# Global REACH Uganda: a Review of Learning Experiences and Opportunities for Added Value

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# Part I. Learning objectives and activities that would be helpful to future students

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## Course Learning Objectives:

*These objectives were designed and agreed upon by faculty and students traveling to southwest Uganda in April 2018. Student reflections on the objectives are italicized below.*

**1. Determine how to pursue a collaborative approach to learning, service, and inquiry in a low-resource setting**
*All work done in a low-resource setting should be done in partnership with the healthcare providers on the ground. It is essential to understand their culture and always engage their thoughts and ideas when formulating any potential solutions to problems you see. More information on this objective can be found in part III of this report*

**2. Experience delivery of healthcare is a low-resource setting**
*Students will have opportunities to visit multiple types and levels of health center, possibly including public, private, community and university-affiliated. Experience may take the form of observing and participating during rounds or in the operating theater, attending outreach activities, participating in outpatient visits, and performing clerical work*

**3. Understand the influence of context and culture on how healthcare is delivered and experienced by patients and their communities**
*Students should expect to debrief with students and faculty from both Michigan and Ugandan health centers*

**4. Analyze the health system available to those in the FP region, develop recommendations and potential next-steps as to potential improvements**
*There are numerous models to study from a policy or health systems standpoint, at the health center- and national-levels (e.g., the national program to combat HIV)*

**5. Identify research questions that could potentially be explored by future groups of U-M students and other learners**
*There are many opportunities for identification and implementation of quality improvement projects. Students should seek opportunities to discuss ideas with peers and stakeholders in the Ugandan health system to assess whether a project is relevant, feasible, and desired*

**6. Develop constructs and specific learning activities that would contribute to a robust curriculum for future learning groups**
*Learning activities for students include but are not limited to: participation during daily rounds, assisting during operations and deliveries, participation in outpatient department, attending community outreach, writing case reports, delivering morning report, providing teaching on topics of interest, developing a QI project*

## Introductory Notes – Clinical Rotation in Uganda:

Clinical students visiting southwestern Uganda can expect to find learning opportunities in multiple domains: clinical, health systems, and cultural. This section includes information we wish we had known before traveling to Uganda, in hopes of helping future students to be productive during their visits.

**Breadth of Experience**: Students may have options to experience the Ugandan health system at different levels. They can gain a broad perspective of Ugandan health care by splitting time between multiple health centers, or they may choose to focus more on the care being delivered in specific settings.

There are benefits to each approach. Students interested in health systems, or those with more general clinical interests, may appreciate seeing how different tiers of the Ugandan health system interact and understanding the differences between public and private models. Students with particular interests in one specialty or mode of care may benefit from focusing their time more at one site (for example, Fort Portal Regional Referral Hospital has a higher volume and variety of surgeries, while someone interested in community health may wish to spend more time at Rwibaale). Spending more time at one site also allows for continuity, developing relationships with hospital staff, and gaining familiarity with a health center over time. For what it is worth, the faculty and staff at each site consistently requested more time with University of Michigan students to foster relationships.

**Group Learning**: We recommend experiencing the Uganda elective as a group of students. Having multiple students together in each location allowed for discussion and reflection. We also felt more comfortable traveling as a group, although we never necessarily felt threatened.

The presence of multiple learners also involved challenges. Overcrowding may be an issue at smaller sites, such as Rwibaale, but generally speaking every health center was able to accommodate us and seemed happy to do so. It will be important in the future to assess whether clinic staff feels burdened by orienting multiple learners and incorporating them into the workflow.

**Clinical Responsibility:** Students assisting with patient care at any site should expect different patient care boundaries and levels of supervision than we experience at US medical schools. Students may be granted a level of autonomy beyond what they are comfortable with or what they deem appropriate. In such instances, it is important to set boundaries with supervising providers about what they are comfortable and not comfortable doing. Ideally, considerations and discussions about these clinical boundaries would begin among the group even before embarking on their trip.

**Background on Medical Education in Uganda**: Medical school in Uganda is five years and typically starts immediately following secondary school (high school). Ugandan medical school involves a lot more hands-on training (e.g., 3rd year medical students are expected to be able to assist on c-sections and do perineal repairs).

