The Ohio State University Greif Neonatal Survival Program
INTRODUCTION

The OSU Greif Neonatal Survival Program was created with a $2.5 million gift from Greif, Inc., through its Greif Packaging Charitable Trust, to The Ohio State University (OSU) to establish healthcare training and delivery programs in developing nations with the goal of permanently improving health conditions in these regions. This gift is mirrored by a similar one to the Global Health Delivery Partnership (GHDP), comprised of Brigham and Women’s Hospital’s Division of Global Health Equity, Harvard Medical School’s Department of Global Health and Social Medicine, and Partners In Health (PIH).

OSU participates in the program through the Wexner Medical Center and its Office of Global Health under the leadership of Daniel Sedmak, MD, and the team of Pamela Potter and Jessica Small, program operations, and Monica Terez, nurse clinician/educator. Initially, the education programs are being created and implemented in Haiti. OSU is focusing its expertise on improving neonatal survival through building in-country health care capacity by means of educational programs for health care workers at all levels, from physicians and nurses to community health care workers.

A central component of the OSU Greif Neonatal Survival Program is expanding to other low-income regions of the world, including Ethiopia and Kenya. The OSU team is working closely with PIH and learning from their highly effective models of in-country clinical care delivery and training of health care professionals and workers.

OVERVIEW OF GLOBAL NEONATAL MORTALITY

Approximately three million neonates died in 2012, most in low-income countries. While deaths among children under the age of five have declined dramatically over the past two decades, the decline in neonatal deaths has lagged. The result is that 44% of all under-five deaths now occur in the first 30 days (Levels and Trends in Child Mortality, Report 2013. UN Interagency Group for Child Mortality Estimation). Three-quarters of these deaths occurred in the first week of life and just under half in the first 24-hours. The three most common causes of neonatal deaths are birth asphyxia, infections, and complications of prematurity. Associated factors include poor prenatal care, intrapartum care by a skilled birth attendant, and little or no medical care of ill newborns. It has been estimated that 50% or more of newborn deaths could be prevented if skilled clinical care was available at birth and during the early neonatal period.
OSU Greif Neonatal Survival Program

After extensive analysis of the state of neonatal care in Haiti, and based upon the literature on neonatal survival, OSU has created a neonatal care training program that consists of both continuing education programs in newborn resuscitation, e.g., Helping Babies Breathe® and the Neonatal Resuscitation Program™, taught by certified instructors, and a combined didactic and experiential course in specialized newborn care nursing. The latter is a six-week course involving lectures, clinical skills training, and mentorship in delivery units (L&D units and ORs) and in specialized newborn care units (SNCU). Our action plan is ambitious—develop curriculum to build in-country capacity and create a clinical site that offers a neonatal nurse training program. To enable the latter, and provide newborn care where none exists, the OSU Greif Neonatal Survival Program is building SNCU’s at select hospitals beginning with L’Hôpital Sainte-Thérèse de Hinche.

Why Hinche?

The Central Plateau Department is one of 10 administrative areas of Haiti, with Hinche serving as the capital city of the Department. The population of Hinche is estimated to be 122,300, but the immediate catchment area is approximately 250,000 people from the arrondissement of Hinche, which includes Hinche, Maissade, Thomonde, Cerca, and Carvajal, as well as neighboring communities in Thomassique and Cerca la Source. In its role as the Department-level referral hospital for the Plateau, it serves over 700,000 people. L’Hôpital Sainte-Thérèse, built in the 1930’s by U.S. Marines, is currently run by the Haitian Ministry of Health and Partners In Health. L’Hôpital Sainte-Thérèse is approximately a 3-hour drive from Port-au-Prince and a 1.5-hour drive from Hôpital Universitaire de Mirebalais, built and operated by Partners in Health and the Haitian Ministry of Health. Given the geographic centrality of Hinche, the existing connection with Partners In Health, the support and collaboration of the current hospital director, and the evident need for education and clinical training around newborn survival, the decision was made to establish the new OSU Greif Neonatal Survival Program in Hinche at L’Hôpital Sainte-Thérèse.

