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EMPOWERING UGANDANS TO CARE FOR UGANDANS

DEVELOPMENT OF A SUSTAINABLE PEDIATRIC CARDIAC SURGERY PROGRAM

BUILDING A HEALTHY FUTURE FOR THE CHILDREN OF UGANDA



10TH OPEN-HEART SURGERY SKILLS TRANSFER WORKSHOP



Held at:

UGANDA HEART INSTITUTE

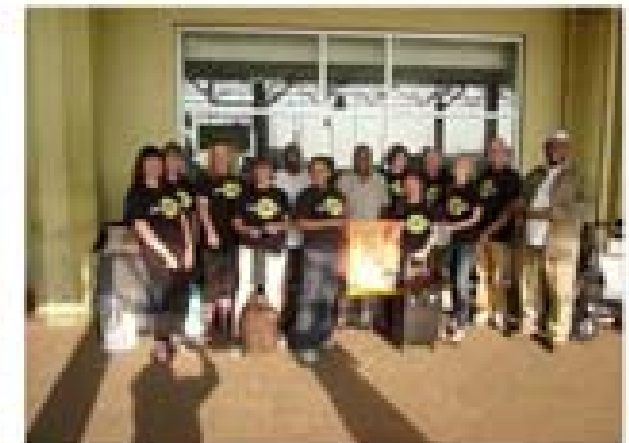
Mulago Hospital Complex



July 22 - August 2, 2011

ACRONYMS

1. ASD Atrial Septal Defect
2. EMF Endomyocardial Fibrosis
3. COH Chain of Hope
4. GOLU Gift of Life International
5. GOLU Gift of Life Uganda
6. HCU High Care Unit
7. ICR Intracardiac repair
8. ICU Intensive Care Unit
9. LVOT Left ventricular outflow tract
10. MOTH Main Operating Theatre
11. OHS Open-Heart Surgery
12. PDA Persistent Ductus Arteriosus
13. PHT Pulmonary Hypertension
14. TEE Transoesophageal echocardiography
15. TOF Tetralogy of Fallot
16. UHI Uganda Heart Institute
17. VSD Ventricular Septal Defect



APPRECIATION

We are grateful for the assistance rendered by the visiting team members from the UK, Rotary Club of Nateete, GOLU, GOLU, Mending Kids International, Mulago National Referral Hospital, and Nakasero Blood Bank for the support given in making this workshop a success. In particular, we wish to extend our sincere appreciation to Prof. Magdi Yacoub for the support rendered by Chain of Hope towards UHI and the people of Uganda. Many thanks go to Dr. Vibeke Hjortdal for the training opportunity given to the local surgeons and to Dr. Isabeau Walker and Maura Anne O'Callaghan for the training rendered to the anesthesiologists and ICU nurses respectively. To Mrs. Nilu Badiani, we extend our heart felt thanks for your continued support of Chain of Hope as well as your logistical support of the team. We continue to thank the Government of Uganda for the financial assistance rendered to the UHI.

Report compiled by:

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PROGRESS CONTINUES AT UGANDA HEART INSTITUTE



An 11 day open-heart surgery (OHS) skills transfer workshop was held at Uganda Heart Institute (UHI), Mulago Hospital Complex from July 22nd - August 2nd, 2011. The workshop was conducted by a combined cardiac team from Chain of Hope (COH) United Kingdom (UK) lead by Prof. Megdi Yacoub. The team was facilitated by COH's charity with support from Gift of Life International (GOLI), Mending Kids International, and the Rotary Club of Nateete, Kampala. The professionals came from various institutions in the UK.

The visiting team members (17 persons) resided at the Golf Course Hotel about a kilometer away from Mulago Hospital. The team was comprised of two cardiac surgeons, one cardiologist, two cardiac anesthesiologists, two intensivists, five cardiac ICU nurses, one cardiac theatre nurse, one biomedical engineer, two coordinators and a trustee.

The UHI Cardiology team was lead by Dr. Lwabi Peter (Consultant Pediatric Cardiologist) while the cardiac surgical team was headed by Dr. Mwambu Tom (Consultant Cardiovascular and Thoracic surgeon).

OBJECTIVE

The objective of the workshop was:

1. To review the progress made in pre-, intra- and postoperative skills in the management of simple and complex cardiac surgical procedures at UHI (RACHS - 1 category; Risk 2).
2. To introduce more complex open-heart surgeries at UHI such as single ventricle repairs (RACHS - 1 category; Risk 2) and Ross procedures.
3. To introduce the use of processed Homografts at UHI.

PATIENTS AND OPERATIONS

A total of 10 patients were scheduled for surgery and were all successfully operated upon. There were four cases of ventricular septal defects (VSD) who underwent patch closure. Two cases of Atrial Septal Defect (ASD) were repaired (one had an unroofed coronary sinus). There was one case of Tetralogy of Fallot (TOF) who underwent total correction. Two cases underwent resection of subaortic spur/membranes (one had a VSD). One patient with severe aortic regurgitation underwent the Ross procedure using a 25mm pulmonary homograft in the pulmonary position.

