

KYABIRWA SURGICAL CENTER

ANNUAL REPORT

YEARS 2022-2023
ISSUE 2

REVOLUTIONIZING SURGERY COLLABORATION

The Power of Patient-Driven,
Innovative Technologies

Changing the Landscape of Surgical Practice in Rural Uganda

Sliding into The Future: New
Innovations in the Pathology
Department

Taking the Lead on Cancer Care

Investing in Investigations: Research at KSC

Aiming High: A Look at Nursing
at KSC

Brick By Brick: A New Building
Is Taking Shape

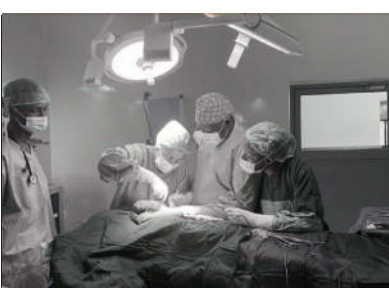
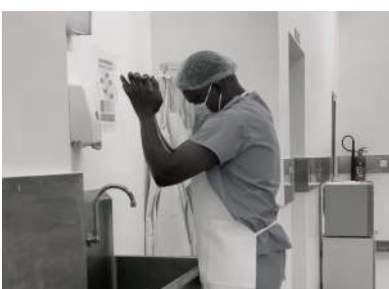


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Anna Turumanya

Director Global Surgical Initiatives Inc.
Kyabirwa Surgical Center



Letter From

The Director of Kyabirwa Surgical Center

To Our Esteemed Stakeholders,

I'm privileged to lead an iconic, patient-centered organization that is influencing a paradigm shift through its ambulatory model in delivery of much needed surgical care to the least privileged, resource-deprived, rural Ugandans. Within three years since inception, Kyabirwa Surgical Center has seen over 15,000 patients. Through surgical interventions, it has given hope to over 3000 patients who could never have dreamt of accessing such excellent care affordably.

Behind us is the phase of 'testing the waters.' We are now fully established with 45 diverse staff members. We are confident in our systems, have perfected our Standard Operating Procedures, and are very eager to explore more opportunities.

From inception to date, our center has highlighted and applied the use of novel approaches to surgical care, including tele-surgery, tele-pathology, tele-radiology, endoscopy, and laparoscopic surgery.

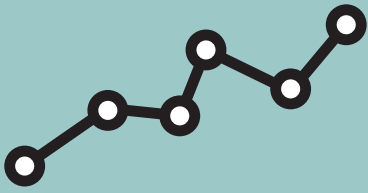
We also have developed a remarkable Recovery@Home program for postoperative care. With the upcoming launch of the Simulation Lab, the first of its kind in Eastern Uganda, the introduction of in-house histopathology lab services, and opening of bigger space for patient recoveries, we believe the impact will only get richer and greater.

Our founders, Mount Sinai, haven't spared any effort in influencing a culture of excellence and we want to tell our recipe for success to the world. To date, we have kept a record of less than 1% post-surgical wound infections. We believe the model we have developed provides an answer to the question of how to close the surgical burden in rural, resource constrained areas.