Our Results

As of March, 2014, the OSU Greif Neonatal Survival Program (OGNSP) has trained over 300 nurses and physicians in newborn resuscitation, created a neonatal nurse training program that has graduated seven nurses, and built a SNCU at L’Hôpital Sainte-Thérèse (see story on page 6). The Haitian nurse graduates are supported by the OGNSP and have already resuscitated and cared for hundreds of newborns. Additionally, these nurses, and the L’Hôpital Sainte-Thérèse SNCU, will serve in the training of future neonatal nurses in Haiti.

Under the direction of Monica Terez, RN, C, BSN, the clinical nurse manager of the Haiti project, over 1000 teaching and training hours have been provided by OSU faculty and staff with over 300 of those hours being donated. Those hours of side-by-side training are vital in ensuring that nurses are well-versed in skills critical to caring for newborns including resuscitation techniques and prevention and management of hypothermia.
Preterm babies often need interventions to prevent hypothermia, a condition in which the baby is unable to maintain a normal body temperature. The methods used to warm the baby vary depending on the severity of the condition and the equipment available but can include skin-to-skin contact (kangaroo care), a warming bed or incubator, warm blankets or towels, and a warm delivery room. Of the deliveries attended by OSU Greif-supported nurses, over 20% have required resuscitation and almost 70% have needed a warming intervention—a clear indication of the tremendous need for these services and for trained personnel to provide them.

**PLANS FOR YEAR 2**

**Neonatal Survival Program**

A major intent of the program is the development of a cadre of in-country neonatal nursing clinical educators and leaders. A subset of their training will include travel to Columbus, Ohio and observation of best practices at the OSUWMC and Nationwide Children’s Hospital neonatology units. Planned next steps in the neonatal survival program include, in alignment with the Haitian Ministry of Health, roll-out of the neonatal training program to other department district hospitals.

Expansion of the resuscitation training will lead to Ethiopia in July 2014 with courses delivered at the University of Gondar and Addis Ababa University. A visit to the Kenyan Ministry of Health is scheduled for fall, 2014 to investigate the potential of implementing the OSU neonatal nurse training program and resuscitation education throughout the district hospitals, starting in the Narok region in the southwest.

In addition to nurse training, we are developing a visiting neonatologist program wherein OSU neonatologists deliver core lectures to pediatricians in low-income countries. This will include both online courses and in-person/in-country training, the latter of which will consist of both didactic lectures and clinical mentoring.
...we finished our training and it was early January and I was called to a delivery with Trofort (another nurse). The mother was 13-years-old. She was pushing and pushing and the baby came out and NOTHING! There was no heart rate, no breathing. Nothing. I was thinking—please remember the training. My heart was beating fast. The mother was screaming saying, “Miss! Miss! DO something! Save my baby!” So we bag breathed the baby and we did cardiac compressions because there was nothing. We were afraid but kept trying to remember what we learned. Soon, the baby started to breathe and the heart rate was good. My hands were shaking and I was sweating. When I heard the baby cry, I said, “Mwen santi mwen soułaje” a Kreyol saying which means, “Now I am relieved!” That baby lived. Trofort and I still talk about it.”

Lelia Dorcin, Nurse Manager
Hôpital Sainte-Thérèse SNCU

Interdisciplinary Efforts

Faculty in the College of Nursing are leading the development of the antenatal and postnatal care delivery education program for nurses. Plans are in motion to involve the College of Public Health in the neonatal training program to formally assess its efficacy and the College of Engineering to help develop solutions to SNCU equipment needs in low-resource environments.

Mesi Anpil (Thank you)

We are thankful for the tremendous support from Greif, Inc., and the Greif Packaging Charitable Trust, whose vision and commitment to mothers and babies made all this possible. We are grateful for the collaboration with Zanmi Lasante, the Haitian arm of Partners In Health, Jean Daniel Laguerre, MD, medical director, St. Therese, Manoucheka Esteve, director, St. Therese nursing education, Jean Louis Romain, MD, chief, Department of Pediatrics, Hôpital Universitaire de Mirebalais and Jean-Renold Rejouit, MD, Ministère de la Santé Publique et de la Population district officer.

