Cardiac Surgery Program In Tanzania Progress and Challenges Encountered

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Summary

- Tanzania Location and Demographics
- Background and Introduction
- Cardiac Program at Muhimbili
- Progress
  - 2000 – 2008
  - 2008 – 2011
  - 2011 – 2014
  - 2015 - 2016
- Challenges
- Conclusion and Way Forward

TANZANIA Location and Demographics

Eastern Africa
Population 45 million
One functional Cardiac Surgery Unit

Background

- Initiatives to establish open heart surgery in Tanzania dates back from 1970s
- By the Government of Tanzania through its Ministry of Health
- The move could not take place until 2000, a task force comprising of senior medical personnel was formed
- Developed a strategic plan to establish the unit
- The task force made several tours to countries with already functioning programs

Members of Task Force

o right: Prof. Victor Mwafongo , Dr. Ramadhani Kazema, Prof. Andrew B.M. Swai, Sr . Fredrica Massawe,
Prof . Leonard Lema, Edward W. Ngwalle, Dr. Johnson Lwakatare, Prof Lawrence Museru.

Introduction

- The Cardiac Program in Tanzania is embedded within the The Muhimbili National Hospital - Super Specialist Hospital
- Bed Capacity 1,263 beds
- Out patients - 1,000 to 1,500 daily
- In patients - 1,000 to 1,200 daily
- Total Employees - 3,062
- Organization:
  - 8 Directorates
  - 29 Departments,(19 clinical and 10 non clinical)
  - 109 Units
- Super specialist services in Cardiology, Cardiothoracic Surgery, ENT, Gastroenterology,

Progress: 2000-2008

- Identified 26 potential young medical personnel from Muhimbili National Hospital and the Muhimbili University College of Health Sciences
- They were sent for training in various fields of cardiothoracic and vascular surgery
- The duration of training ranged from 1 to 2 years
- In May 2008 Open Heart Surgery was started

Progress 2008 - 2011

- The core team in collaboration with visiting cardiac surgeons and cardiac anesthesiologists from Zimbambwe started the work.
- There were 4 cardiac surgeons one from China, two cardiac anaesthesiologists, 2adult cardiologists, and 2 paediatric cardiologists, 4 perfusionists there was five ICU and four theatre nurses
- Todate five cardiac surgeons , two general surgeons, still two cardiac anaesthesiologists,one for adults and paediatric plus 1 anaesthesiologist, we have more than 8 cardiologists, 3 paediatric cardiologists

Progress 2008 - 2011

- The core team in collaboration with visiting cardiac surgeons and cardiac anesthesiologists from Zimbambwe started the work.
- The visiting team were actually Tanzanian Natives whom had moved to Zimbambwe due to lack of cardiac infrastructure in the country
- They were the key instructor during the kick off, they supervised us and laid down the fundamentals of patient selection, postoperative care and the importance of working as a team

Surgical output in the first year

- During the first year a total of 105 patients underwent surgical intervention.
- Majority of patients were females (79%) with mean age of 19.4±12.3.
- Rheumatic valvular heart disease accounted for the majority 47.6% , Congenital heart disease 35.2%, myxomatous degeneration 16.2% and pericardial disease 1%.
- The overall mortality during that interval was 13.3%.

- The Core team was later joined by other medical staffs trained in China and Israel
- The Government of China continued to send Medical staff, specialized in Cardiac surgery and have made such a program in such a way the stay for an interval of two years before another team is allowed to come

Progress 2008 - 2011

- The visiting expertise continued to come at an interval of 3-4 months for a period of 2 years
- Gradually the visits frequency declined
- Towards the end of 2011 the local team had gained good experience and they were able to conduct open-heart surgery on their own
- In 2006 the peoples Republic of China agreed to donate funding equivalent of 63.5 million Yuan (US$ 18 million) to construct the Muhimbili Cardiac Surgery, Treatment and Training center