**Anna Turumanya Kalumuna,
PGDM, MHSM**

Director,
Global Surgical Initiatives Inc.
Kyabirwa Surgical Center



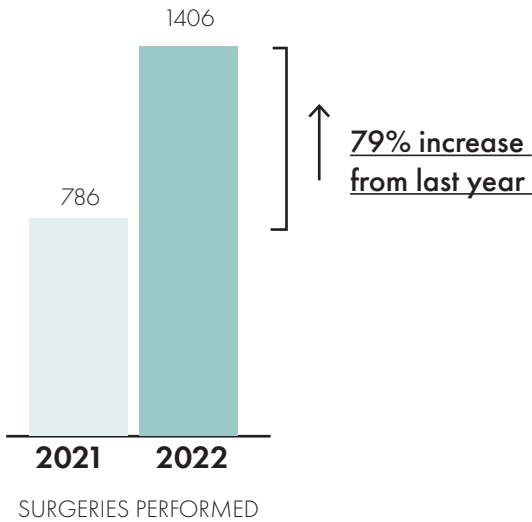
THE IMPACT

2019-2022

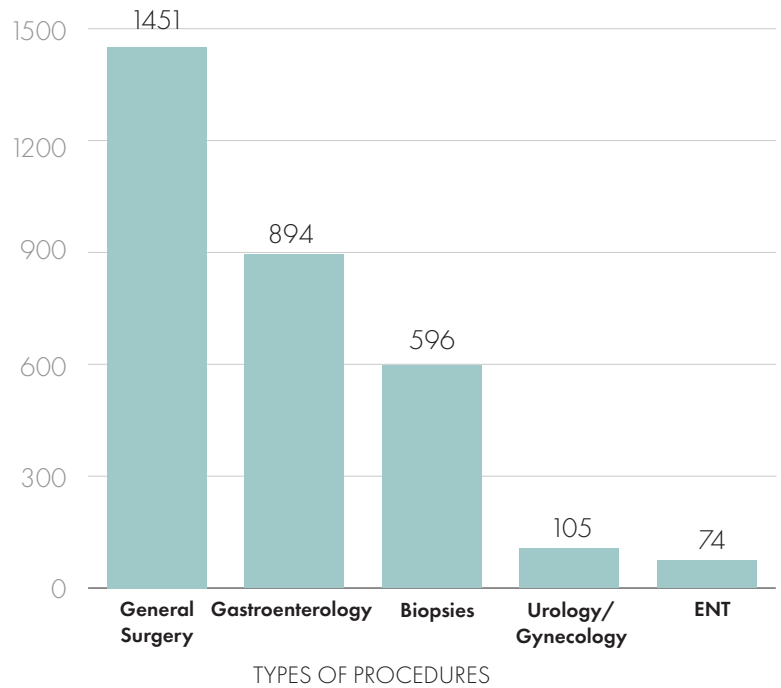


TOTAL NUMBER OF SURGERIES

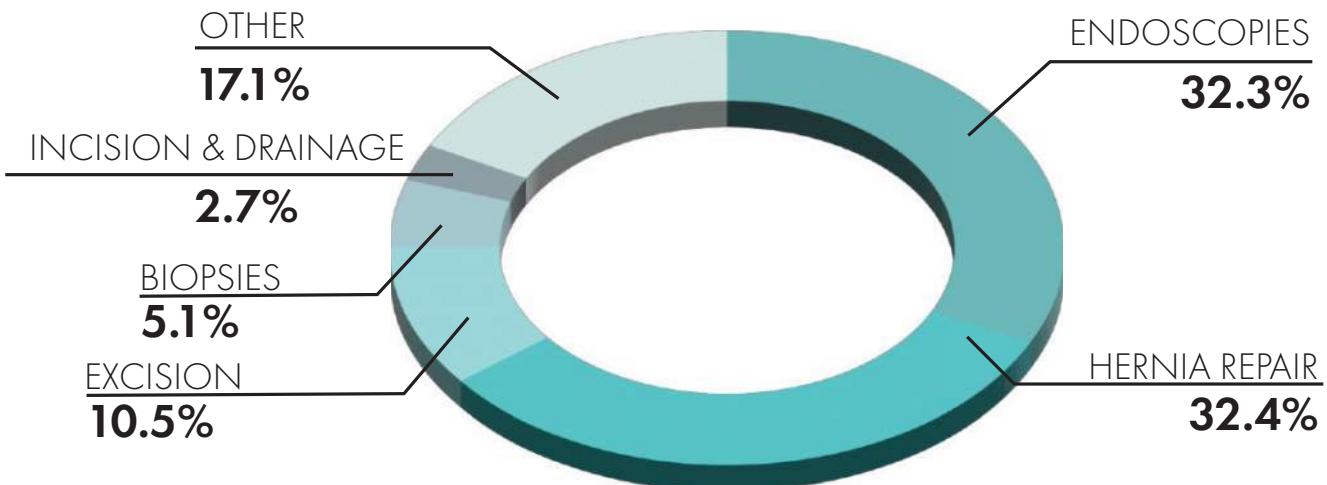
1406 IN 2022



SURGICAL SPECIALTIES



TYPES OF SURGERIES





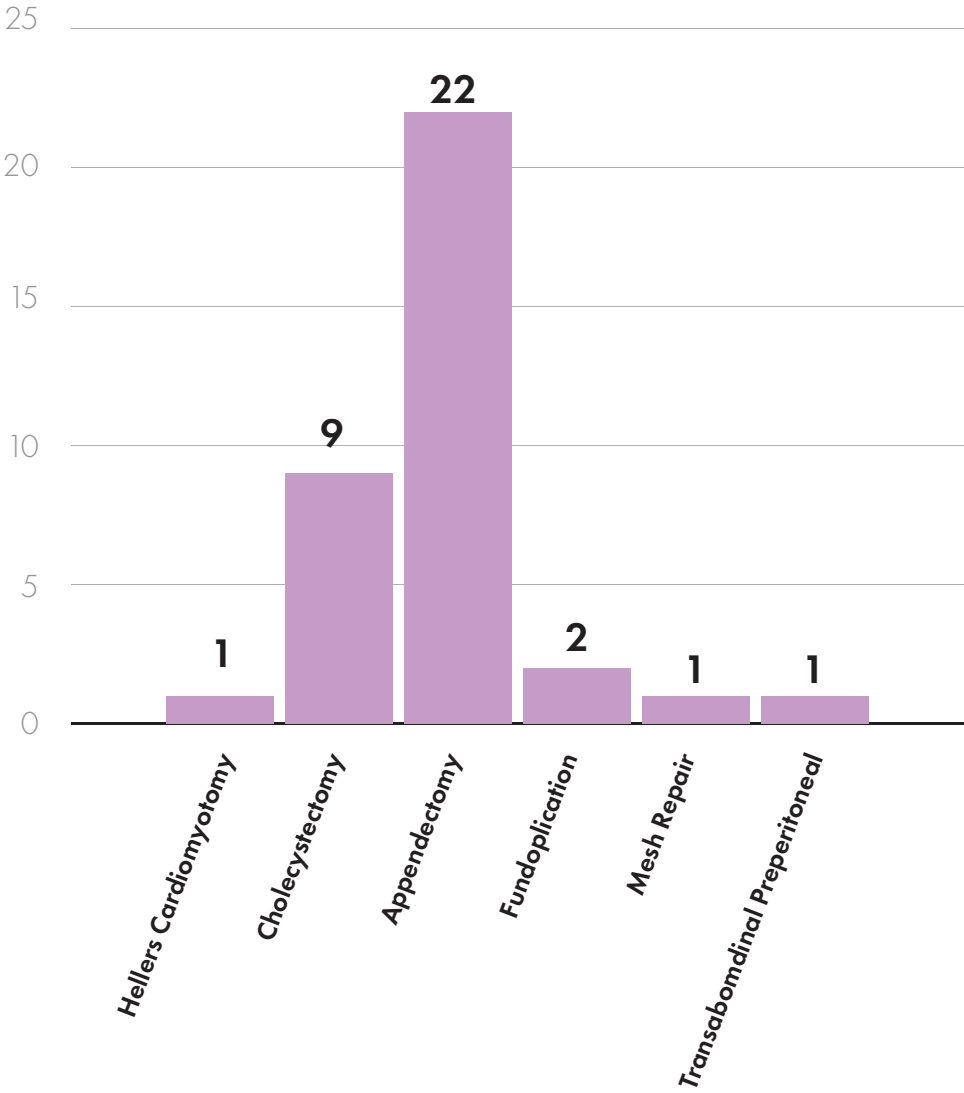
SPECIAL SPOTLIGHT ON LAPAROSCOPIC CASES

28 Laparoscopic Cases done in the past year

37 Total (2021-2022)



TYPES OF LAPAROSCOPIC PROCEDURES



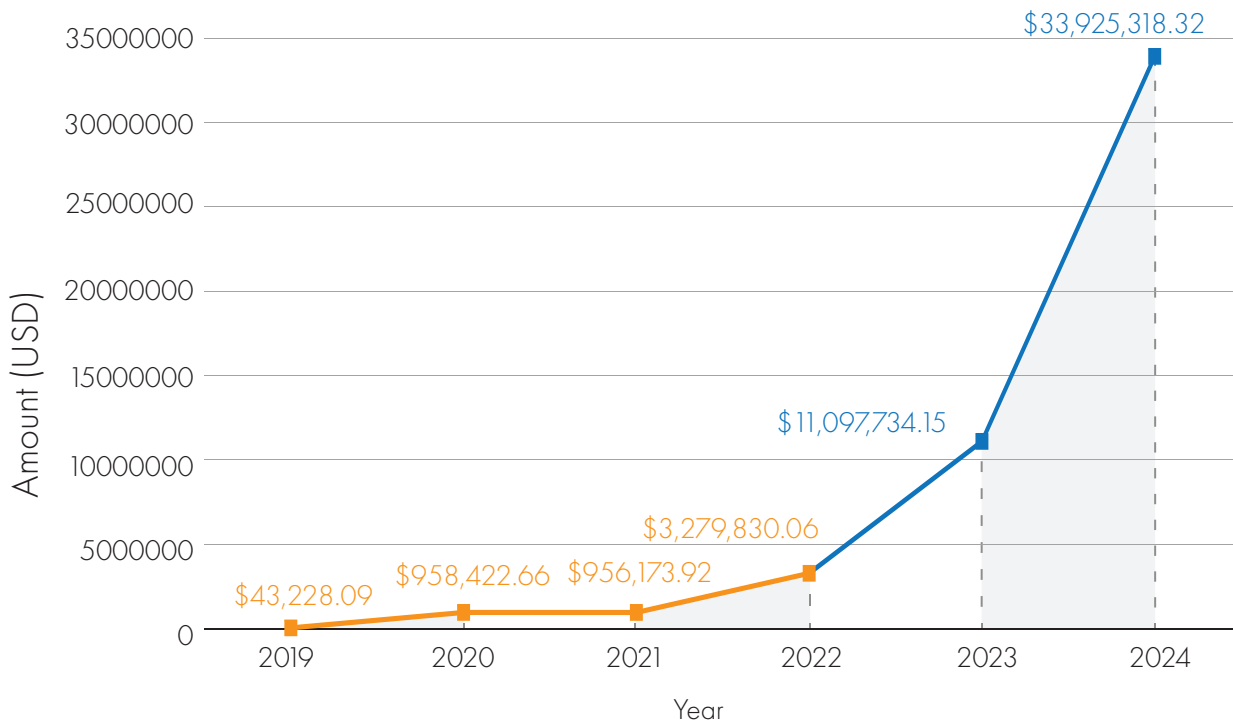
MEASURING IMPACT

Disability Adjusted Life Years (DALY)