Following graduation, students enter their intern year where they are assigned to a hospital to rotate through all the core specialties (surgery, peds, medicine, ob/gyn, psychiatry). After intern year, the interns transition to medical officers and complete another two years of general training. All medical officers are trained to do basic

operations such as C-sections and hernia repairs. After general training, medical officers have the opportunity to specialize if they choose by pursuing a “masters.” However, many remain as general practitioners.

Students visiting Uganda may also work with clinical officers or clinical officer students, which are equivalent to physician assistants and PA students in the United States. Unlike medical officers, clinical officers do not operate. Their schooling is three years and they receive a certificate upon completion.

**Background on the Healthcare System in Uganda:** There is a tiered system of health centers in Uganda:

| Level | | Health Center | Approximate Population Served | Services Provided |
|---|---|---|---|---|
| District | Health sub-district | I | Village - 1,000 | Community-based preventive and promotive health services. |
| | | II | Parish - 5,000 | Preventive, promotive and out-patient curative health services, and outreach care. |
| | | III | Sub-county - 20,000 | Preventive, promotive, out-patient curative, maternity and in-patient health services and laboratory services. |
| | | IV | County - 100,000 | Preventive, promotive, out-patient curative, maternity, in-patient health services, emergency surgery, blood transfusion and laboratory services. |
| | | | General Hospital – 500,000 | In addition to services offered at health center 500,000 level IV, other general services are provided including in-service training, consultation and research for community-based health care programs. |
| National | | | Regional Referral Hospital – 2,000,000 | In addition to services offered at the general hospital, specialist services such as psychiatry, Ear, Nose and Throat (ENT), ophthalmology, dentistry, intensive care, radiology, pathology, higher level surgical and medical services. |
| | | | National Referral Hospital – 24,700,000 | Comprehensive specialist services, teaching and research. |

At each level of health center, there are different drugs, personnel, and services available. The resources and services available at each level are determined by the government and are supposed to be standardized, though in reality, there is a large difference between institutions at the same level. Many medical resources that are widespread in the United States (CT, dialysis, etc.) are only available at a select one or two health centers located in Uganda’s largest cities.

Ugandan hospitals can be public (government) or private. Government hospitals admit patients at no charge, but patients and their families end up paying for many of the supplies used in their care. Private hospitals admit and board patients for a fee. Within the government hospitals and the private hospitals we visited, there were both private and public wards. The private wards contained private rooms for an extra daily fee.

**Learning Guide – By Setting:**

**i. Fort Portal Regional Referral Hospital/Buhinga**: Buhinga, officially known as Fort Portal Regional Referral Hospital, is a government hospital. The interns (approximately 30) essentially ran the hospital with very little support from specialists. There were large numbers of patients who were referred from health centers all over the area. Sister Rose Kantu was our main contact here. She the Department Head of Pharmacy who has done a lot of successful work to cut down on drug shortages at Buhinga. There were many clinical officer students in each department, as well as foreign nursing students.

**Medicine:** The medical ward at Buhinga often showcased diverse pathology, with very sick patients, as there was no separate ICU. Without any monitors and few-to-no vitals available, it was easy to forget how sick many of the patients were.

Rounding provided opportunities to learn about specific patients, and also to develop rapport with hospital staff while comparing US and Ugandan management of diseases. Mornings on the medical ward at Buhinga were more conducive to learning than afternoons. In the morning, there was often a consultant (attending physician) present, which gave structure to rounds and led to more teaching. Consultants typically did not round on the ward (or if they did, it was only on a few of the patients), but were sometimes eager to teach and show us interesting patients, (although this was variable).

In the afternoons, things became less structured: There were generally no senior doctors on the wards, and the interns were responsible for admitting and caring for all patients. They ordered tests and treatments, with the plan to discuss decisions with a consultant the next morning. There were also large groups of clinical officer students who rounded with the interns. At times, afternoons felt like a free-for-all, in which patients rolled through the door and there was no one on hand to conduct a workup. While daunting, this could also be viewed as a unique opportunity to assume responsibility for a patient without much supervision. We were encouraged by the interns to see any patient and order any tests or treatments that we wanted. Overall, Buhinga had potential for a lot of learning in regards to approaching the undifferentiated patient in a low resource setting.