Progress 2011 - 2014

- Construction was completed and Handing over was done in February 2013
- In March 2013 two units Cardiothoracic and Vascular Units (from General Surgery) were merged with other cardiology units to form the Department of Cardiovascular Medicine
- The Muhimbili Cardiac Surgery and Treatment Center was inaugurated on 27th April 2014 by His Excellency the President of URT, Dr Jakaya Mrisho Kikwete
- His Excellency the President directed the Ministry to convert the Department of Cardiovascular Medicine into a fully fledged Institute with its own budget and administration

The Muhimbili Cardiac Surgery Center

The Muhimbili Cardiac Surgery Center

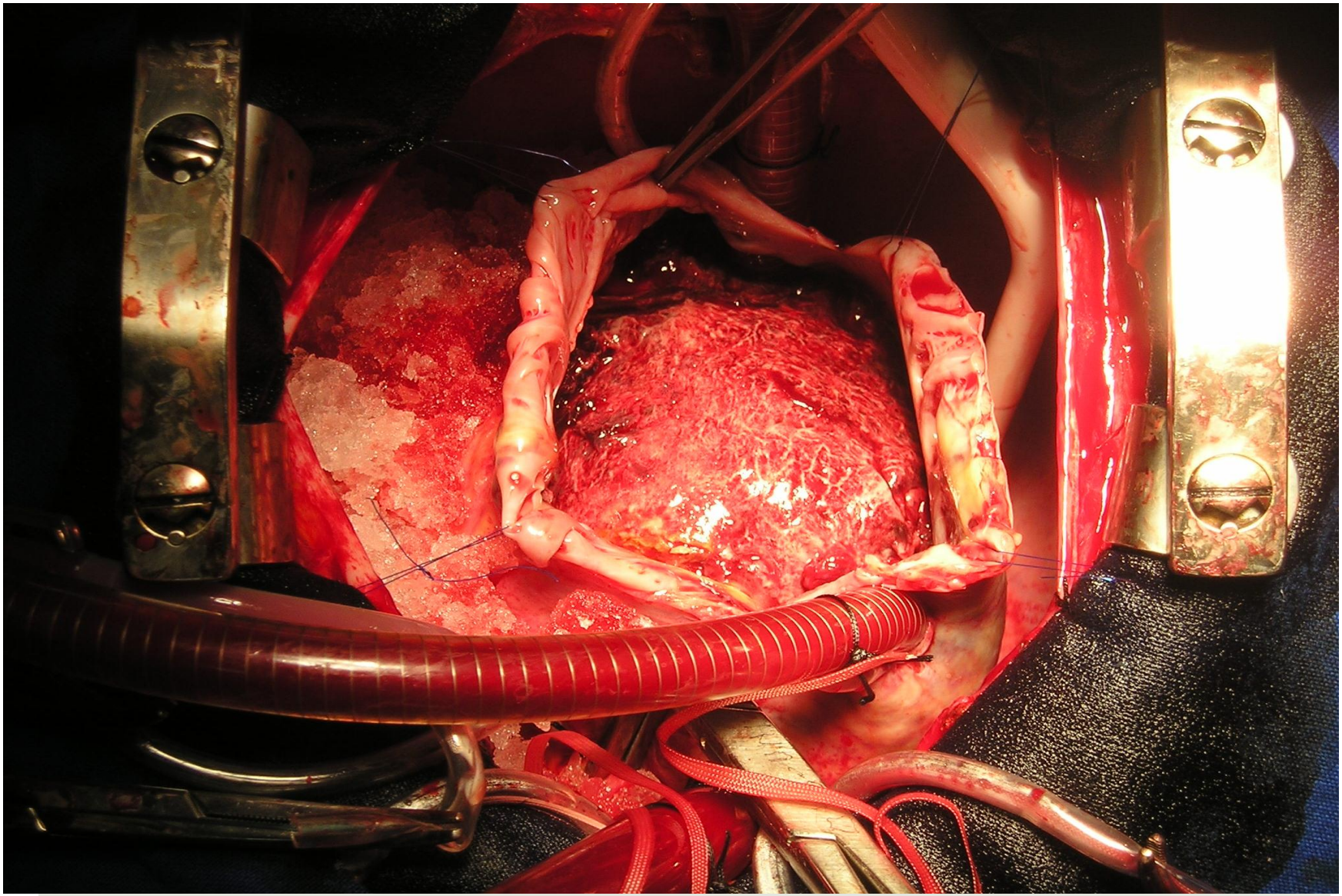
- It is a 96 bed facility, 164 qualified staff
- Reception bay, Revenue Collection area, Food and Nutrition Clinic, Social Welfare unit, Six Consultation Rooms
- Imaging section: Hybrid biplane catheterization lab
- Echo Laboratory complex
- CCU with six bed capacity
- Three open heard surgery theatres of which one is fully functional
- Cardiothoracic surgery ICU
- Three Executive rooms and one Presidential suite
- In patient wards