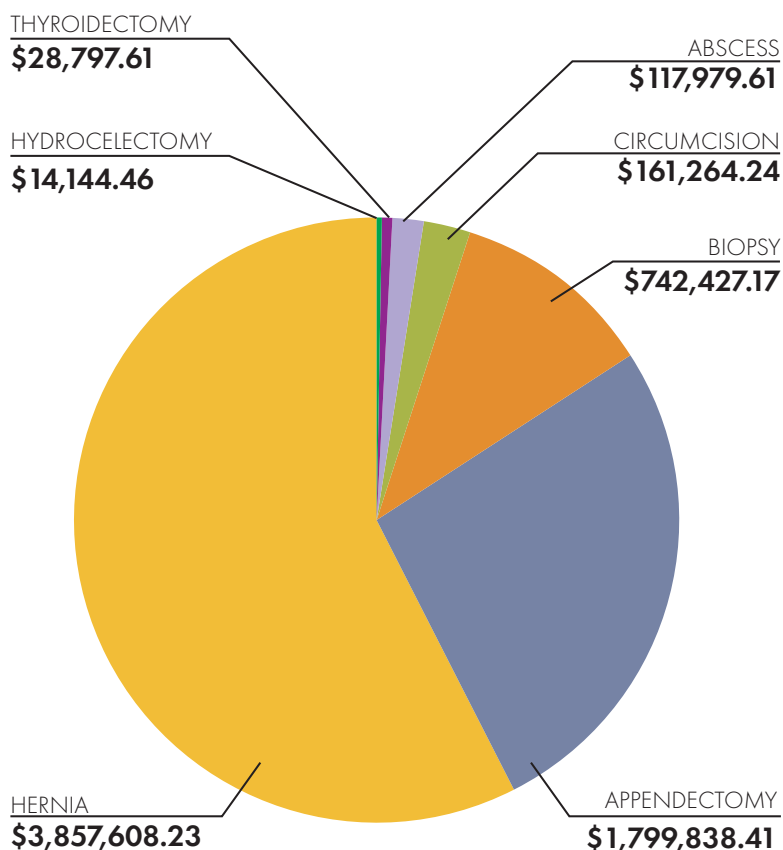
It can be hard to demonstrate an impact within global health. We can see the positive changes in the faces of our patients, but, as researchers, we need to have numbers. For those, we use disability-adjusted life years (DALYs). DALYs represent years lost due to poor health, disability, or early death. For surgically correctable conditions, a surgical procedure avoids future years spent with that disability. This is referred to as DALYs averted. Every DALY has an economic impact reflecting the decrease in productivity due to the condition. This allows us to calculate the center's "net impact," which is the economic impact minus the cost of the surgical center. Our last annual report reflected a total net impact for 2020 and 2021 of \$1.0 million and \$1.8 million, respectively. This reflected a 46% growth in the economic impact. With growth at this rate, we projected the net impact in 2022 to be \$2.9 million. Well, imagine our surprise when the net impact for 2022 was \$3.4 million!

NET IMPACT BY YEAR AND 2023/2024 PROJECTION





Total Gross Impact by Procedure



| | |
|--------------------|---------------------|
| DALY AVERTED TOTAL | 199.886 |
| DALY WORTH | \$1,934.00 |
| TOTAL IMPACT | \$386,579.72 |

Projected Financial Savings from Surgical Procedures

| PROCEDURE | DALY TOTAL | DALY WORTH (UGANDA) | TOTAL \$ DALY WORTH |
|----------------|------------|---------------------|---------------------|
| Hernia | 1458.306 | \$1,934 | \$ 2,820,363.80 |
| Circumcision | 13.941075 | \$1,934 | \$ 26,962.04 |
| Abscess | 23.625 | \$1,934 | \$ 45,690.75 |
| Biopsy | 181.79784 | \$1,934 | \$ 351,597.02 |
| Appendectomy | 393.43425 | \$1,934 | \$ 760,901.84 |
| Hydrocelectomy | 4.09098 | \$1,934 | \$ 7,911.96 |
| Thyroidectomy | 9.815675 | \$1,934 | \$ 18,983.52 |

KYABIRWA SURGICAL CENTER



2020 National Healthcare Award
2021 AIA Merit Award
2022 National Healthcare Award - New Addition (Building on the Right)

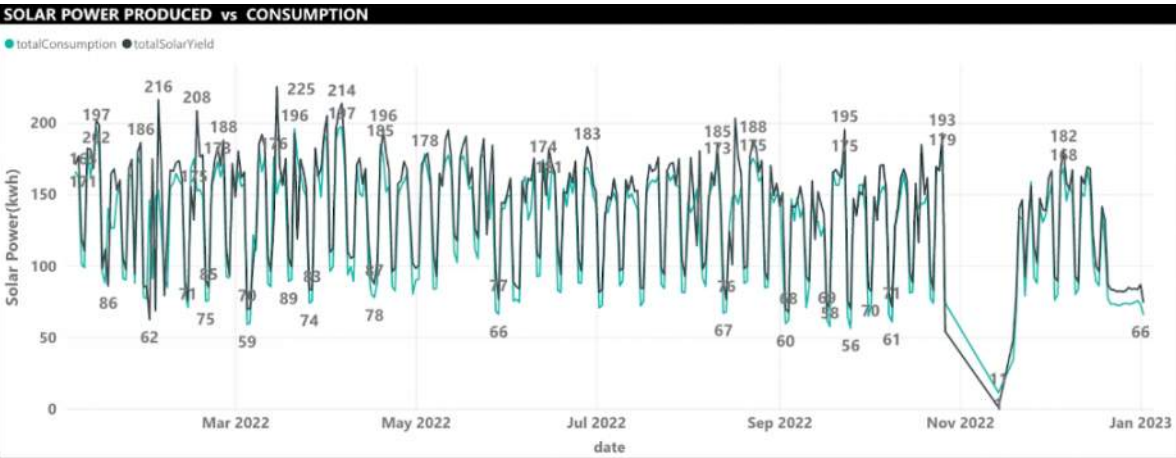
The **American Institute of Architects (AIA)** has awarded the Kyabirwa Surgical Center the National Healthcare Award 2020, 2022, and 2021 Merit Award. The award highlights the conceptual strength that was used to solve the aesthetic, social, functional, and sustainability concerns associated with a health care setting.

KYABIRWA SURGICAL CENTER

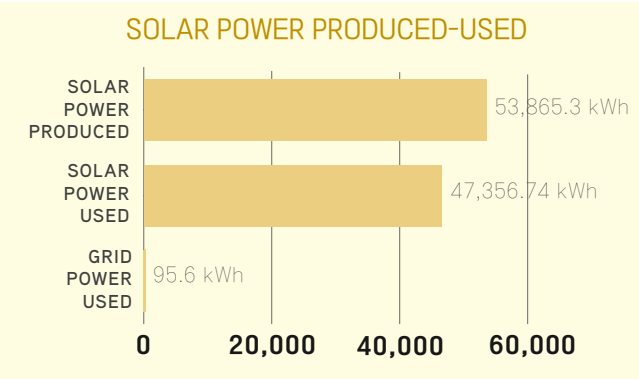
BUILDING ENVIRONMENTAL IMPACT

Kyabirwa Surgical Center was funded by generous philanthropic donations from the Mount Sinai Hospital Department of Surgery. The award-winning center is designed as a **replicable, self-sustaining** surgical facility. It generates all its own power through solar panels, collects and stores its own water for use, and manages its own waste.

