Alison Climes

Public Statement: The Barger scholarship helped facilitate my trip to Ghana this summer with the International Programs in Engineering project, Design for Global Development. Along with two other students, I spent a total of 8 weeks this summer at the Korle Bu Teaching Hospital in Accra as well as the Komfo Anokye Teaching Hospital in Kumasi.

The first five weeks in Ghana were spent in Accra. The three of us worked with three University of Ghana biomedical engineering students to complete the preliminary steps of a senior design project. The overall goal was to immerse ourselves into the daily lives of the doctors and nurses at the hospital and do a “deep dive” with the hopes of learning more about maternal health and identifying a challenge that could be addressed with an engineering design project. The first two weeks were spent doing general observations in various parts of the obstetrics and gynecology department of the hospital. We spent time on the labor ward, the recovery ward, the outpatient department, the gynecology emergency room, both the labor and gynecology operating rooms and the family planning center. There were also other international students at the hospital, but most all of them were doing exchanges as medical students. It was a challenge to explain to nurses and doctors what our goals were for the project. One of our struggles was to help them understand why we wanted to simply watch what they were doing and explain that we were unfortunately unable to assist in any sort of procedure. It also took us some time to master the art of observing and understanding what were simply differences in the way things were done versus true challenges. Also, some things that we perceived to be challenges were not necessarily problems in the eyes of the doctors and nurses.

The third week we continued to observe, and created a down selection rubric to begin narrowing down the over 60 needs statements that we had created to a top ten. We scored the needs on categories such as doctor interest, market size, existing solutions, and if it fit within the scope of the senior design class that would be taking in the fall. We presented to the staff at the daily morning meeting to gather more of their feedback on the things we had identified to be the top challenges the obstetrics and gynecology department faced. Ultimately, we decided to focus on post partum hemorrhage based on the need for a device to treat primary post partum hemorrhage in cases of uterine atony.

The following week we began to gather information for our user requirements. We started to interview doctors and nurses that would potentially be the future users of this device to try and uncover features that this device needed to have as well as features that would be nice to have. Furthermore, we tried to gather even more information so that we would be able to quantify these requirements during the design process in the class. It was again challenging to help the doctors understand the kind of information that we wanted. When we asked them what they considered desirable features of this hypothetical device, they often would resort to explaining something that already existed but that they wanted, or they would begin just talking about post partum hemorrhage itself and how it occurs. We had to learn how to phrase our questions to get the information that we wanted, and it still sometimes did not work. Another thing we learned was that sometimes it was better to focus on one feature of the device and try to get as much information from that person on that specific feature. Instead of asking about all the things we thought might be important, we might press them to truly understand what it meant for a device to be portable. What physical size should it be? How much should it weigh? Does it need to have wheels? What about a handle to carry it? Asking these questions to doctors and nurses in between patients or right after a meeting was another challenge. We had gone into this experience thinking we would be able to sit down and conduct focused interviews with staff, when in reality we had to illicit the information whenever we had the chance.

The last week we continued to develop our user requirements as well as begin to sketch ideas for our solutions to be able to show these same stakeholders. The hope was to be able to gather even more information about what they thought about these designs and how we should
change them or what they liked or disliked about them. It was again not as easy as we would have hoped, but we were able to get some helpful information. The last day at Korle Bu, we presented once again at the morning meeting to inform the staff of our topic and the information that we had gathered so far, and that we would be returning to school to work on the project and generate a prototype. We said that we would share our design report and prototype with them upon completion of the project and that we would most likely be seeking more information from them about the design.

The last three weeks were spent in Kumasi, a city farther north that was a little quieter, a little smaller, and much greener than Accra. We went through the same process, but without the first two weeks of observations. Because other groups had already gone in the past to the Komfo Anokye Teaching Hospital, we compiled all of their needs statements into one document and then narrowed that down to a top thirty. Our first week there we completed general observations, while also down selecting the previously identified needs. With the help of one of the senior doctors, we further narrowed down our thirty needs, and with the help of our professor, narrowed it down to a top ten. We then consulted 4 senior doctors to help us select our one project topic, based on their interest and perceived priority of the needs we had identified. We then selected the project topic as a way to convert labor beds into delivery beds. This was based on information the doctors had given us along with our own observations. The next week we spent doing focused observations in the labor ward, witnessing deliveries as well as talking to the midwives, nurses, and doctors that spent a lot of time there. During this week, we again were trying to gather similar information to Korle Bu, which was information to help us develop user requirements for our device once we got back to school. The final week we were there we began sketching ideas and showing them to people, trying to help them to understand what we were thinking and hoping to get feedback from them. We presented our findings on the very last day we were there at the morning meeting, and informed them of what they could expect from our project.

From this experience, I learned many different things. I learned the difficulties and challenges faced when not only working in a new culture, but in attempting to navigate a fragile atmosphere while trying to be the least intrusive as possible. I learned how to practice patience and how to adapt to situations when they did not go as we expected. I learned how to work with students of different backgrounds and with different work ethics than myself. I was challenged mentally both by the actual work we were completing and adjusting to a new lifestyle. Traveling to Ghana this summer proved to be quite difficult, but also rather rewarding in the end. This was an invaluable experience that I would not have had the opportunity to complete without this scholarship.