Catheterization Laboratory

Cardiac Operating Theatre

Perfusionist at Work

Cardiac Myxoma of the Right Atrium



Cardiac Surgeons at Work

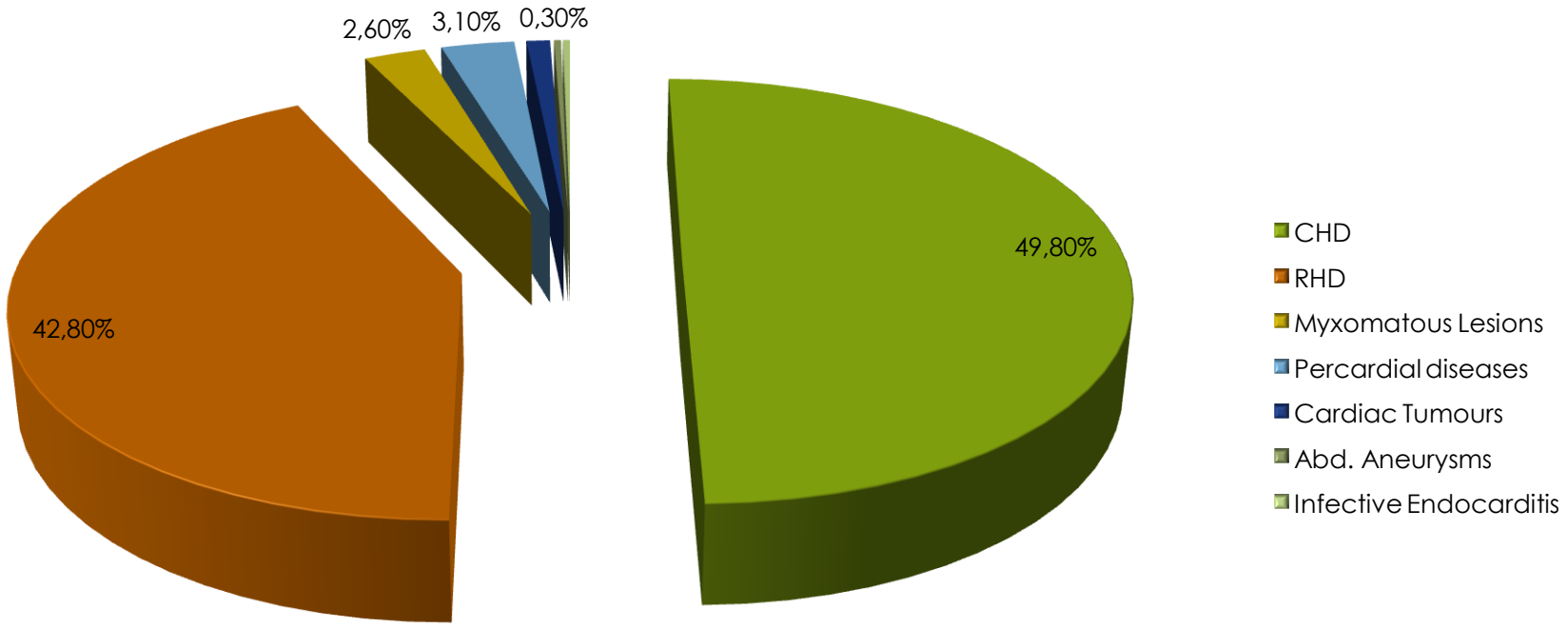
Progress 2015-2016

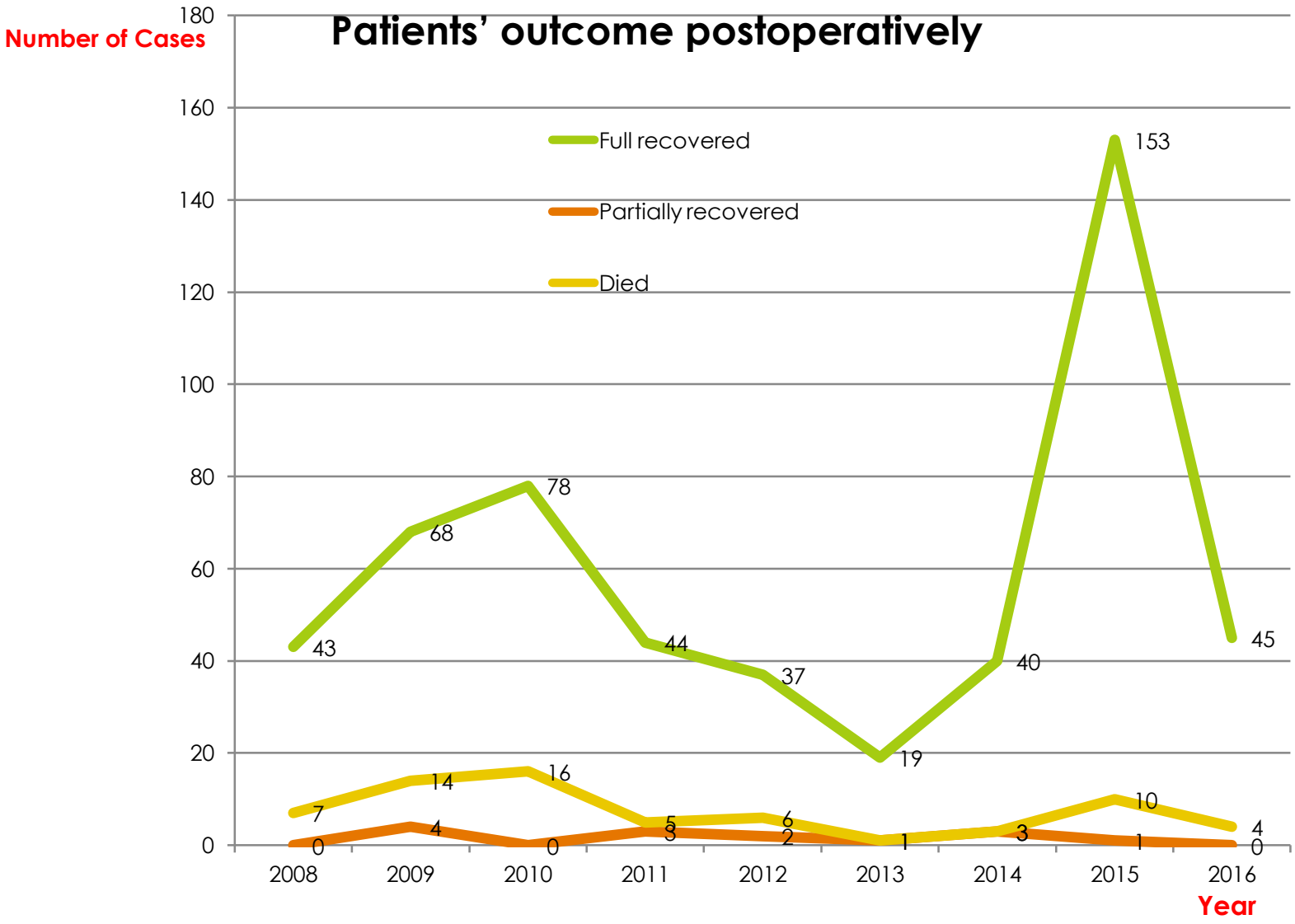
- Time of great change, overall operations to date 607, Male 216(35.6), Female 391(64.4), Mean age 16.2,SD 13.7, R 3months-70yr
- Inauguration of the cardiac Institute and its name changed to The Jakaya Kikwete Cardiac institute as from 4 september 2015
- The time when the Ministry of health initiated move to have missions
- The cardiothoracic unit was joined with other staff from Bugando Medical centre, pediatric cardiac surgeon and pediatric anaesthesiologist
- The year that has motivated and attracted more experts worldwide to visit and work at the centre