SOLAR POWER

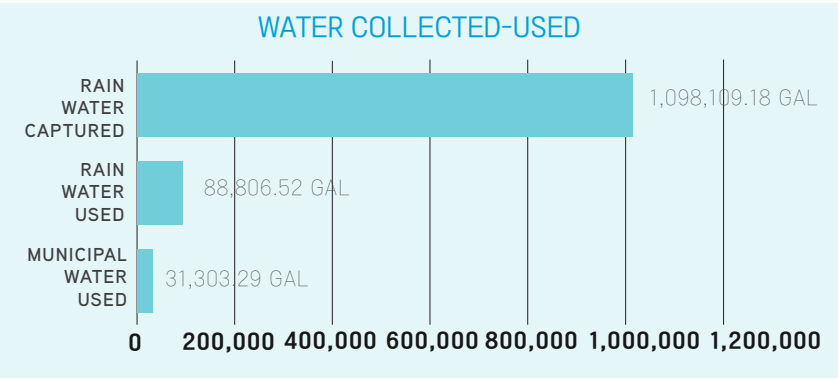


A Net YIELD of **3088** kWh



Solar panels on the roof collect sunlight for power while also providing shade for the roof, reducing solar heat gain in occupied areas of the building. Solar panels, Li-Lead Acid Hybrid battery storage, an onsite generator, and intermittent power from the grid provide uninterruptible power for the surgical center. The electricity generated by the 75kWp solar panels is stored in a Li-Lead Acid hybrid battery, which can power the surgical facility for up to two days.

WATER USAGE



Local municipal water is intermittently available; when it is, it is stored in gravity tanks on site and filtered and sterilized on demand. The onsite septic tank system handles liquid sanitary waste. A gray water system collects rainwater from the roof and stores it in underground tanks. Gray water is used to flush toilets and water the onsite vegetable garden.



Taking the Lead on Cancer Care

Recovery Unit Nurses, Maureen Nandu and Judith Kabengano, check and assess a patient after surgery.

The World Health Organization estimates that the global cancer burden has increased by 6 million between 2000 and 2022. Most of this increase will fall on the shoulders of low- and middle-income countries, including those in Sub-Saharan Africa. The Ugandan Cancer Institute (UCI) is the only comprehensive cancer treatment in Uganda and registers around 4,000 new cancer cases a year.

Our research on access to cancer care shows that our patients in the Busoga region are hindered by a plethora of obstacles to receiving safe cancer care. These barriers include fear surrounding their diagnosis, catastrophic expenditures accrued from traveling and treatment, and difficulty navigating the healthcare system.

Here at Kyabirwa Surgical Center, we aim to tackle each of the problems above. With our telepathology healthcare delivery model, our laboratory has processed and read

over 130 patients' slides this year. We have performed over 200 breast imaging ultrasounds. In addition, we provided 10 successful and affordable mastectomies and 27 esophageal stents placements. We now refer all our patients diagnosed with cancer to Rays of Hope Hospice in Jinja, where further care and treatment is coordinated with the Uganda Cancer Institute.

To decrease logistical, financial, and patients' psychosocial burdens, all patients who have been diagnosed with cancer are now automatically referred to nearby Rays of Hope Hospice Jinja, an organization dedicated to providing palliative care to patients with life-limiting or life-threatening illnesses from the comfort of their home and a care coordinator for UCI appointments.



Director of Laboratory, Penninah Asiimwe, and Lab technician, Moses Opiio examining patient samples.

Research Spotlight **on Cancer**

The Impact of an Ambulatory Surgery Center on Cancer Diagnosis and Follow-up in Rural Eastern Uganda

Chelsia Melendez, Katie Glerum, Jotham Azirembuzi, Daniel Mukisa, Anna Kalumuna, Joseph Okello Damoi, Linda Zhang

Study aimed to explore the various barriers to cancer care in Uganda using qualitative interviews and survey questions answered by patients. Study concluded that cost, transportation to the Uganda Cancer Institute, and housing during their treatment at Kampala were the three main barriers to surgery.

Access and Time Interval to Cancer Diagnosis in Rural Eastern Uganda

Abhishek Moghli, Christian Renz, Chelsia Melendez, Krsna Kothari, Joseph Okello Damoi, Moses Binoga Bakaleke, Angellica Giibwa, Katie Glerum, Jerome Waye, Michael Marin, Linda Zhang

Study aimed to quantify the time interval of patients' initial presentation at KSC to referral to the Ugandan Cancer Institute for treatment. The most common malignancies included 25 (28.7%) patients with breast cancer, 15 (17.2%) patients with oropharyngeal/esophageal cancer, and 13 (14.9%) patients with skin cancer. The median time interval from initial consultation to biopsy was 4 days (mean of 21.8 days).



Successful Scopes: Laparoscopy and Endoscopy Training and Education



Dr. Joseph Okello Damoi performing his exam for his Fundamentals of Laparoscopic Surgery Certification.

KSC has pioneered laparoscopic surgery in rural Eastern Uganda. We are the only center in Jinja District to offer a minimally invasive, laparoscopic approach to surgery, allowing for same-day discharge, faster recovery, and minimal scarring. In 2022, we performed a total of 23 laparoscopic cholecystectomies and appendectomies, all with remote proctoring from expert laparoscopic surgeons of Mount Sinai. In addition, Dr. Joseph Okello Damoi has become the forefront endoscopist in the region, performing an additional 445 endoscopies in 2022, with 277 upper endoscopies, 168 colonoscopies, and 27 interventional endoscopies.

Dr. Joseph Okello Damoi is the only Ugandan surgeon practicing in the country to have received a Fundamentals of Laparoscopic Surgery (FLS) certification, passing a validated prestigious laparoscopic knowledge and skills test required for surgery board certification in the United States.

In addition, Dr. Joseph Okello Damoi was invited to be a faculty member of the Global Laparoscopic Advancement Program (GLAP), a laparoscopic training course for surgeons of LMICs, organized by the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). He passed onward his knowledge of laparoscopy to surgeons from Namibia, Ethiopia, and Somalia at the GLAP course held at the College of Surgeons of East, Central, and Southern Africa (COSECSA) 2022 Annual Conference in Namibia.

With our ambulatory model and laparoscopic approach, our center is changing the landscape of how surgery can be practiced in rural Uganda. As we open our newly constructed simulation center in May 2023, surgeons and trainees from the entire East African region will have the opportunity to receive standardized training in laparoscopy and endoscopy.



Dr. Daniel Herron coaches through a laparoscopic cholecystectomy through teleproctoring technology.

Research Spotlight

on Endoscopy and Laparoscopy

Expanding the Access to Endoscopic Procedures Using Remote Proctoring

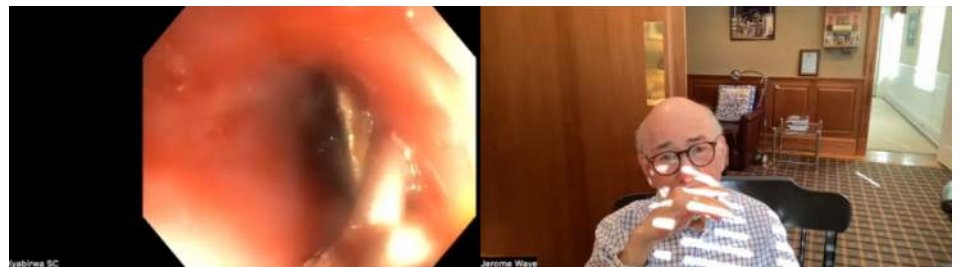
Angellica Giibwa, Julia Torabi, Joseph Okello Damoi, Moses Binoga Bakalele, Marnie Abeshouse, Yakira David, Linda Zhang, Michael Marin, Jerome Wayne

There is a significant unmet need for endoscopy services in rural Uganda. Our ambulatory center has been at the forefront of remote education across oceans, further promoting endoscopic skills of surgeons in Uganda. Our surgeons, who previously had no experience with endoscopic procedures, are not only performing diagnostic endoscopies, but also remotely proctored interventional procedures such as esophageal variceal banding, foreign body retrieval, and palliative esophageal stenting. We have performed 390 endoscopies, including 31 therapeutic endoscopies.