There were many challenges in admitting patients, including language barriers (most patients speak a regional language and not English) and unfamiliarity with the hospital's charting and resources. Working with clinical officer students and asking them to translate for a patient may be a way to see new admissions without impeding the interns' workflow too much. There were many opportunities to perform supervised

bedside procedures that medical students are allowed to perform in the US, such as LPs and paracentesis. Although interns are happy to simply supply you with the equipment and tell you to do your best, they are also usually willing to supervise if you explain the need for this.

**Pediatrics:** Pediatrics in Uganda is defined as patients twelve years old or younger. The pediatric ward at Buhinga actually began before stepping foot into the building, as there were often patients waiting outside to be admitted. Inside the ward, the space was broken up into an acute care or emergency area, a surgical area, a medical area, malnutrition room, and neonatal room. Additionally, there was a separate NICU in a different building. Time was not spent in the NICU during this rotation, however it was noted multiple times that this would also be a good place for learning.

There were consistently 60 to 75 patients for two interns and two nurses. Mornings began with both interns, a group of clinical officers, and a medical officer to round on the sickest 3-4 patients. Once those patients were seen, the medical officer would leave and the interns rounded on the rest of the patients. They usually split up and each rounded with half of the clinical officer students. The question most often discussed was, “what is the most important test for the patient right now?” We often created longer differentials, but families only had enough money to pay for one test or families would have to be sent out to a different center for a specific lab test. We also discussed the difference between United States care and Ugandan care. Occasionally, as the day progressed, there would be less time for discussion of a patient's concerns in English and the intern would conduct the interview, write, and move on.

We were encouraged to see patients on our own, however the language barrier and personal comfort limited this ability. The medical officer suggested partnering with a clinical officer student to take histories of incoming patients, however rounds followed by required activities for students created some difficulty here. Rounds would usually last until 2 or 3pm with the high volume of patients. The pathology seen at Buhinga was very diverse and ranged from frequent sickle cell crises and malaria to typhoid, advanced stage HIV, and post op bowel perforations.

Once patients were rounded on and their treatment plans were written in their notebooks, it was the family’s responsibility to make sure that treatment was carried out. A nurse was stationed at a desk where antibiotics, fluids, and other medications were held. Parents would bring their children to this desk with their treatment notebook and the medication would be hooked up to the IV. It was essential for families to keep track of time and bring patients to this medication desk, otherwise children would not receive medical treatment.

**Ob/Gyn:** The maternity ward at Buhinga is very busy with over 600 deliveries per month. It also has some of the highest maternal and infant mortality rates in Uganda. That said, there were many midwives present who were committed to providing quality care. One of us worked in the labor and delivery suite for the week, and primarily only worked with the midwives and clinical officer students. There were two interns working

in the Ob/Gyn wards, but they were hard to find at times. It was difficult to coordinate being able to round with them in the morning (benefits of Ob/Gyn = fast rounds!). Interns were the only ones who do c-sections, or any other emergency surgeries. We did not see the Ob/Gyn consultant once during the week there.

Since Buhinga is a referral hospital, there were many women in obstructed labor, needing C-sections (only health center IV and above are capable of doing C-sections), or having other emergencies such as a ruptured uterus. The biggest challenge of working at Buhinga, other than the craziness of having so many patients, was the lack of supplies. Women were required to bring their own medical supplies and were not seen until they had all of the supplies, such as surgical gloves and surgical blades.