Types of Cardiac diseases

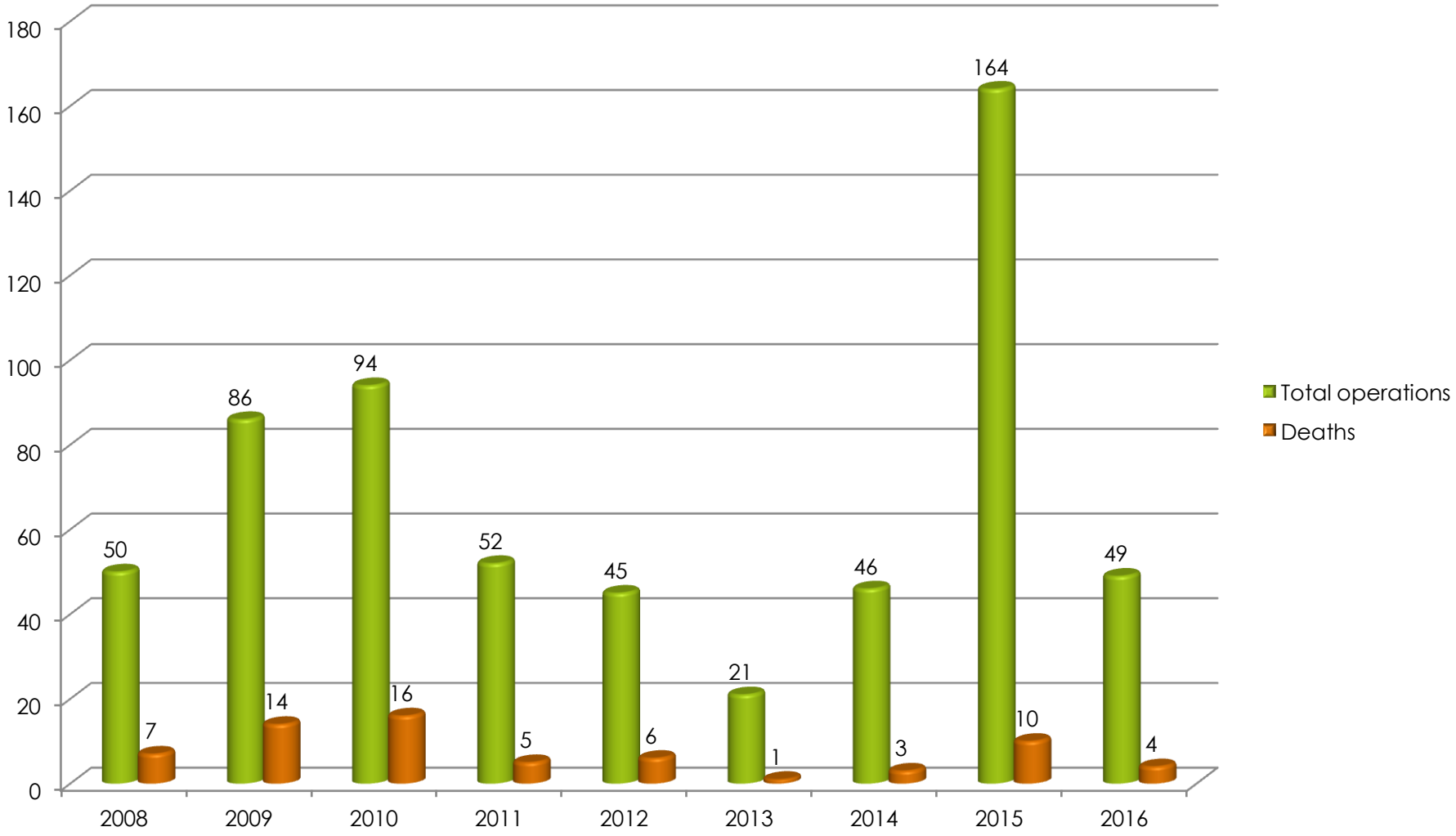
	Number	Percentage
Congenital Heart diseases	302	49.8
Rheumatic heart diseases	206	42.8
Myxomatous lesions	16	2.6
Pericardial diseases	19	3.1
Cardiac Tumors	6	1.0
Vascular(aneurysm)	2	0.3
Infective Endocarditis	2	0.3
TOTAL	607	100.0%