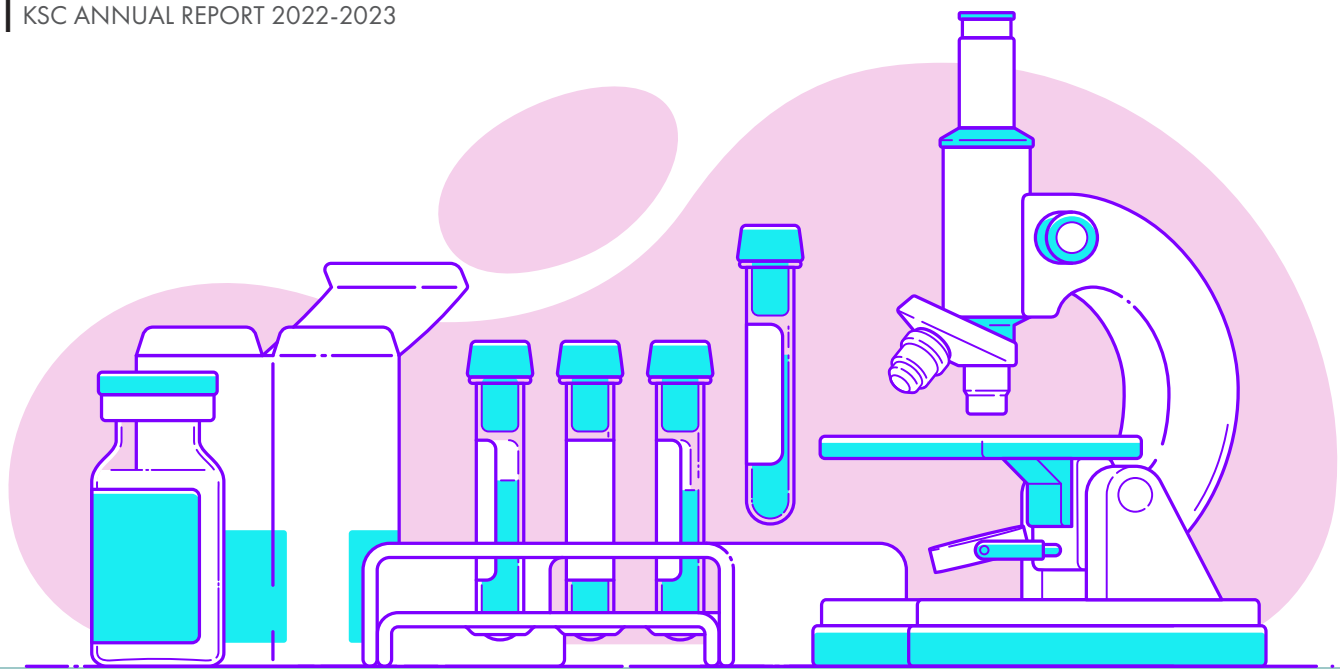
The Role of Tele-mentoring in Creating a State-Of-The-Art Locally-Staffed Minimally Invasive Surgical Center in Rural Uganda

Catherine Tsai, Joseph Okello Damoi, Umut Sarpel, Katie Glerum, Linda Zhang, Michael Marin, Daniel Herron

This research studied the outcomes of laparoscopic surgeries that were part of a focused training program using a combination of in-person training supplemented by supervised tele-mentoring with state-of-the-art teleconferencing technology. Mount Sinai and KSC worked jointly to create a modern, 2-OR ambulatory surgery center in the rural eastern Uganda. All operations were outpatient and included 20 appendectomies and 8 cholecystectomies. There were no complications intra-operatively nor any reported in the short-term follow-up. The study showed tele-mentoring can be safely implemented to provide advanced laparoscopic surgical care to the local rural patient population.



Dr. Jerome Wayne coaches Dr. Joseph Okello Damoi to successfully retrieve a coin using endoscopy from a five-year-old boy who could not swallow any solids for 5 days due to the coin being dislodged in his esophagus.



Sliding into The Future: New Innovations in the Pathology Department

This year, our pathology department has been expeditiously providing quality pathology slide readings to our patients. Uganda faces a significant shortage of pathologists, which impacts surgical care and timely diagnosis of diseases seen in our Ugandan community. Using telepathology with coordinated readings by Dr. Nebras Zeizafoun and Dr. Melissa Umphlett, a Mount Sinai pathologist, KSC has been able to provide the much needed pathology services.

Research Spotlight

on Pathology

Increasing Access to Pathology Services in Low- and Middle-Income Countries Through Innovative Use of Telepathology

Krsna Kothari, Joseph Okello Damoi, Nebras Zeizafoun, Penninah Asimwe, Katie Glerum, Moses Binoga Bakaleke, Angellica Giibwa, Melissa Umphlett, Michael Marin, Linda Zhang

This study demonstrates the feasibility of implementing a telepathology model to supplement the critical pathology needs of a low-income country. This telepathology program confirmed the surgeon's clinical suspicion of cancer in 65% (n=64) of tissue samples. Of the cases not tagged as suspicious for malignancy by the surgeon, 12% (n=6) had malignant features detected by the pathologist. With the increasing availability of video conference platforms and network connections, a telepathology model can be easily implemented in countries with poor access to pathology services.



A sincere thank you to Don Laferty and the rest of the Objective Imaging Team for their generous donation of our Glissando Slide Scanner and complementary image viewer!



Director of Laboratory, Penninah Asimwe.

In October 2022, with the generous donation from Objective Imaging and the help of the president Don Laferty, we acquired a slide scanner that allows Penninah Asimwe, KSC's lab director, to digitize slides onto a cloud platform for Mount Sinai pathologists to access any time, resulting in even faster turnaround for pathology readings.

Penninah led the charge in the implementation of the slide scanner into our healthcare delivery model at Kyabirwa. When discussing the scanner's role in her work, Penninah states, "The new scanner has decreased the amount of coordination I need to do with Dr. Nebras Zeizafoun to have him read slides. I can scan on my own time and he can read on his!"

In addition to our scanner, we have introduced a microtome into the mix of lab technologies. This allows our lab team to slice slides into a monolayer for cells, allowing for the most accurate readings.

We are excited to see how both of these devices will further streamline the accuracy and speed of reading to our patients!



Our Newest Addition: Dr. Melissa Umphlett

We also welcome Dr. Melissa Umphlett, a neuropathologist at Mount Sinai Health System, to our Kyabirwa Surgical Center family. In just her first few months, she has added much to our remote pathology team. Welcome, Dr. Melissa!



Radiology

Since opening in 2019, there have been 7,536 ultrasounds and 1,824 X-rays. Many of those happened in 2022, with 3,797 ultrasounds and 815 X-rays completed. Compared to 2021's numbers, that is a 59% increase in ultrasounds and a 66% increase in the number of X-rays. 2022 was also a year of growth in our partnership with the radiology department at Mount Sinai. It was the first year of meeting regularly with Dr. Amita Kamath, and we look forward to welcoming Dr. Genevieve Abbey to these ongoing consultations in 2023.



Report

A destructive lesion is noted overlying the right wrist joint. The lesion is associated with a periosteal reaction and pathological fractures of the distal radius and ulna. The carpals and proximal metacarpals are severely destroyed.

Conclusion

X-ray findings are impressive of a malignant bone tumour.



Mount Sinai Radiologist, Dr. Amita Kamath, reviews cases with Dr. Joseph Okello Damoj, along with Dr. Michael Marin, Katie Glerum, and Unwana Abasi.

Engaging Medical Students



In 2022, we had 3 medical student researchers from Mount Sinai, **Chelsia Melendez**, **Abhishek Moghli**, and **Peter Campbell**, who spent their summer working on research alongside our KSC Staff Members. During these months, they worked on projects pertaining to cancer care, fear and knowledge surrounding anesthesia and surgery, as well as the economic landscape of our patient population.