KS: *I was not confident in cervical exam checks at that time, and I felt guilty trying to learn there because it would require two surgical gloves - one pair for myself and one pair for the midwife checking after me. However, I felt that I was still able to learn a lot about maternity care and the many similarities to the United States through mainly shadowing the midwives and assisting where needed. For the few women that did speak English or had a family member that could translate (not necessarily the best option, but the only option there at times), I was able to take their full history prior to a midwife completing the physical exam. All women who have attended prenatal appointments (called ANC – antenatal care there) will have a small book with them that contains the majority of the information that you need to write down in the paper labor book. For the first history I took, I bought a completed note into the room with me, simply copied each section, and then filled in the relevant information for the woman I was seeing.*

**Surgical:** The surgical ward is an eye opening experience that all students would benefit from observing. Students will likely have the opportunity to participate beyond what they are allowed to do in the US, but due to ethical concerns and risk for personal injury (needles and scalpels are mixed in with the rest of the instruments), it may be best to simply observe. However you participate, remember to “do no harm.” In this setting, you will likely question whether some care is better than no care, and this is something you should feel welcome to openly discuss with the interns. They know they are not providing the standard of care that would be expected in a high resource setting, but are doing the best with what they have. While in the operating theater, consider stressing the importance of sterile technique and proper hand hygiene.

**ii. Virika Hospital (Health Center IV):** Virika Hospital is a private, mission-based hospital. The days began with hospital-wide morning report at 8:00 am. Morning report consisted of a hospital census and brief presentations of new patients that arrived the previous day. “CME” (continuing medical education) was done on Fridays in addition to morning report and consisted of 1-hour discussions on particular topics.

**Medicine:** Morning rounds were generally a time for students to see patients and discuss their care with the team, similar to medicine rounds at U-M. There was no pre-

rounding by students or physicians, though this may be one way that students could add value to the system. Notes were written on the ward, immediately after seeing the patient in question, which greatly slowed down rounding. We found that our suggestions or questions during rounds often led to changes in the tests or treatment that were ordered, though some of the doctors were more receptive to our perspectives than others.

In the afternoon, things were less structured as senior doctors often left the premises and interns ran the show. Depending on the day, there may be good afternoon learning opportunities in the OPD (outpatient department), including at the HIV clinic, which ran every day across the street from the main hospital. We did not have opportunities to interview patients much ourselves in OPD, but the doctors were happy to let us sit in on clinic, ask questions, and to discuss cases with us. The relatively orderly environment at Virika made it an easier setting in which to follow patients day-to-day, as we were more accustomed to doing as medical students in the US.

**Pediatrics:** The pediatric ward at Virika consisted of a medical area (surgical pediatric patients were cared for in the surgical ward) and a neonatal room with warmers and lights for jaundiced infants. The ward had many Virika nursing students of all years who helped care for the patients. An intern was around for any immediate needs, however we waited each day until the medical officer arrived to round. The nursing students would round with us and kept track of treatment plans for each patient. With a smaller volume, there was much more time to have in depth discussions about differentials and possible treatment options in a low resource setting. Rounds were more personal and there was more time to ask questions and interact with families through the nurses or medical officer.

Usually, rounds ended between 10am and 11am. There was then time to talk with the nursing students about their roles and impressions or learn about hospital protocols. This was also a good opportunity to spend time in the maternity ward as newborns were not brought to the pediatric ward or seen by a pediatrician unless an acute medical concern arises.

LM: *I often found that spending the rest of the morning/early afternoon in the medical ward was also an option for learning. There were many patients and additional conversations that provided insight into healthcare in Uganda that helped to round out what I was experiencing in the pediatric ward.*

Every Thursday, a pediatric HIV clinic was run in the separate outpatient center across the road. On clinic day, 80 children, ranging in age from 6 months to 14, arrived for check up and medication refill. This clinic required the collaboration of nurses, pharmacist, social workers, counselors, and families. This experience is highly recommended as it provided insight into the cultural context of a critical public health challenge and was also an opportunity to learn more about a disease we do not see as often in the US.

**Ob/Gyn:** Although much lower volume compared to Buhinga, Virika may provide a better learning experience in the maternity ward. One of the biggest benefits was getting to work directly with Dr. Sister Priscilla. She was a vast source of knowledge. One of the best learning opportunities with her was watching her work with a mom to improve her breastfeeding. Since we have so many specialists in the United States, such as lactation consultants, Virika provided new opportunities to learn valuable skills.