Cardiac diseases



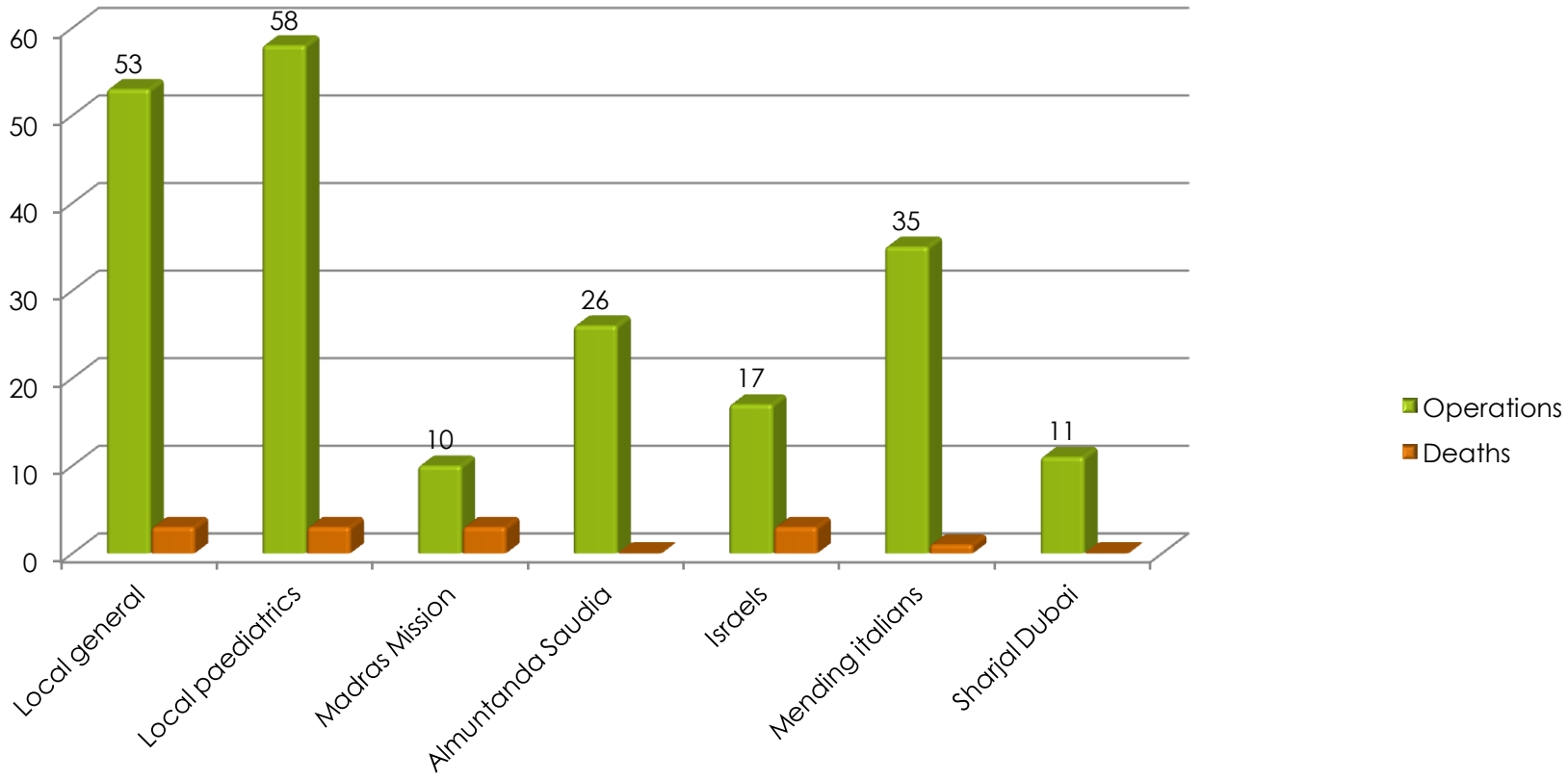

Patients' outcome postoperatively
Number of Cases
Year
Full recovered
Partially recovered
Died
180
160
140
120
100
80
60
40
20
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
43
68
78
44
37
19
40
153
45
7
14
16
5
6
1
3
10
4
0
4
0
3
2
1
1
0

Number of operations over years and corresponding deaths



- There was a gradual decrease in mortality rate
- Overall mortality decreased from 13.9% in the first year to 9.8% by 2016
- The year 2015 there was a great increase in number of operations
- There has been several organisation team coming as mission to conduct cardiac surgeries and most of these mission aim at helping children
- In July 2015 the team was joined by our collogue from Bugando medical centre and they have been operating paediatric cases

Operating mission for 2015/2016