Unwana Abasi, a now fourth-year medical student at Mount Sinai, worked with Kyabirwa staff throughout 2022 to create and grow the research department. Along with working on projects investigating barriers to care and pain management, she paved the way for future research and development at the center.

Krsna Kothari is now following in Unwana Abasi's footsteps as the second research medical student to come from Mount Sinai. She has been working on understanding caregiver burdens during post-operative care, developing the telepathology delivery model, and connecting Kyabirwa Surgical Center to Rays of Hope Hospice Jinja for comprehensive cancer care.



Investing in Investigations

Research at Kyabirwa Surgical Center

As the first ambulatory surgical center in Eastern Uganda, we believe outcomes data and research is integral to our mission at KSC. We boast of a very productive year in 2022, with eight acceptances to present at national conferences, including three podium presentations, four poster presentations, one video presentation, and two speaker presentations. Our research is broad in scope, including uncovering the barriers to accessing surgical care, reflecting on our innovative model of remote endoscopic and laparoscopic training, examining patient experience with cancer care, and identifying quality improvement initiatives to enhance our center. We will continue to ask questions that will critically evaluate our current model of surgical care for the benefit of our patients and the future of our center.



Daniel Mukisa, Head of Research and Security, meets with a patient to assist them with a survey.

Spotlights in Research from 2022

KSC RESEARCH TEAM PRESENTS AT INTERNATIONAL CONFERENCES:

American College of Surgeons,

Society of American Gastrointestinal and
Endoscopic Surgeons,

Association of Surgeons of Uganda
(ASOU),

Consortium of University of Global Health,

Academic Surgical Congress

An Assessment of the Understanding and Fears of Anesthesia for Patients Undergoing Surgery in Rural Uganda

Abhishek Mogili, Peter Campbell, Daniel Mukisa, Katie Glerum, Angellica Giibwa, Moses Binoga Bakaleke, Arthur Emoru, Anna Kalumuna, Joseph Okello Damoi, Linda Zhang

The patient education and informed consent project at KSC aims to understand what barriers there are in providing patient education to patients receiving surgical procedures. Additionally, this study is working to understand the role that patient education and fear play in surgical attendance and comfort. This study is looking at patients undergoing an endoscopic procedure or receiving anesthesia for a surgical procedure. Currently, this study has completed its data collection for its control group, and the study intervention is in the final stages of implementation. Results from this study will help inform how best to deliver patient education and obtain informed consent in our patient population.

A Statistical Approach to Determining User Fees at an Ambulatory Surgical Center in Rural Uganda

Peter Campbell, Chelsia Melendez, Makda Getachew Zewde, Katie Glerum, Daniel Mukisa, Anna Kalumuna, Moses Binoga Bakaleke, Angellica Giibwa, Joseph Okello Damoi, Linda Zhang

A retrospective study to estimate the poverty level of patients at Kyabirwa Surgical Center and subsequently determine if they should receive further subsidized care. We developed and implemented our own User Fees Survey (UFS) based on the Simple Poverty Scorecard (SPS), to assess poverty levels of patients and were able to show correlation between the two surveys such that the UFS score can be used as an effective screening tool to predict a patient's level of poverty. Implementing this statistically validated approach will serve as a better means of ensuring that no patient is charged a catastrophic healthcare expenditure.

We were also able to show that the current process of allocating subsidized care does not effectively target those who should receive subsidized care. However, we found that if we simply base the allocation of subsidized care on the doctor's recommendation during the consultation we are better able to identify patients who have a higher likelihood of poverty.

Acceptability of Ambulatory Surgical Services and Its Predictors among Residents of Budondo Sub-County-Jinja District, Uganda

Anna Turumanya Kalumuna

This study was to assess the acceptability of ambulatory surgical services and its predictors among residents of Budondo Sub-County—Jinja. It targeted 371 household heads in Budondo Sub-County, which was stratified by parish, with villages in each randomly sampled. Data was collected by structured interviews and questionnaires. The level of acceptability of ambulatory surgical care services among residents of Budondo Sub-County was found to be near-universal, at 96.5%. The odds of accepting ambulatory surgical care were least among household heads who agreed that surgery done in a hospital would be cheaper than surgery done at community level, those who had health insurance, and household heads who were covered with private health insurance. Acceptability of ambulatory surgical care was higher among household heads who agreed that they would trust ambulatory surgical centers with their life, and household heads from households that had less than five members with surgery history were twice as likely to accept ambulatory surgical care.

A Patient-Driven Method to Assessing Catastrophic Healthcare Expenditures for Patients of Low-Income Countries with No Formal Income

Krsna Kothari, Susan Walusansa, Josephine Namugambe, Katie Glerum, Margrethe Juncker, Sylvia Nakami, Linda Zhang

Catastrophic healthcare expenditure (CHE) is spending >10% of the household's annual expenditure or income on healthcare. Most wealth assessments measure formal income, assets/debts, and large-scale expenditures. These are ill-suited for populations living as subsistence farmers bartering goods. This study suggests an alternative approach by identifying frequent expenditures that participants view as important. Participants enrolled in home-based hospice in rural Uganda were asked to list the top five Essential Goods (EG, items causing a significant decrease in quality of life if absent) and Non-Essential Goods (NEG, amenities that give comfort, convenience, or enjoyment). The most commonly named five EG and NEG did not differ when stratifying by sex, age, income type, or residence location. 100% of participants named at least one of the top five EG, and 95% named at least 2. For NEG, percentages were 97% and 78%, respectively. Statistical analysis was performed using the Index of Qualitative Variation (IQV), whose values were 0.178 (EG) and 0.306 (NEG), showing high uniformity among participants. This study shows participant consensus on the top five EG and NEG. For populations without formal income, measuring a decrease in their patient-valued common expenditures can be a useful metric for assessing CHE.

Pain is Well Managed in the Post-Discharge Setting Following Ambulatory Surgery in Rural Uganda:

Unwana Abasi, Makda Getachew Zewde, Swalleh Mamisah, Daniel Mukisa, Katie Glerum, Ambrose Nuwahereza, Joseph Okello Damoi, Anna Turumanya Kalumuna, Moses Binoga Bakaleke, Angellica Giibwa, Michael Marin, Arthur Emoru, Linda Zhang

As a pioneer in ambulatory surgery care in Uganda, pain management in the postoperative period is an essential area to research, ensuring that our patients are going home with well-controlled postoperative pain. Our study examined postoperative pain in the first week after surgery, stratifying based on demographic factors, type of pain management regimen, and type of procedure. Based on our findings, pain was well-managed after discharge, with no interference in patients' functionality in the postoperative 7-day period.



Meeting the Patients Where They Are: Updates on the **Recovery@Home** Mobile Application



Nurse Jotham Azirembuzi and Annah Munezero organizing and attending patient requests from the **Recovery@Home** Mobile App

SUCCESS IN NUMBERS
total number of visits
3242

| POST-TREATMENT REASONS FOR PATIENT VISITS | | PERCENTAGE % |
|--|----------------------|--------------|
| Wound Infection | | 0.47% |
| Emergency Visits Back to the Center | | 0.00% |
| Post-Operative Complaints (pain, bleeding, dizziness, ambulation, shortness of breath) | Post Operative Day 1 | 7.50% |
| | Post Operative Day 3 | 0.90% |

The Recovery@Home Mobile App has been a great tool in enabling us to achieve effective and efficient postoperative patient follow-up. It provides quick access to patient information integrated with the electronic medical record used in the clinic and in-house application features such as the ability to store patient data, flag abnormal patient findings, and prompt the user to the next course of action. Furthermore, the application alerts any abnormalities to the surgeon in real-time.

Since its inception, the visiting nurse has performed 3242 total home visits. This program is very highly accepted in our community, with 99.9% of patients agreeing to participate in our Mobile App Program after surgery.