KS: *Virika was where I became proficient on my cervical exam checks - the midwives stopped back-checking me by the end of our time there! With a smaller number of midwives and other healthcare providers, I truly felt like I was part of the team at Virika and was excited to learn about the other providers' families and life outside the hospital.*

The rest of the time at Virika was spent with the medical officer on duty, and rounding with him. Given the repetition in Ob/Gyn, a student may eventually be able to round independently ahead of time, complete the impression and plan, and write the discharge instructions (with close supervision to ensure that nothing was missed). This made for much more efficient rounds and was also a great learning opportunity. The hospital is primarily OB patients, however, there are a few GYN patients sprinkled in.

One thing to note is because Virika is a mission-based hospital, the only family planning available was natural family planning. Elective abortions are illegal in all of Uganda.

**iii. Rwibaale (Health Center III)**: Rwibaale was a smaller health center with limited diagnostic and therapeutic capabilities, in accordance with its designation as a Health Center III. There were specialty clinics or outreach trips most days of the week, and these all provided worthwhile learning opportunities. Vaccine outreach on Thursdays and HIV clinic Fridays were particularly valuable. Because the health center was so small, students were best served by rotating between departments in search of activity. Spending some time in the lab, pharmacy and store room will help students appreciate the resources available and the role of Rwibaale as a lower level health center. Rwibaale HC III has a new operating theater under construction, funded by the NGO Collaborating for Better Health. Expected to be operational by summer 2018, this addition will primarily be used to perform cesarean deliveries and will elevate Rwibaale to Health Center IV status.

**Medicine**: The inpatient wards were quite small, and were recently decreased in size to 3 beds for the male ward, 3 for the female ward, 4 for the pediatric ward, plus 1 isolation bed behind a curtain in the hall. Rounds were therefore pretty quick, with one doctor or clinical officer rounding on all admitted patients. James, the clinical officer, typically wrote notes as he rounded, and eventually asked us to help with note writing as we discussed each case.

There was a strong focus on conditions commonly seen in the local community: malaria, pneumonia/TB, HIV, and UTI. Students can spend time in outpatient clinic in the morning and afternoon, and should expect to learn how to take a (very) focused and

efficient history seeking to identify these common illnesses. With the volume of patients that must be seen, it's easy to jump to a conclusion or diagnosis, but one of the ways students can benefit the system and clinicians is by broadening differentials and asking a few extra questions on history.

**Ob/Gyn/Pediatrics:** Two of us worked together in the maternity ward, reviewing the basics of prenatal appointments, PMTCT (prevention of maternal to child transmission of HIV), labor and newborn care. Sister Gertrude (the midwife) and the nurses in the maternity ward were very excited to include us in providing care to the mothers there. They typically would allow us to examine the patient, announce our findings out loud, and then would do the examination themselves to determine if we were correct. They were also diligent about explaining the different medications used, particularly for HIV in mothers and infants.

When not seeing patients, we mainly worked on getting their ultrasound machine functioning. Although they had received the ultrasound machine several years ago, they were not confident in their ability to use it. We were able to teach Sr. Gertrude how to determine the baby's position and find the heartbeat. Future ultrasound curriculum requested by the staff, that a visiting student could teach, included: head circumference, gestational age, weight, nuchal cord, amniotic fluid level, and number of fetuses.

## Part II. How can visiting students add value?

*Here we hope to touch on some "dos and don'ts," while being mindful of the perspectives of the various stakeholders we worked with during our month.*

As with many medical clerkships, we often felt that we were in the way and slowing down the clinical workflow. However, this was not the case all of the time. We felt we were better able to contribute when we had gotten more comfortable with the team, and similarly, when the team was more familiar with our knowledge and skill level.

There are several common sense ways to integrate yourself into the team: start each day by introducing yourself, maybe reminding people who you are and why are you there. Wear your U of M name badge and white coat. The University of Michigan is well established now in all institutions that you will be visiting and therefore creates some familiarity. Once integrated into the team, it is a fast transition from feeling like you are always in the way to feeling like you are actually making a difference.