Diagnoses for cases operated

Diagnosis	Number	percentage	Cummulative
MR	56	9.2	9.2
MS	55	9.1	18.3
Mixed MVD	51	8.4	26.7
AR	15	2.5	29.2
AS	3	.5	29.7
Mixed AOVD	1	.2	29.9
TR	2	.3	30,1
MR+TR	41	6.8	36.9
MS+TR	26	4.3	41.2
MS+AS	1	0.2	41.4
MMVD+AR	16	2.6	44.0
Triple Valvular Disease	8	1.3	45.3
PDA	114	18.8	64.1
ASD	43	7.1	71.2

Overall RHD

Cont. Diagnosis	Number	Percentage	Cumm. frequency
VSD	56	9.2	80.2
Pulmonary stenosis	5	0.8	81.0
TOF (Tetralogy of Fallot)	53	8.7	90.0
Tricuspid atresia	1	0.2	90.1
Single Atrium	4	0.7	90.8
Av Canal defect	14	2.3	93.1
Combined ASD+VSD	2	0.3	93.4
Constrictive Percaditis	13	2.1	95.6
Percardial effusion	7	1.2	96.7
Cardiac myxoma	3	0.5	97.2
Missed diagnosis	1	0.2	97.4
Abdominal aneurysm	2	0.3	97.7
DCRV	3	0.5	98.2
PDA with Disloged device	1	0.2	98.4
Infective Endocarditis	3	0.5	98.8
TEF(TracheoEsophageal Fstl	1	0.2	99.0

