the Chiesi Foundation is operative, may be scaled up and transferred to other hospitals and countries.

PILOT INTERVENTIONS

Within the NEST Project, the Chiesi Foundation is implementing pilot interventions in neonatal care units already operative at the St. Camille Hospital in Ouagadougou (Burkina Faso), at the St. Jean de Dieu Hospital in Tanguietá (Benin), the Hospital Yendube des Enfants in Dapaong (Togo) and at the Hospital of Ngozi (Burundi). The collaboration with Saint Camille Hospital in Ouagadougou is presented as key pilot intervention, since it represents the setting in which the NEST Model is being implemented in all its aspects.



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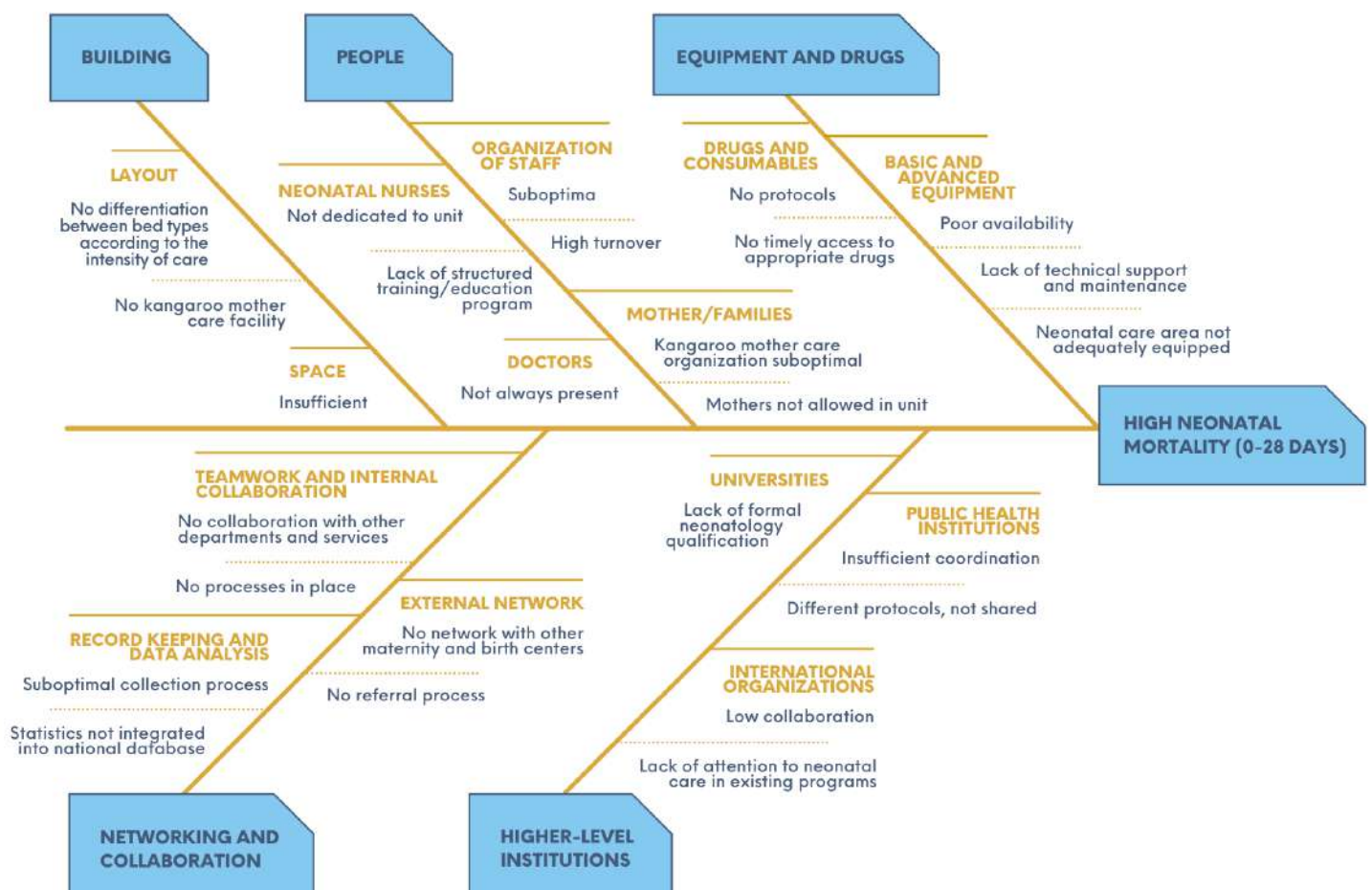


BURKINA FASO

CASE STUDY

The **Saint Camille Hospital in Ouagadougou, Burkina Faso (HOSCO)**, managed by the Camillian Fathers, has been collaborating with the Chiesi Foundation since 2010 for projects of renovation of facilities and procurement of equipment and drugs. In 2014, with the first steps of the NEST project, the Chiesi Foundation approach changed in order to have a more structured approach to improve neonatal outcomes. The objective of the hospital was to improve the quality of neonatal care and to decrease the high mortality rate at HOSCO.

