

Pediatric Heart Surgery Waiting Time at Lady Ridgeway Children's Hospital in Sri Lanka the National Center for Pediatric Referral: A Case Study 2019

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ABSTRACT

Background: Pediatric cardiology is one of the most rapidly advancing fields in Sri Lanka. This advancement is not only in depth where it has advanced from simple to more complex lesions but also in breadth where it has advanced in the percentage of patients it could treat from a minority to a majority. However, we still have waiting lists and patients dying of cardiac conditions while awaiting surgery.

Materials and method: A case study to identify the causes for long waiting list at the main cardiology referral center in Sri Lanka, The Lady Ridgeway Hospital (LRH) performed using available medical record data at the hospital and key informant interviews. Root Cause analysis done to identified the main problems which give rise to long waiting list.

Results: On the average, we see 10,000-12,000 new referrals every year. In addition, they have follow up patients which amounts to another 20 000 per year. As they do an echocardiographic assessment in almost all patients, LRH perform approximately 25,000 echocardiograms each year. There is no waiting list for assessment as we do not give appointments for first visits. There are 45 beds in cardiothoracic wards and 14 beds in cardiothoracic ICUs. Annual admission for the cardiothoracic surgeries are around 1500 during 2018. They have performed 1500 cath lab interventions and 952 open and closed heart surgeries during year 2018. Currently there are 4 cardiothoracic surgeons and 4 cardiothoracic anesthetics perform duties. Lack of human resources facility and infrastructure facility give rise to long waiting list. Current waiting time varies with 6 months to 18 months periods.

Conclusion: Waiting time for cardiac surgery for children in LRH is long and should be viewed as a problem in public health policy. Depending on the type and severity of the disease seen attempt should be made to solve this problem at the national level by increasing human resources and develop the infrastructure facility.

Keywords: Pediatric cardiology, Heart surgery, Cardiothoracic, Children

INTRODUCTION

Pediatric cardiology is one of the most rapidly advancing fields in Sri Lanka. This advancement is not only in depth where it has advanced from simple to more complex lesions but also in breadth where it has advanced in the percentage of patients it could treat from a minority to a majority. However, we still have waiting lists and patients dying of cardiac conditions while awaiting surgery [1].

Lady Ridgeway Hospital for Children is the only tertiary care referral center for children with heart disease in the country at present. There are three Pediatric Cardiologists, three Cardio-thoracic Surgeons and four Cardiac Anesthesiologists' at present [2].

The Pediatric Cardiology Unit at LRH has 3 basic components: the Outpatient Clinic, the Cardiology Ward and the Catheterization Laboratory. The first contact of almost all patients with suspected heart disease is the outpatient

clinic. In more than 95% of patients, the diagnosis and management plan is decided after the initial assessment. A minority of patients will need further evaluation with a cardiac catheterization before a final diagnosis and plan of management is formulated [3].

Analyzing the disease burden is the most important step in

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planning. It is estimated that approximately 400,000 live births occur in Sri Lanka each year. As the incidence of CHD is 6-8 per 1000 live births, it can be estimated that the number of children born with CHD is 2427-3236 each year in Sri Lanka. According to the literature, two-third of this (1618-2157) will need surgery or intervention for their heart lesion. If properly treated, 85-95% of patients born with congenital cardiac malformations will reach adulthood. With these estimates, our target should be to treat around 2000 children every year. However, when we consider the numbers awaiting surgery in waiting lists and those who will need re-operations in the future, we should plan for approximately 2500-3000 surgical procedures and catheter-based interventions to be performed every year [4,5].

The objective of this case study is to understand the main factors contributing to routinely observable long waiting list at Cardiology surgical list at Lady Ridgeway children's

Hospital, Colombo and suggest recommendations to minimize the waiting list [6].

SITUATION ANALYSIS

On the average, we see 10,000-12,000 new referrals every year. In addition, they have follow up patients which amounts to another 20 000 per year. As they do an echocardiographic assessment in almost all patients, LRH perform approximately 25,000 echocardiograms each year. There is no waiting list for assessment as we do not give appointments for first visits. There are 45 beds in cardiothoracic wards and 14 beds in cardiothoracic ICUs. Annual admission for the cardiothoracic surgeries is around 1500 during 2018. They have performed 1500 cath lab interventions and 952 open and closed heart surgeries during year 2018. Currently there are 4 cardiothoracic surgeons and 4 cardiothoracic anesthetics perform duties. There are 104 deaths happened during last one year period (Tables 1-5).

Table 1. Statistics of cardiac catheterization 2018.