All patients were admitted at least two days prior to surgery and reassessed for fitness for surgery including review of diagnosis. Attendants to patients were counseled and informed about the procedure their children were to undergo. Meals were provided for all patients and one attendant each while on the ward and in the ICU.

All equipment for use during the workshop was assessed by the visiting biomedical engineer in collaboration with the local biomedical engineer and biomedical technician.

Both crystalloid and blood cardioplegia were selected for use on the patients depending on the case. Crystalloid cardioplegia was cooled using ice slash and delivered from a plastic bottle under pressure. Blood cardioplegia was cooled and delivered from the heart-lung machine with the help of a cardioplegia delivery system.

At all times, the local team was given the opportunity to participate in the surgeries including operations, perfusion and intensive care nursing.



Four and a half year old Sitenda Immaculate recovering in the ICU following VSD closure and PDA ligation.

WELFARE

Meals for the guests were provided by Rotary Club of Nateete and COH in collaboration with GOU. UHI availed a refrigerator, coffee percolator and microwave to facilitate the services.

UHI provided the local team with morning and evening teas as well as during the night shifts.

OBSERVATIONS

This is the first time COH performed surgeries at UHI. The team was impressed with the level of skill the health care professionals at UHI had, as well as their ability to adapt new skills easily. The team supervised the UHI nurses in the ICU while the UHI nurses did most of the nursing. The local perfusionists ably ran the heart-lung machine even during the complex surgeries. The local surgeons prepared the cases, weaned them off bypass and closed all the patients. In addition, they were each supervised operating a case.

The Vivid-i portable echo machine brought in by the visiting team made the work environment in the operating room more comfortable by availing more space. UHI will require a robust machine of this nature in the future. It has the advantage of being portable and can be used in the operating room, during outreaches and for regular out-patient echocardiography investigations.

WAY FORWARD

The visiting and local teams held daily debriefing meetings in the operating room and ICU as a prerequisite to the day's work and to ensure that all the staff was in agreement with the day's procedures. This was found to be of great help in improving the care of patients undergoing OHS at UHI.

The following recommendations for continued improvement of OHS at UHI:

- a) The local team needs to perform more numbers of complex cases (so far practiced in) between missions and on a regular basis so as to improve skills and maintain the confidence built so far.
- b) Completion of the cardiac theatre currently under construction be expedited so as to avail space for more regular OHS.
- c) There is an urgent need to recruit and train an intensivist at UHI to take care of the patients in the ICU following surgery so as to relieve the burden on the cardiac surgeons. An offer to train an intensivist was made by Prof. Magdi Yacoub under COH's charity and will need to be followed up.

MEDICAL SUPPLIES, EQUIPMENT AND MAINTENANCE

In order to ensure adequate availability of supplies, all the cases were prepared as elective cases with both teams exchanging patient information via internet connectivity to help in selection of specialized sundries especially so for perfusion. Drugs used in the operating theatre, ICU and during perfusion were supplied by both COH and UHI. The perfusion sundries used were mainly provided by the visiting team (COH).

Blood products were readily available throughout the workshop and in adequate quantities and were directly obtained from Nakasero Blood Bank. We wish to congratulate the laboratory staff at UHI and management and staff at Nakasero Blood Bank for adequately facilitating the workshop.

There were few minor power interruptions during the workshop. The inverter system was however, able to cover up the interruptions without much interference to service delivery. The blood gas cartridges for IRMA (TruPoint) blood gas analyzers, supplied under GOL's support to UHI, were used both in the operating theatre and ICU for blood gas analysis.

It was quite evident that a single monitor in the operating room was insufficient. A slave monitor is required in the operating room to facilitate surgical operations by enabling the perfusionist and surgeon to view the patients' parameters with greater ease.

TRAINING MEDICAL STUDENTS AND NURSES

Makerere University post-graduate students rotating in cardiology had the opportunity to witness complex open-heart surgery and understand the principals behind cardiopulmonary bypass and its physiology. They also received teachings in transoesophageal echocardiography (TEE) techniques from the visiting consultant anaesthesiologist, Dr. Gavin Wright. The presence of a camera and viewing screen in the operating room continued to be of help in facilitating teaching which would otherwise have been difficult considering the large amount of equipment and personnel in the operating room.



Trainee nurses from other hospitals had the opportunity to witness and learn new theatre techniques in situations of complex surgical procedures including instrument set up and types of surgical instruments.

Intra-operative Transoesophageal Echocardiography (TEE) was performed for all cases with the guest team giving opportunities to the local team of anaesthesiologists to attain skills.