Thanks to the NEST framework, the hospital has been able to identify, explore and better understand the many factors contributing to neonatal mortality, as represented in the figure below:



By taking a quality improvement approach and a structured methodology to face the different aspects impacting the neonatal mortality, HOSCO was able to prioritize the actions and activities to be put in place. The first gap identified was the space and area dedicated to the care of neonates that was too little and without the proper layout.

In 2016, HOSCO started work on restructuring and enlarging the neonatal care unit to manage the increasing number of neonates admitted to the unit, most of whom are out-born and to improve

the quality of neonatal care delivered by the hospitals. The plan of the new building was developed in collaboration with the Chiesi Foundation that financially supported the total cost of the work and collaborated in the definition of the structure layout and organization, including a dedicated unit for Kangaroo Mother Care that was not existing before. The new Neonatal Care Unit was inaugurated at the beginning of 2017.

At the same time one of the priority identified was to implement a structured training for the staff working at the HOSCO NCU, with specific attention to neonatal nurses. Within the project, local champions for training were identified and a team of external experts, mainly neonatologists was put in place in order to provide training on key agreed topics, upon request of the local staff. Starting from 2016 an annual training plan is developed by the staff in collaboration with the experts and continuous training is ongoing at HOSCO, with a “train the trainers” approach.

Within the framework of NEST, the Chiesi Foundation is also partnering with HOSCO in two other important projects which HOSCO is leading and collaborating with other local hospitals and institutions:

- The creation of a formal Network of hospitals and birth centres in the district of Ouagadougou, to improve immediate newborn care and to organize safe transportation for sick newborns, by standardizing skills and adopting common protocols.
- The creation of specialized training courses at university level to provide specific skills in neonatology to midwives and nurses, in order to officially recognise their key role in the care of newborn babies and enhance their competencies.



Figure 1-2: Neonatal Care Unit at HOSCO, before and after the intervention

The Chiesi Foundation and the NEST model today

Aware of the importance of the principle of continuum of care to reduce newborn mortality including the antenatal and postnatal care, the NEST model was born to primarily address a specific gap in low-resource settings in the care for sick, unwell, preterm and LBW babies requiring specialized attention. After 5 years of implementation, we have identified some key elements that differentiates the NEST Model from other projects active in the same area:

- NEST has an organic and holistic approach for a better quality of newborn care, taking into consideration all the aspects that can contribute to improve the care delivered to newborns in low-resources setting.
- NEST has a specific focus on the recognition of the role of the neonatal nurse.
- NEST values the role of empowered /the empowerment of mothers and families in the care of newborns.

We believe that these aspects make the NEST Model unique.

For the next years, we want to continue to consolidate and test the NEST Model in those countries where the Chiesi Foundation is already present. We want to strengthen the relationship with the local hospitals and reinforce the dialogue with different institutions and organizations such as Ministries of Health, Universities and local professional groups.

Secondly, assessing the impact of the activities implemented is an essential part of the execution of the NEST Model, in order to evaluate the effects of the interventions promoted, to verify the positive and negative changes and to correct actions and strategy accordingly. Currently the NEST Model has a measurement system in place which needs to be reviewed and reinforce in order to create evidence of the effectiveness of the intervention promoted and of the changes the project is favoring.

Finally, assessing and proving the impact/the measurement of our impact will also allow the transferability and scaling up of the NEST Model in other countries and hospitals in need. To promote the scaling up of the Model, the Chiesi Foundation seeks key partnerships with global players in the international cooperation arena, international organizations and other relevant stakeholders that can contribute to increase the visibility of the NEST Model and have the power and the resources to scale up and implement the model at countries level.

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Chiesi Foundation Onlus

L.go Belloli, 11/a - 43122 Parma, Italy

info@chiesifoundation.org

www.chiesifoundation.org

Codice Fiscale 92130510347

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