We want to thank Steven G. Gabbe, MD, Senior Vice President for Health Sciences and CEO, OSU Wexner Medical Center, for his leadership. The neonatal nurses from OSU who volunteered their time and services as trainer/mentors: Karen Lojo, Jenn Rutherford, Kate Taylor, Kristin Westerfield, and Sherry Yoder, literally saved lives and trained others to do so. Their skills proved invaluable in training the Haitian nurses and the ripple effect in live, healthy babies will continue for years.

We would also like to acknowledge the over $14,000 of equipment for the newborn care unit that was generously donated by Ganim Medical, Inc., of Delaware, Ohio.
If you want to train and mentor nurses in neonatal intensive care, it is important to create a space designed to accommodate the special needs of these babies. In early May, 2013, Jean Daniel Laguerre, MD, medical director, St. Therese, offered a space, to the OSU Greif Neonatal Survival Program, with the idea that it could be renovated into a Specialized Newborn Care Unit. Some people hear “a room that measures 22.5 feet long by 6.5 feet wide,” and they don’t think specialized newborn intensive care unit. Some people do.

Its cement walls were painted dark green, the only light in the room was natural sunlight that came streaming in from a rear positioned window, consisting of uncovered holes in the concrete wall, that measured approximately 4 feet by 3 feet. By July, 2013, renovation had begun. The fixtures had been removed, the plumbing reconfigured, and the cement flooring dug up. The cement lattice in the back window was removed. Rudimentary tools lined the walls of the “unit” as Haitian construction workers slowly transformed the room.

Two coats of white paint and a baby footprint and heart design border by a local Haitian artist removed any trace of the room’s original purpose. Installation of an air conditioner to maintain temperature stability in the room and construction of a “nurses' station,” positioned to the right upon entrance into the unit, cemented the transformation. It measures 5.5 feet long by 3 feet wide, includes desk space, shelving for supplies and equipment, and a refrigerator for storing breast milk for mothers whose babies are too weak to breastfeed. A full length glass door was added to the entrance of the unit to further insulate the air flow. The room was now fresh, light and clean—ready for the next step.

On February 24th, the equipment for the unit, donated by Ganim Medical Inc., in Delaware, Ohio, arrived from Port-au-Prince following a two-month journey from Ohio. It included 3 infant cribs, 3 radiant warming beds, 1 portable radiant warmer, 2 incubators, 7 pulse oximeter monitors, 2 cardiac monitors, 2 syringe pumps, and 6 IV poles. The unit can hold 7 infants and will include an area for mothers to visit, hold, and breastfeed their babies.

For newborns it is a room of life and hope. For OSU and Greif, it is the culmination of a vision, months of investment in time, money, and passion to improve the lives of mothers and babies in one of the toughest places in the world to give birth.

### Donated Equipment

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Cost</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel infant cribs</td>
<td>3</td>
<td>$300</td>
<td>$900</td>
</tr>
<tr>
<td>Infant isolettes (incubators)</td>
<td>2</td>
<td>$1,500</td>
<td>$3,000</td>
</tr>
<tr>
<td>Portable overhead infant warmer</td>
<td>1</td>
<td>$800</td>
<td>$800</td>
</tr>
<tr>
<td>Full size infant warming beds</td>
<td>3</td>
<td>$900</td>
<td>$2,700</td>
</tr>
<tr>
<td>Portable Baxter infusion pumps</td>
<td>2</td>
<td>$600</td>
<td>$1,200</td>
</tr>
<tr>
<td>Masimo pulse oximeter monitors</td>
<td>5</td>
<td>$450</td>
<td>$2,250</td>
</tr>
<tr>
<td>Nellcor pulse oximeter monitor</td>
<td>1</td>
<td>$375</td>
<td>$375</td>
</tr>
<tr>
<td>Passport XG Cardiac Monitors</td>
<td>2</td>
<td>$1,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Stainless steel IV poles</td>
<td>6</td>
<td>$150</td>
<td>$900</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>$6,075</strong></td>
<td><strong>$14,125</strong></td>
</tr>
</tbody>
</table>
For more information or to contribute to this project, please contact Pam Potter at pamela.potter@osumc.edu or 614-292-3684.