Procedure	No. of Patients
ASD device closure	320
PDA device closure	129
PDA coiling	72
Cardiac catheterization	314
Septostomy	11
Pericardial aspiration	9
Pulmonary valvuloplasty	43
Aortic Valvuloplasty	7
COA dilatation	63
TOE	73
PPM Insertion	14
TPM insertion	6
Coronary angiogram	26
Aortic angiogram	38
AV Fistula closure	5
RVOT Perforation	4
MAPCA Coiling	4
Radiology Procedure	21
BPV+Cath	1
PTMC Dilatation	1
Malformation (vascular plug)	1

Loop Recorder in plantation	1
Attempted PDA device closure	5
Bronco gram	5
Renal angiogram	1
SVC Angiogram	1
Attempted ASD Device closure	7
AP window closure	1
Venogram	1
Esophgiogram	1
Under GA Echo	1
DSA Radiology	1
Total no of Major cardiac Interventions	1198

Table 2. Operations summary 2018.

Description	Major	Intermediate	Minor	Total
General Surgery	2472	4798	5509	12779
Cardiac Surgery	1134			1134
Traumatic Surgery	54	156	2947	3157
Skin			2081	2081
Surgical (OPD)			23	23
Total	3660	4954	10560	19174

Table 3. Number of ICU beds.

ICU Beds	No.
MICU	12
SICU	8
CTICU 11 (HDU)	8
CTICU 1	6

Table 4. Total number of heart surgeries during year 2018.

Surgery	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Open Heart surgery (ASD/VSD)	61	62	67	47	64	64	58	70	62	79	65	51	750
Closed Heart surgery (BT/PDA)	10	8	16	4	12	12	10	14	9	16	23	18	152
Total Heart Surgery	71	70	83	51	76	76	68	84	71	95	88	69	902
Thoracic Surgery	2	4	7	3	3	6	9	1	4	6	2	5	52
Other Major Surgery	0	0	0	0	0	0	1	0	0	0	0	0	1
Surgical Procedure	5	3	4	1	1	6	3	2	1	4	1	1	32
Total	78	77	94	55	80	88	81	87	76	105	91	75	987

Table 5. Total number of heart surgeries according to age limit 2018.

Age	Total number of cases
0-6 months	300
7 months to 1 year	133
1-3 years	159
3-6 years	217
6-10 years	108
10-14 years	70
Total	987

Cardiac Catheterization Laboratory at LRH was the first in Sri Lanka which could be opened for emergencies 24 h a day, 365 times for an elective catheter intervention is around 2-3 months and is progressively coming down. However, depending on the urgency, procedures can be done even on

the same day days a year and is the only dedicated pediatric Cardiac Catheterization Laboratory in the country. Waiting time for the heart surgery depends on the severity of the disease condition (Table 6 and Figure 1).

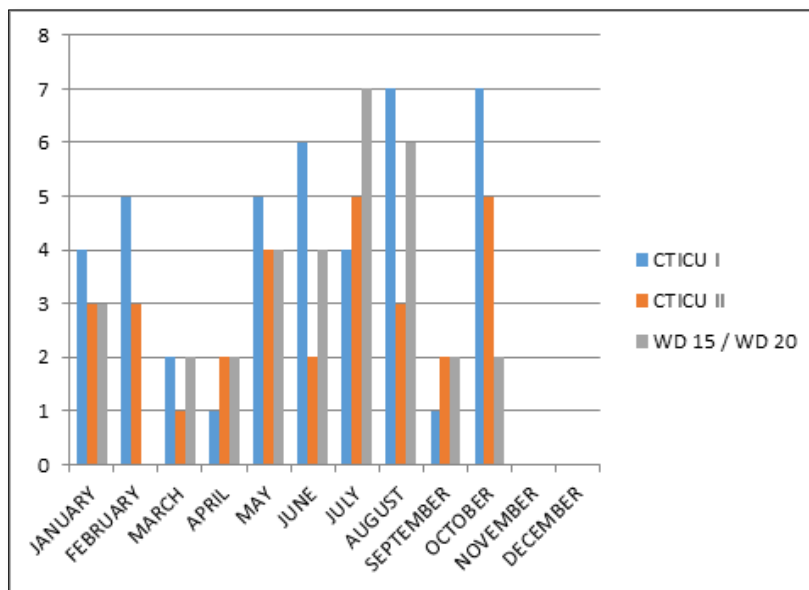


Figure 1. Death statistics of cardiothoracic and cardiology unit, 2019.

Table 6. Death statistics of cardiothoracic and cardiology unit, 2019 (CTICU I, CTICU II, WD 20A, WD 20B, ECHO: CATHLAB, WD 15).

No.	Month	CTICU I	CTICU II	WD 15/WD 20	Total
1	January	4	3	3	10
2	February	5	3	0	8
3	March	2	1	2	5
4	April	1	2	2	5
5	May	5	4	4	13
6	June	6	2	4	16
7	July	4	5	7	16
8	August	7	3	6	16
9	September	1	2	2	5
10	October	7	5	2	14
11	November				
12	December				
Total		42	30	32	104

In today’s context, pediatric cardiac care is delivered by the united effort of Pediatric Cardiology, pediatric Cardiothoracic Surgery, Pediatric Cardiac Anesthesia and Intensive Care Teams. There are many other ancillary services like

Infection Control, Radiology and Physiotherapy which are equally important for the best possible outcome of the patient. This is called Comprehensive Pediatric Cardiac Care (Table 7 and Figure 2).

