Abigail Radomsky
Uganda, Research Grant
Summer 2016

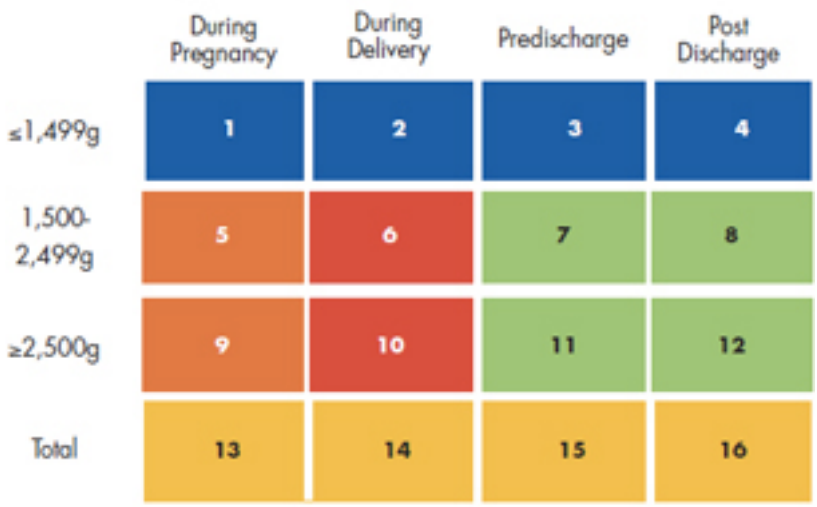
Improving Emergency Obstetric and Neonatal Care through Retrospective Analysis of Intrapartum Stillbirth Data in Southwestern Uganda

I arrived in Uganda to find that I had much to learn. Within days of landing, the country's president was sworn into office for the fifth time. This led to many vibrant conversations regarding the country's government as a whole and its effects on various aspects of the nation. I learned which newspapers would be biased since they receive money from the government and which would be more honest. I learned about all of the various means of transportation in Uganda and the traditional food. I learned about the different regions of the country and what they were known for. My head was full of new knowledge and a feeling of excitement to see what was ahead of me. The most important thing I think I learned in those first few days, though, was that while I was planning on researching a very specific aspect of the health system in one region, my research would be influenced by so much more.

Baylor College of Medicine Children's Foundation-Uganda (Baylor-Uganda) is a not-for-profit child health and development organization providing child-focused and family-centered HIV/AIDS prevention, care and treatment services, health professional training and clinical research in Uganda. Baylor-Uganda is one of the implementing partners of the Saving Mothers Giving Life (SMGL) initiative in the Rwenzori region of Uganda with their main office located in Fort Portal. This is the NGO that I worked closely with throughout my time in Uganda to complete my research.

One of the main projects that the SMGL initiative has carried out is the implementation the BABIES matrix in the higher-level health care facilities within the Rwenzori region. The BABIES matrix can be used to define newborn health problems, assess the performance of a

health system, select an effective and proper intervention, and then monitor and evaluate said intervention. This matrix relates birth weight and time-at-death, in the form of ratios. On the top left, you have babies that are of very low birth weight and are dying during pregnancy moving down and to the right until you get to normal birth weight babies that are dying after they leave the hospital. By first counting the numbers of babies dying that fit into each cell, one can then divide by either the full total number of birth (alive and dead) or by the total number of births (alive or dead) within each weight class. These values can then either give you a birth weight proportionate mortality rate or a birth weight specific mortality rate, respectively, in each box of the matrix. Each color represents a different primary prevention strategy that would be most likely to lower the number of deaths in that category.



Blue: Maternal Health and Prematurity
Orange: Maternal Care
Red: Newborn Care
Green: Infant Health

I began my research with knowledge of the BABIES matrix values in the region for 2013 and 2014. Upon arrival, I was able to access the BABIES matrices from 2015, though, so I shifted my focus to that data. Additionally I decided to focus mainly on the Fort Portal Regional

Referral Hospital since they had had the largest percentage of intrapartum stillbirths in the region.

The data collection process that I followed included the following steps. First, I looked to the maternal registries that have the most basic data about mothers and their babies. From there, I collected the mothers' names, dates of admission and the IP numbers associated with their delivery for every intrapartum stillbirth of a baby greater than 2.5 kilograms. My research assistant then went and pulled as many of the individual patient case sheets of interest that she could find and I collected extensive data regarding variables that could have been contributing to the high rates of stillbirth from the case sheets. The state of the medical records office greatly inhibited my ability to find all of the desired case sheets since I was only able to record data from 40.7% of the identified desired cases. The records office consisted of three rooms with cardboard boxes filled with patient case sheets stacked into piles with large plastic bags of case sheets sitting around them. Some of the bags and boxes were labeled by department and the period of time that the case sheets had come from, but many others were unmarked. To fill in some of the gaps in my data, I gained access to various data that Baylor-Uganda had collected over the years. This data included the individual BABIES matrices by year, broken down by each facility rather than just an aggregate matrix for the entire region. I also gained access to the Pregnancy Outcome Monitoring System (POMS) database.

However, just with the data that I was able to collect from those 40.7% of the identified cases, I was able to learn a lot. The following chart shows some of the variables that I collected data on from the Fort Portal Regional Referral Hospital.

Maternal Register Data	
Total FSBs >2.5 kg	118
Referred	56%
Standard Vaginal Delivery	53.4%
C-section	45.8%

Patient Case Sheet Data	
FSBs >2.5 kg Case Sheets Found	40.7%
FHR Not Heard Upon Arrival	33.3%
Abnormal Lie	22.9%
Obstructed Labor	16.7%
Ruptured Uterus	14.6%
Cord Prolapse	14.6%

In addition to this basic quantitative data, I made some observations that will significantly impact my research analysis. These included an over-crowding issue at the Fort Portal Regional Referral Hospital as a result of the end of the SMGL voucher program. This program was put into place a few years ago to get mothers to go to smaller health centers that are closer to them for free rather than paying the fee associated with the smaller facilities that do not receive full government funding. The Regional Referral Hospital is always free though. However, during the voucher program, since all of the facilities were free for the mothers, the number of births in each facility evened out. Once the program ended though, the number of deliveries in the Regional Referral Hospital vastly increased, leading to an overcrowding problem that left mothers in the early stages of labor lying on the floors of the hallways in the maternity ward. Additionally, I found that the time from decision to operate for a caesarean section to the time of delivery was incredibly long, often spanning multiple hours. These long delays seemed to stem from theatre space and staffing problems. Finally, I observed poor record keeping and

organization as well as a low desire for analysis. Without a desire to analyze what is occurring within the health centers, there is no need to keep track of the data. I believe that all of these observations are affecting the rates of stillbirth, and while my analysis will focus on the quantitative data, I must take these into account as well.

While I was able to find variables that seem like they could be contributing to the high rates of stillbirth (abnormal lie, obstructed labor, etc.) I think the thing I learned that I found the most interesting was the interconnectedness of health. I realized through my research that I couldn't take the health system and evaluate it on its own to find the variables contributing to stillbirth. They must be looked at in context. While in Uganda I gave three initial presentations regarding my research. One to the regional Baylor team, one to the national Baylor team, and one to the District Health Team, run by the District Health Officer. These presentations ended with the various group members wanting to hear more about my analysis and about ways in which we can work to better the health system with regards to the high rates of stillbirth.