Cont. Diagnosis	Number	percentage	Cum.frequency
Residual VSD	1	0.2	99.2
RT Atrial thrombus	2	0.3	99.5
Mitral Atresia + PS	2	0.3	99.8
Aorto-pulmonary window	1	0.2	100.0
TOTAL	607	100%	100.0%

Mean duration ICU stay 5.2 days, mode 4 and median 4 days, max 30, minima 1 day

Cardiac Intensive Care Unit

Local Challenges

- You may note in the first year 105 patients underwent heart surgery but from 2008 to 2015 (7 years) only 276 patients were operated
- If we went with the pace of at least 100 patients per year we would have operated at least 700 patients for seven years
- This discrepancy occurred due to a number of challenges locally:
  - Limited and irrational funding from the Government
  - Inadequate number of staff across the unit
  - Irrational supply of consumables that arrive out of time
  - Method of procurement that follows the Public Procurement Act
  - Lack of awareness among the sourced suppliers - have limited knowledge with cardiac surgery needs
  - Very expensive procedures insurance companies refuse to include in their packages
  - Need to procure through the National Medical Stores Department that was not established for super specialist items
  - Low morale of the team due to long working hours
  - Leadership and organization structure

Overall cardiac services in the Country

- There has been some cardiac surgical activities in the country unfortunately they fallen into pezzella classification
- KCMC: in the 1990s
- Bugando Mediical Centre –recently
- Tanzania Heart Institute
- AKH in Dar es Salaam I a private is in move to establish

Challenges facing open heart Surgery

- Pezzela has clearly illustrated for the failed programs.
- (Pezzella AT, OHS in a developing Country.Asian Cardiovasc Thorac Ann 2006 August 1; 14(4): 355-356)
- Pezzela T , has categorized cardiac surgery program in emerging countries as:
  1. Nonexistent but wanting to start
  2. Previously existed but failed
  3. Small or even larger existing programs now limited by financial and political considerations
  4. Ready to start ,but need financial and political support
  5. Already functional, but needing academic support
  6. Various combinations of all above examples

Global Challenges

- Few or absence of credible and reputable manufacturers and/or agents within the country to supply highly specialized consumables for cardiac surgery and cath lab
- Lack of committed partnerships whom could devote their time and stay work together with our local team as suggested for at least 2-3 years
- Lack of a Telemedicine facility in the center that will create a learning curve with advanced centers for teaching purposes
- Operating organization through mission is a matter of discussions as there advantage and disadvantages

Conclusion

- Establishing open-heart programs in our setting at MNH has been a challenge and need government commitment
- We are obviously threatened with sustainability issues
- Todate the Institute is in need of :
  - Training: so as to have continuity
  - Consumables: to have sustainable cardiac services
  - Expertise to enhance sustainability: those committed to come and work for a period of 2-3 years, so that they impart expertise to the local team as general

Way Forward For Our Center

- Get renewed commitment from the Government
- With a fully fledget institute we need to have a reliable budget that will help to run cardiac activities without interruption
- Open Heart Surgery a costly undertaking; need for sustainable running cost, necessitating cost recovery strategies such as a PPP
- Need for a well trained, dedicated and committed team, that should be well remunerated, and motivated
- Deal with our MSD on procurement to get prequalified reputable suppliers to provide reliable supply chain supporting system
- Teach our staff on optimal utilization of consumables and medicines that is compatible to existing world class standards
- Strengthening our supportive services – blood bank, renal dialysis, vascular radiology, and specialized laboratory services to run smoothly
- Source collaborations with regional and international Universities and Cardiac Centers/Institutes for continuing training to maintain acceptable world standards and supports e.g a telemedicine project and revive visiting teams

Dar Es Salaam Way to Zanzibar

Dar Es Salam way to Mount Kilimanjaro

Dar Es Salaam Way to Ngorongoro


THANK YOU FOR YOUR
KIND ATTENTION