“

I find this work incredibly highly rewarding. I get to go to the patient's home, talk to the caregivers, and make a difference in their lives to calm their fears and treat them. The mobile app makes it easier for me to keep track of a patient's progress and know which patients to see each day. This is so much easier than manually scheduling all the patients each day.

- Jotham Azirembuzi, nurse at KSC

”



The home-based healthcare provided by the Recovery@Home app brings healthcare one step closer to the patient and their families, making it a truly patient-focused delivery model. Meeting patients in the comfort of their homes allows the visiting nurse to observe their patients' home environments and support systems. In addition, the visiting nurse can assess patients' recovery, make recommendations, and confirm adherence to medications.

With the Recovery@Home Mobile App, we noticed a reduction in the number of post-operative physical hospital visits since most post-operative questions and concerns are being managed remotely in the comfort of the patients' homes.

A case in point is a 24-year-old post-laparoscopic cholecystectomy female whose umbilical incision showed signs of infection during a home visit. The surgeon was reached, and he prescribed antibiotics without needing the patient to travel back to the clinic.

Jotham Azirembuzi visiting patients scheduled through the [Recovery@Home](#) Mobile App



Yeremiya's Journey

One Patient Story

Esophageal Pathologies in Uganda

In Uganda, a common malignancy seen is squamous cell carcinoma of the esophagus. Due to its insidious nature, many patients present with advanced presentations, making palliative treatment the only path forward. Few hospital centers can perform diagnostic endoscopies with visualization and biopsy of the mass as well as palliative endoscopic stenting. In Kyabirwa, through our remote education model of collaboration between Dr. Jerome Wayne of Mount Sinai and Kyabirwa's Head Surgeon, Dr. Joseph Okello Damoi, we are now an advanced endoscopy center with biopsy and endoscopic palliative stenting capability.

Yeremiya is an 87-year-old male who had been suffering from difficulty in swallowing food for the last 6 months and a chronic cough during mealtime. During an imaging test at a health clinic, he was found to have a narrowing in his esophagus with a fistula into his lungs. The fistula was a direct tunnel between his esophagus and lung, allowing food particles to enter and irritate his lungs every time he ate, resulting in his chronic cough. He was unable to get further treatment at other hospital facilities in Uganda and was referred to Kyabirwa Surgical Center. Here at our center, Dr. Joseph Okello Damoi has the expertise and experience in esophageal stenting, which helps to both widen the esophagus to alleviate the swallowing difficulty, as well as block off the connection between his lung and esophagus.

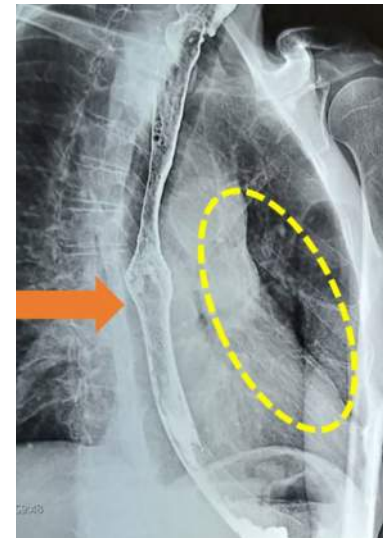
On October 21st, 2022, Yeremiya had a successful stent placed. After surgery, the imaging showed no more connection between his lungs and esophagus. While Yeremiya still has a diagnosis of advanced esophageal cancer, the palliative stenting allowed him to eat once again and enjoy his food without an irritating cough.

BEFORE



The yellow ellipse shows the liquid that he swallowed entering the lungs. This causes irritation and cough.

AFTER



Placement of the stent indicated by the orange arrow prevents fluid from entering the lung and directs it downward to the stomach. The yellow circle here shows now liquid going into the stomach as compared to the previous picture.

Passing It On Training at Kyabirwa Surgical Center



Dr. Arthur Emoru giving a tour to anesthesia students from different healthcare centers in Uganda.

Global Surgery Rotation for General Surgery Residents of Mount Sinai Hospital

We are excited that this year, we were able to bring 6 Mount Sinai General Surgery residents to Kyabirwa for their global surgery rotation. While at KSC, residents have the opportunity not only to train under Dr. Joseph Okello Damoi, but also to be trained by the nurses, social workers, and administrators on everything that is needed to keep KSC performing at its highest standards. Residents see patients in the consultation rooms, operating theatres, and even have the opportunity to visit them at their homes during the postoperative home visits, allowing the residents to see the entire course of treatment from beginning to end.

Advancing Anesthesia Training in Uganda

Kyabirwa Surgical Center, through a partnership with Busitema University, serves as one of the training centers for Bachelor of Anaesthesia students from Busitema University. Since April 2022, we have trained a total of 7 students, with each student spending at least a month at our center. Students observe and participate in the delivery of anesthesia for day-care surgery under the direct supervision of Dr. Arthur Emoru, the anaesthesiologist. They are exposed to enhanced recovery practices, regional anesthesia techniques, and the importance of patient selection and discharge criteria.

Advanced Life Support Training

On May 2022, Swalleh Mahmisah, Dr. Moses Binoga Bakaleke, Salaama Nabirye became certified in Advanced Life Support, organized by the European Resuscitation Council. Since then, they have championed training the remaining staff at the center with the necessary advanced life support skills.



The rotation allowed me to contextualize the nuances of general surgery outside of the urban U.S. — and a better understanding of rural surgery and in a developing nation. Additionally, it was an overall amazing opportunity to work in a new and beautiful environment and expand my professional network!

- Dr. Yamira Bell, PGY-3, Mount Sinai General Surgery Residency



Aiming High NURSING DEPARTMENT

At KSC, the nursing team is the center's foundation, cornerstone, and building block, whose primary goal is to ensure the delivery of safe and effective health care.

Skills and knowledge transfer have been the center of our excellence in nursing care. With six new nurses this year, we have become more efficient and effective in performing more surgical procedures, reducing the turnaround time in the operating theater, and improving patient and caregiver education for post-operative care during discharge. The nursing outreach team has continued to visit patients at their homes, which has resulted in fewer patients needing to return to the center for review. This both reduces the burden on the patients, who do not have to pay for transport, and allows doctors to perform additional procedures and see new patients.

Ambrose Nuwahereza (Department Head of Nursing):



I am proud to continue to develop and maintain the center's good image of excellence of the services that we offer at KSC. We are committed to improving and sustaining the initiatives for improving patient experience while focusing on individual patient needs. I am excited to lead the team that is at the center of achieving the best outcomes.

Annah Munezero:



My experience at KSC has been fun. At the core of KSC is the patient and their well-being. I feel like at KSC, we are given everything we need to provide the best care for them!

Monica Kawala:



I have had so much fun at Kyabirwa Surgical Center. This is my first experience working with surgical patients, and I am learning so much. I know how to triage between non-surgical and surgical cases. I also meet people from all over the country, and know how to connect with them.

Judith Masambe:



I joined Kyabirwa Surgical Center (KSC) on 27/09/2021 as a nurse. My experience working with KSC has been and is still good. I love the team work exhibited by all the employees and the conducive working environment. I have learnt a lot of new skills. I really like working with KSC.

Other Key Personnel:



**Peruth
Nakyesa**



**Salaama
Nabirye**



**Esther
Asaba**



**Jotham
Azirembuzi**



**Winnie
Nannozi**



**Juliet
Nahabwe**



**Herbet
Mazinga**



**Sandra
Nambi**



**Swalleh
Mahmisah**

Department of Pharmacy and Supply



Dr. Suzan Nasaga and Joyce Alol Elay stock medicine in our pharmacy department.