The first ever Glenn procedure (univentricle repair) for Tricuspid Atresia as well as the Ross Procedure for Aortic Valve Disease were successfully performed by Prof. Magdi Yacoub. The 25mm Pulmonary Homograft used for the Ross procedure performed on Nakubulwa Phiona (10 year, 8 month old female) was donated to Chain of Hope by CryoLife. It was transported in an ice box with dry ice and stored at negative 80 degrees centigrade on arrival at Mulago prior to use.

Following their operation, all patients were initially admitted to the intensive care unit (ICU) for 48 to 96 hours prior to transfer to the high care unit (HCU) and then later to the ward. All patients did well post-operatively and were discharged by the 8th post-operative day on average. One patient who underwent resection of a subaortic membrane developed post-operative mediastinal bleeding and underwent re-exploration to achieve haemostasis. All patients were discharged in a good general condition.

During the workshop, the team conducted a series of educational sessions with the doctors, nurses, anaesthesiologists and perfusionists including a workshop for the nurses a day prior to commencing the operations.

Over 75 patients were screened during the mission with particular interest in cases of EMF. A register for EMF cases was started with the purpose of holding a mission in the near future to offer surgical treatment to some of the cases and start a centre for surgical correction of EMF in east Africa.



Cardiac Surgeons: (Left to right) Dr. Mwambu Tom, Prof. Magdi Yacoub, Dr. Vibeke Hjortdal and Dr. Omagino John. A young boy with EMF stands amidst them in the center.



UHI ICU nurse Bbosa Flavia attends to Nakubulwa Phiona following Ross Procedure as cardiothoracic surgeon Dr. Mwambu Tom looks on.

PARTICIPATING MEDICAL TEAMS

The Chain of Hope UK visiting pediatric cardiac medical team:

- Pediatric Cardiothoracic Surgeons: Sir Magdi Yacoub, Dr. Vibeke Hjortdal
- Pediatric Cardiologist: Dr. Bent Kristensen
- Perfusionist: Dr. Stanley Brown
- Anesthesiologists: Dr. Isabeau Walker, Dr. Gavin Wright
- Intensivists: Dr. Cleopatra Patterson, Dr. Intikhab Zafarellah
- Scrub Nurse: Julie Plumridge
- ICU Nursing Team: Maura Anne O'Callaghan, Janet Taylor, Ines Souto, Tara Hesp, Karen Anderson
- Mission Coordinators: Emma Scanlan, Lisa Yacoub
- Trustee: Gary Gilmour

The Uganda Heart Institute pediatric cardiac medical team from Mulago Hospital:

- Pediatric Cardiothoracic Surgeons: Dr. John Omagino (Director), Dr. Mwambu Tom, Dr. Michael Oketcho, Dr. Manyilrah William (Resident)
- Pediatric Cardiologists: Dr. Peter Lwabi, Dr. Sulaiman Lubega, Dr. Aliku Twalibu (Resident)
- Adult Cardiologists: Dr. Mondo Charles, Dr. Sebatta Elias, Dr. Okello Emmy (Resident)
- Perfusionists: Dr. Muraa Pascalina, Dr. Wambuzi Sam
- Anesthesiologist: Dr. Cephas Mijumbi
- ICT Technician: Enoch Kibalizi
- Scrub Nurses: Munduru Gertrude, Obwin John, Oyang Ben
- ICU Nursing Team: Atweeta Lillian, Atugonza Constance, Ayaa Kate, Mwima Rachael, Nakisige Monica, Namanda Cissy, Atukwaste Joseph, Munduru Jane F, Nabulya Edith, Nalubega Madina, Namayanja Berna, Namuli Flavia, Namukwaya Harriet, Nawakonyi Susan, Nyakakywe Catherine, Byabakama Margaret, Samalie Kitoleeko
- Ward Incharge: Musoke Leticia
- Physiotherapists: Egwayu Nancy, Kasita Richard, Makweta Bob
- Administrator: Yonah Oboth
- Secretary/Assistant Coordinator: Bukenya Anne
- Biomedical: Milad Nashat (Engineer), Malungu Robert (Technician)
- Pharmacy: Afidra Philip
- Laboratory: Faisal Nyanzi
- Stores: Ngobi Bob, Birungi Susan

Like in other workshops, the UHI professional staff was equally matched to the visiting team so as to enable adequate transfer of skills.

All health care professionals participating as the local team were UHI staff. No nurses were recruited from other units in Mulago Hospital as has been in other workshops to back up the



James Nkalubo

4 years old

TOF with severe
infundibular stenosis



Emmanuel Keni

15 years old

Subaortic Membrane with
hypertrophic
interventricular septum





Immaculate Sitenda
4 years old

VSD with Large PDA



UHI team. This was deliberately done to test UHI's capacity as an entity. There was an exemplary performance by the nursing team in the ICU and operating theatre. This was greatly contributed to by the large number of nurses who have undergone their fellowship training in cardiac nursing.