Keep in mind why you are visiting Uganda. Rather than striving to save every patient, or performing procedures that you are not experienced in performing, you are there in large part to learn about the Ugandan healthcare system and the similarities and differences with the US healthcare system. That said, working with patients and staff will provide challenging, rewarding experiences, and you should still contribute to patient care as appropriate. This big-picture view is important to keep at the forefront of your mind throughout your time in Uganda.

We spent much of our time in Ugandan health centers considering how future students might be of added value there. We believe U-M students could have a greater positive impact if this experience were to become longitudinal: Senior students would return from Uganda, talk to M1s and M2s and discuss innovative solutions to identified needs; senior students could teach specific lessons on relevant topics such as HIV clinic and vaccine outreach; participating students might visit once as M1s or M2s for research, and again as M4s for research and clinical work.

**List of potential collaborative projects:**
Additional ideas for U-M students adding value for our Ugandan health partners are listed below. These projects were considered as the product of conversations we had with Ugandan healthcare providers throughout the month.

**i. All sites**

- **Outpatient counseling:** OPD (outpatient department) clinics were high-volume and practitioners were pressed for time. Students could pair with a clinical officer student or nurse as a translator and see patients for HTN, DM, and prenatal counseling. Students could review how these common conditions are managed in Uganda with the resources available (referencing the Uganda Clinical Guidelines Handbook) and be prepared to provide guidance on medication adjustments, how to take medications, and the importance of controlling conditions like hypertension and diabetes.

- **HIV admin support:** HIV clinics at all sites were run similarly with the same required paperwork. This could be an area for students to help and collaborate.
- **Organize "CME" morning or afternoon talks**: possibly developing a lesson in collaboration with Ugandan medical students/interns. Emphasize topics of interest to Ugandan providers, or topics that highlight novel practices in the US health education system (e.g., breaking bad news, how to debrief as a team, etc.) Consider thinking beyond just teaching other medical students and intern. The nursing and clinical officer students are excited to learn, as well!
- **Identify/Implement a quality improvement project:** Design a new QI project or implement a QI project identified by past students. Use focus groups with community members and stakeholders at the health center to identify most salient problems.
    - *Note: our month ended with a feedback session with faculty and staff at Virika Hospital. It might be possible to check in with Dr. Sr. Priscilla to see if any additional conversations or ideas were discussed after more time to reflect.*
- **Shadowing:** Partner with nursing staff and other learners to act as a bridge between patients and teachers of the health care system they work in. Follow a staff member through the hospital as they work to get a patient discharged, spend time in the stock room or pharmacy, etc. More options for future collaborations will arise with these learning experiences.
- **Lessons in Lean:** What can we learn about patient care with limited supplies and can we apply any of it to care at U-M or similar US health centers?
- **Cost of private vs. public care:** A survey-based study that probably works best for OB. Many practitioners questioned whether "free" public care was really more affordable than private care, given the cost of medical supplies to the patient. Compare costs to patient at Virika to costs on market. Could also look at resource use. Ask patients why they choose private vs public healthcare.
- **Collaborative case reports:** work with doctors or medical students to write up interesting cases.
- **Model diagnostic reasoning** for interns, nurses and other students. This can be done on rounds by taking a step back to work through a diagnosis, or possibly even in Morning Report at Virika.
    - *For example, if you are told a patient's ascites is due to "a liver problem," ask why and make sure it's not just because "that's what is most common." Talk through other causes of ascites and what associated symptoms you would see with each. Although the interns were extremely knowledgeable, it was surprising how frequently people would jump to a diagnosis without considering a differential.*
- **Triage**: Educate local clinicians on the importance of triaging patients and quickly responding to emergency situations. It was not uncommon for critically ill patients to be admitted and not be seen for a long time. For example, a newborn that began seizing was not prioritized and the newborn was allowed to seize for 20 minutes before he was seen by the doctor and treated.
- **Hand Hygiene:** Discuss the importance of sterile technique and proper hand hygiene in the OR with students and clinicians. Sterile technique was not always

observed in the operating theater, and hand sanitizer was not always available or used on the wards.
- **Mortality Study:** Research how in-hospital deaths are dealt with and what the interaction is like from the family's perspective (What is the cost to the family? What is the family told? Are autopsies done?)