The pharmacy department proudly exemplifies KSC's high level of commitment to quality, which is essential to our success, and in the best interest of all employees, customers, and stakeholders.

We have systems in place to ensure inbound and outbound pharmaceutical and para-pharmaceutical products at KSC are of superior quality. This includes assessing a product's quality from the side of suppliers (pedigree assessment) against the industry quality standards (GMP, GDP, GLP, ISO/QMS). Once goods reach KSC, the shipping documentation is thoroughly reviewed and the products are scrutinized, including organoleptic tests as the acceptance criteria. All this is done by pharmaceutical experts who finally give a technical verdict for all consignments.



An Interview with

Phoebe Kwagala, Head of Social Work Department



Phoebe Kwagala (left) talking to a KSC patient.

What's been going on at Kyabirwa's Social Work Department?

The Department of Social Work has been quite busy this year! We offered all types of support for our patients, both in and out of the center - through care coordination, follow up phone calls and home visits, and offering psychosocial support through education of their upcoming procedures while demystifying stigma related to anesthesia and surgery. We've also created a new referral system in collaboration with nearby Rays of Hope Hospice for all our cancer patients. We hope it can improve patient navigation and financial support, as they progress through their cancer illness journey.

What do you love about being a Social Worker at Kyabirwa?

Social work digs deep into the social issues affecting our patients. It allows me to appreciate the complexity of patients' needs and behaviors through empathetic principles. It also shows me that some challenges can actually be solved simply through talking with patients, counseling them, explaining and addressing myths and misconceptions, and communicating patient needs and concerns to the larger medical team.

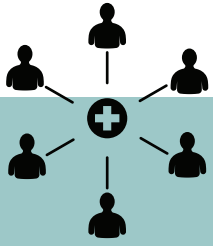
What is a patient story you remember from 2022?

I remember a 26 year old female who came in for a huge breast mass. On the day of her surgery, she could not be contacted and did not come to the center. The doctors referred her to me, and she agreed to have me visit her home. I spent time empathetically engaging her and her family on the surgical conditions, importance of surgery, and the risks of not having surgery. I also heard what she was fearful of and tried to address each and every fear. Afterwards, she agreed to come to the center and have the mass removed. The mass was benign but had regrown a year later. I addressed her anxiety, helped her navigate the healthcare system to get her mastectomy, and arranged for consultation and treatment at the Uganda Cancer Institute. She is now doing well.



Our newest Social Worker Addition: Shafiga Babirye

Shafiga Babirye is a patient mobiliser representing KSC in the community. She has a bachelor's degree in social work and is passionate about identifying resources so that communities can thrive. She is a true advocate for our vulnerable patient population!



Growing Together: Community Outreach and Patient Education at Kyabirwa Surgical Center



The community outreach program aims to forge connections between the center and communities to increase awareness of surgical pathologies and interventional options. By mobilizing our team of nurses, social workers, and outreach workers, we have created a positive relationship between health personnel and community members.

We are proud to have reached 87 villages in 4 sub-counties of the eastern region of Uganda in 2022. We continue to push our boundaries and nurture relationships with the communities we serve.



“

“Many patients have gained confidence after these sessions and visited us for surgery. I believe we have brought hope back to those who lost it, creating a good relationship [with them] and breaking the barrier of fear”

- Sandra Nambi, KSC Community Outreach Nurse



”



BRIDGING AND BROADCASTING

PUBLIC RELATIONS AT GLOBAL SURGICAL INITIATIVES

Since our creation in 2019, KSC has made an effort to make our name known through various modalities. The new formation of the Public Relations this year, spearheaded by KSC nurse, Salaama Nabirye, has completed a variety of projects under the department.

3, 2, 1...Action!



Dr. Angellica Giibwa and Dr. Moses Binoga Bakaleke speaking on 87.7 BABA FM on surgical pathologies and Kyabirwa's available interventions.

KSC has visited 11 talk shows in Uganda to educate listeners on various topics ranging from cancer screening modalities and various pathologies requiring surgical care. Furthermore, the department has scheduled radio announcements advertising KSC.

Education, Together



KSC has hosted workshops for Continuing Medical Education (CME) with over 80 attendees, focusing on services done at the center. We have also hosted over 80 Human Resource Managers from the public service commission to discuss ideas and collaborate on company management and morale.

Surgery For All



Kyabirwa is proud to have run 3 surgical camps, each with over 200 patients in attendance. One of these camps involved hosting the Kyabazinga (King of Busoga), which helped increase KSC's regional credibility.

Celebrating Our Staff



Here at KSC, we prioritize making sure our staff feel loved and celebrated - they do so much for our center. We host quarterly staff birthday celebrations (with delicious cakes and sodas) and had our second annual end-of-the-year staff party.

GOAALL!



KSC is proud to have hosted two friendly soccer matches (which we won) against Soft Power Health, a primary care clinic in Kyabirwa, and a local Radio Station. We hope this is the start of many more matches with other health organizations in our area.

NEW BUILDING

KYABIRWA SURGICAL CENTER WARD



AIA National Healthcare Award **2022**

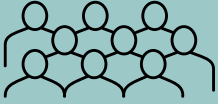


Test Bricks for the Exterior Facade at KSC

Kyabirwa Surgical Center will soon double in size. The additional building being constructed will house an overnight stay ward, state-of-the-art pathological lab, and a medical simulation lab/training center.

The building combines local material with innovative design to create an environmentally efficient structure that is ecologically friendly, sustainable, and beautiful.

Construction is using mostly local labor and materials. The exterior is being cladded with locally manufactured clay tiles. An artwork by a local artist will be installed in the recovery bay room, reflecting the region's Nile River, village life, and local community's artistry. The kitchen will be outfitted with an induction stove top powered by solar panels to reduce energy uses and the building's carbon footprint. The secondary roof steel work is nearly complete and curved corrugated tin sheet placement is underway to provide solar heat gain protection for the building.



Special Thanks

UGANDAN ORGANIZATIONS

While we are so proud of all the work that we have accomplished this past year and in the years since opening, we know that we could not have done it without help from our community and trusted advisors. We want to give our profound thanks to these organizations in Uganda that support us in our efforts to help us grow and reach all those in need of our services.

Ministry of Health
Jinja City Health Office
Jinja District Health Office
Office of the Resident City Commissioner
Kyabirwa Local Council Office
Jinja Regional Referral Hospital
Busoga Health Forum
Tellistic Technologies LLC

Uganda Cancer Institute
Lancet Laboratories Uganda
Kamu Medical Centre
Soft Power Health
Rays of Hope Hospice

His Majesty William Kadhumbula Gabula Nadiope, Kyabazinga
 King of the Busoga Kingdom

INTERNATIONAL ORGANIZATIONS

We would also like to extend our thanks to these international organizations that have donated either their time, money, or knowledge to support our efforts.

Olympus
African Esophageal Cancer Consortium (AfrECC)
Johnson&Johnson
Rods&Cones
Objective Imaging LLC

Surgical Safety Technologies
Morrell Instrument Company
Ibex Medical Analytics
Mount Sinai Health System
GKG Architects

GLOBAL SURGICAL INITIATIVES

We continue to thank the Global Surgical Initiatives Board of Directors for their guidance and contributions.

Dr. Michael Marin
Dr. Jerome Waye
Dr. Charles Kalumuna
Dr. Jeanne Franck
Paige McMillan
George George
Jay Lieberman

Andrea Lieberman
Mark Yockey
Laura Yockey
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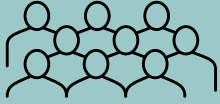
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Kyabirwa Surgical Center

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**EQUITABLE & ACCESSIBLE
SURGICAL CARE**

Kyabirwa Surgical Center



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