Support staff from Mulago Hospital were however, called upon to back up the UHI team in areas of laundry, cleaning, transport and security.

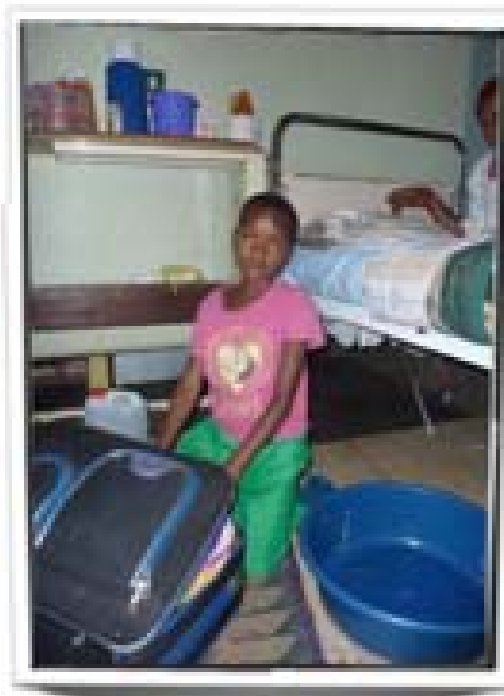
PATIENT LIST

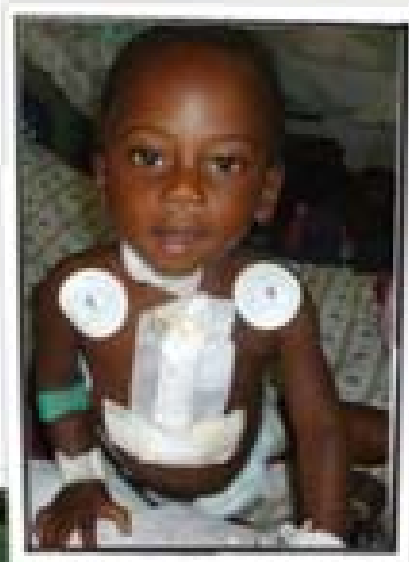
No.	Patient Name	Age	Diagnosis	Surgery	Date of Surgery
1	Kibedi Joy	4 years	ASD, Corneal scar	ASD Closure	7-25-11
2	Sitenda Immaculate	4 years	VSD with Large PDA	VSD Closure, PDA Ligation	7-25-11
3	Maweje Nabiru	1 year	VSD with Small PDA	VSD Closure, PDA Ligation	7-26-11
4	Ankunda Wilfred	2 years	VSD	VSD Closure	7-26-11
5	Sarah Evans	1 year	ASD with unroofed coronary sinus	ASD Closure, re-routing of coronary sinus to right atrium	7-27-11
6	Nkalubo James	4 years	TOF with severe infundibular stenosis	ICR, infundibular resection, VSD Closure	7-27-11
7	Nakubulwa Phiona	10 years	RHD, Severe AR with mild MR	AVR (Ross Procedure)	7-28-11
8	Mwebingwa Ariana	1 year	Tricuspid Atresia, ASD, VSD	Bidirectional Glenn	7-28-11
9	Wakisa Jackline	8 years	VSD with subaortic spur	VSD Closure, resection of LVOT fibrous spur	7-29-11
10	Keni Emmanuel	15 years	Subaortic Membrane with hypertrophic interventricular septum	Resection of Subaortic membrane and hypertrophic septal muscle	7-29-11

Phiona Nakubulwa

10 years old

RHD, Severe AR with mild MR
(Ross Procedure)





Sarah Evans

1 Year Old

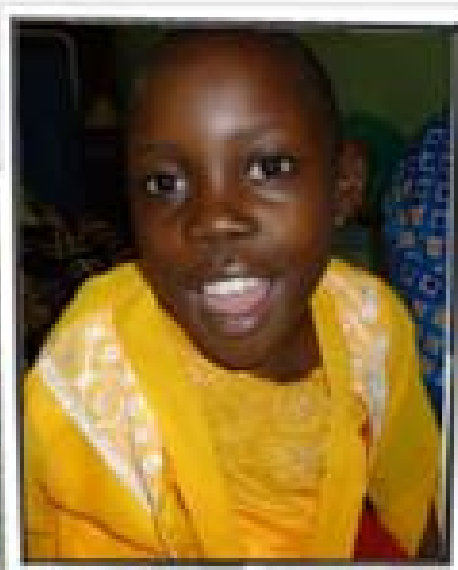
ASD with unroofed coronary sinus



Jackline Wakisa

8 years old

VSD with subaortic spur



Ariana Mwebingwa

1 year old

Tricuspid Artresia, ASD, VSD