**ii. FPRRH/Buhinga**

- **Creative solutions to overcrowded hypertension/diabetes clinic.** Because of patient load, doctors did not have time to investigate secondary causes of HTN. Possible ideas include increasing the number of clinic days, having patients-to-patient education about lifestyle modification, involving other non-physician patient educators (community health workers).
- **Admitting patients:** Partner with clinical officer students to take history and physicals on newly admitted patients while interns are rounding. Patients can then be presented after rounds to help with workflow.
- **Develop algorithm for cost effective workup of ascites**. Ascites was noted by the doctors we worked with to be a common and expensive to workup. Patients often struggle to pay for necessary tests and diagnosis can be delayed because of uncertainty about which tests to order.
- **Comparative analysis of PPE requirements**: Requirements for personal protective equipment were often different between US and Ugandan public hospitals and it was unclear what data or cultural norms were driving these differences.
- **Oral rehydration protocol:** There did not seem to be the same emphasis on rehydration when indicated (e.g., HHS or DKA patients) as there is in the US. Although IV fluids were limited, bottled water was readily available and a protocol could help provide WHO-ORS for patients who are able to drink and need rehydration.
- **Partograms:** Quality improvement project around the use of partograms (how the labor curve is charted in Uganda) and the decision to move to C-section based on labor progress.
- **Assessment of neonatal resuscitation** in the OR following c-section.
- **Counseling on family planning** and its efficacy within a large volume institution.

**iii. Virika Hospital**

- **Supply chain analysis**: We observed frequent supply shortages/outages that impacted patient care (examples include EKG machine out of ink and chemistry labs without necessary reagents). Conduct a supply chain analysis to identify any preventable causes of supply shortages.
- **Morning Report focus group:** The purpose and meaning of morning report seemed to be different for various staff members. Focus groups on what each department/stakeholder hopes to get out of morning report may lead to a unified understanding and a collaborative approach so that everyone in the room benefits.

- **Hand hygiene protocol**: Hand sanitizer appeared and disappeared on the wards, and was generally used with inconsistency. Develop a program to discuss the importance of hand washing and standardize the use of hand sanitizer (e.g., “clean in, clean out”).
- **ACLS crash cart**: The important medications and equipment for a code are not readily available during emergencies. Create a standardized, organized and accessible crash cart to improve responses to codes.
- **Study about prevalence of herbal medicine**: Doctors repeatedly mentioned the issue of herbal medicines: uncertainty about what patients are taking and how much. A study about what percentage of patients takes herbal medicines and how often they are documented would highlight the importance of this issue.
- **Infertility study**: Study the available treatments, and the effect on women and their families. Additionally, one could study the possible impact of religious beliefs on infertility treatments.
- **Morning Report Teaching:** Morning report at Virika served as a time to take a census of the hospital and troubleshoot administrative problems. Although new patients were presented to the group, very little learning occurred. Students, interns, and consultants may really enjoy a US style morning report where a particular patient case is discussed in detail.

**iv. Rwibaale**

- **Ultrasound curriculum**: There was an ultrasound machine but most staff were unfamiliar with how to use it. Education with a focus on what will change patient management (note: they are already good at identifying fetal lie and gestational age without use of ultrasound) would be a project for visiting students or staff.
    - *Specific requests from staff were: head circumference, gestational age, weight, nuchal cord, amniotic fluid level, and number of fetuses.*
- **Cost and health outcomes analysis**: comparison of adolescent and neonatal circumcision. Circumcisions are routinely performed at age 14 in Uganda, in anticipation of men becoming sexually active, as opposed to during infancy.
- **JACOLD:** Jaundice, Anemia, Cyanosis, Oedema, Lymphadenopathy, Diarrhea – the history taking tool used to screen for common diseases. Chart review to determine sensitivity/specificity for diagnosis of serious illness.
- **Ideas to increase digital access to medical literature:** The doctors at Rwibaale recognized a challenge in accessing cutting edge health information. Consider enlisting help of U-M informationist to identify low bandwidth, free sources of accurate medical information.
- **Improving ART outreach**: Anti-retrovirals are not transported during outreach trips to the community because this is too costly. What would it take to add this service and would this intervention be cost-effective?
- **Critical analysis of prophylactic antibiotics**: All patients in HIV clinic are given TMP-SMX regardless of CD4 count. Analyze the health risks/benefits, financial costs/benefits of this practice.