Table 7. Data comparison between 2007 and 2019.

Year	CT surgeons	Nursing Staff	ICU beds	Total Number of Surgeries
2007	2	40	14	1000
2019	4	54	14	1000

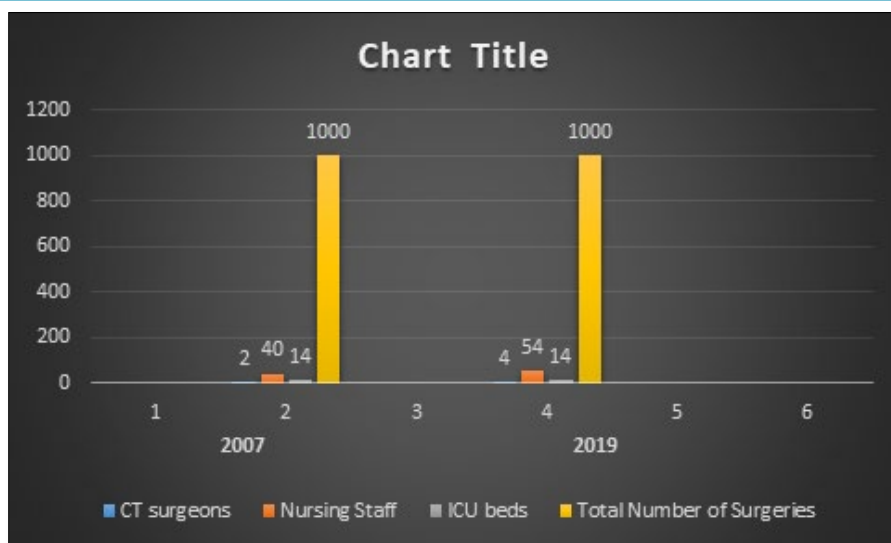


Figure 2. Data comparison between 2007 and 2019.

Cardio-thoracic surgery at LRH commenced, in 2007 January with two operation theatres, two surgeons and one anesthetist. There were only 14 ICU beds which was the main limiting factor in the number of surgical procedures

that could be performed. Average waiting time range from 6 months to 18 months period depends on the severity (**Table 8**).

Table 8. Average waiting time at LRH.

Station	Average Waiting time (Non-emergency)
Clinic to Ward	6 months to 14 months
Ward to Surgery	2 weeks to 6 months
Post operation	3 weeks to 2 months

PROBLEMS IDENTIFICATION AND PRIORITIZATION

Data collection

The evaluation was done by this author following information gathered through following sources.

1. Discussion held with the Director, Deputy Director, Nursing Officer in charge of cath lab, Consultant cardiothoracic surgeons and ICU staff
2. Discussions with few relatives of patients.
3. Observatory visits to Cardiology and Cardiothoracic wards.

Problem identification

Following gaps were identified:

1. Lack of human recourses (medical officers and nursing staff).
2. Infrastructure development is not adequate (spaces in wards operation theaters and ICU).
3. Lack of operation theater time to meet the demand of surgeries.
4. Rapid care by multidisciplinary team is disturbed due to lack of HDU facility.
5. Patient needs, especially psychological wellbeing of patients is not ensuring. Basic arrangements and layout is not ensuring the psychological wellbeing of patients. School children are staying at ward not attain school for months.
6. Delaying of post-surgical discharged plan and back referral system.

RECOMMENDATIONS

1. Increasing the number of acute and long-term care beds
2. Increasing operating room capacity
3. Increasing the supply of physicians and other health care professionals

4. Establishing specialty clinics, Post operation care HDU facility
5. Developing central patient registries and prioritization tools
6. Ensuring best practices for reducing wait times, including incentives for hospitals and physicians to reduce wait lists
7. 7. Enhancing information technology
8. 8. Ensuring government, providers and patients are accountable for results and reducing waits will require additional funding. Research shows that additional funding, if properly targeted, is effective in reducing waits.

When planning hospitals in Sri Lanka, we plan the hospital to keep patients in hospital for procedures but not to perform more procedures and send the patients home. Therefore, most of the hospitals have large numbers of beds instead of more Operating Theatres, Catheterization Laboratories and Computer Tomography (CT) or MRI scanners. The Royal Children’s Hospital in Melbourne which provides a similar in-patient service has only 334 beds but at LRH we have about 1000 beds. Therefore, if we are to provide a cost-effective service we need to improve facilities to do more procedures and investigations and not facilities to keep more patients in-ward for such procedures [7,8].

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