## Part III. How can students best pursue activities and conversations to achieve objectives I *(learning objectives and activities that would be helpful to future students)* & II *(activities that would add value for our Ugandan health partners)*?

*Here, we share approaches and behaviors that we think would be most helpful to students hoping to engage in learning activities while adding value at the Ugandan healthcare sites. We also share lessons from our debrief session with staff at Virika hospital.*

Traveling to Uganda, or any low-resource setting, will always be full of surprises. As such, do not expect things to go perfectly, but be pleasantly surprised when things go better than you expected. We found the Ugandan healthcare providers were extremely excited to partner with University of Michigan medical students and were eager to include us in the care provided to the Ugandan people.

After arriving in Uganda, it may take 1-2 weeks to adjust to the differences in healthcare, culture and lifestyle. Allowing for this adjustment period will allow you to better integrate into the healthcare system and become better partners with the healthcare providers already doing great work there. The first week in a new health center is also a great opportunity to build report with the doctors and staff.

Once adjusted, you can launch into more serious conversations about strengths and needs within the Ugandan healthcare system, and how you can be a viable partner in enacting changes. Many of the topics listed in *part II* were the result of casual conversations that we had with nurses, medical officers, consultants, or even patients. Change, like many things, happens slowly in Uganda. It's important to remember this as you work within the constructs of the system.

We conducted a debrief with staff at Virika hospital, in which we highlighted the five most impactful things we learned during our time there. These five takeaways may give future students an idea of what worked for us, and help them take advantage of the learning assets available in our Ugandan partner hospitals.

1. **Teamwork** - All of the hospital staff are valuable allies for visiting learners. Nurses and nursing students often have greater familiarity with patients and their care. They are also able and willing to translate for you when patients do not speak English. Lab technicians are often eager to demonstrate their methods and teach students. Midwifes, Pharmacists, and Cashiers are generally all happy to help students understand the hospital's workings. You may also find that the interprofessional staff is interested in learning from you, as well.
2. **Approach to Diagnosis** - We learned about the challenges of making a diagnosis with limited diagnostic resources. Whereas doctors in the US often order labs and imaging reflexively, doctors in Uganda spoke to us about the "syndromic approach to diagnosis": identifying patterns from the history and physical exam and then managing presumptively for common illnesses. Providers sometimes do not think to share their thought process on rounds. In

these cases, we found it helpful to ask questions that prompted more discussion about the medical decision making that was taking place.

3. **Cost-conscious Care** - Providers must often make difficult decisions based on the affordability of diagnostics and interventions. In contrast to US healthcare, where medical costs are opaque and health care costs astronomical, we realized that Ugandan doctors are often very aware of the price for each test or therapy. At times, there were conversations with patients and their families about whether they could afford treatments, and unaffordable treatments were not prescribed, even if this meant increased morbidity or death.
4. **Health System Structure** - We rotated through multiple levels of health center, and this allowed us to see different tiers of patient care and better understand the referral process. We also learned about the different designations of healthcare providers in Uganda, such as clinical officers, medical officers and consultants. Understanding the different roles of each health center and the practitioners who worked there helped us get more out of our time in Uganda.
5. **Importance of Attendants/Families in Care** - Patients' families (referred to as attendants) are integral to patient care in Ugandan hospitals. They often accompany the patient 24 hours a day and provide many of the services we would expect from nursing in the US: washing, nourishing, medicating and advocating for the patient. Patient families are therefore valuable allies for the medical team and great sources of information for learners who want to be helpful with patient care. We realized that doctors and nurses must have an understanding of the community they are serving, as they are integral in patient care.