

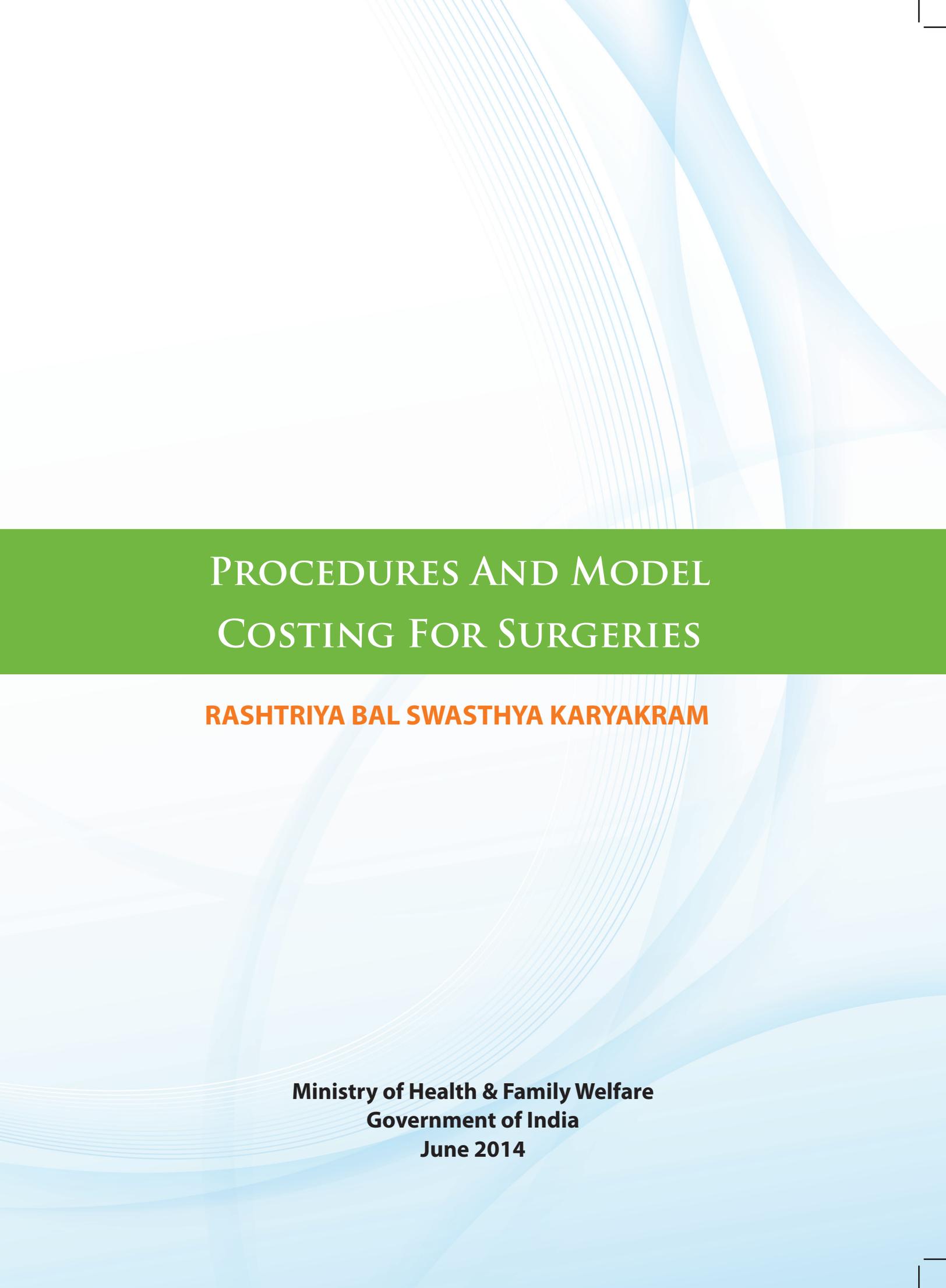


June 2014

PROCEDURES AND MODEL COSTING FOR SURGERIES

RASHTRIYA BAL SWASTHYA KARYAKRAM

MINISTRY OF HEALTH AND FAMILY WELFARE
Government of India



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**Ministry of Health & Family Welfare
Government of India
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PREFACE

Out of our country's annual birth cohort of 27 million, it is estimated that 1.7 million children are born with birth defects, accounting for 10% of the total newborn deaths and 4% of under-five mortality. Among the survivors, Developmental delays afflict 10% of our childhood population and thus require timely intervention to prevent or minimize developmental disability. Childhood deficiencies and diseases usually require basic and timely care but a few like Rheumatic heart diseases may require surgical care. Early identification of the select health conditions and their linkage to quality care, including surgical interventions at the Tertiary institutions at zero cost to the families will help achieve equitable child health care.

Rashtriya Bal Swasthya Karyakram (RBSK) through National Health Mission is a step towards achieving Universal Health Coverage among our children. The program envisages to reach out to children from birth to eighteen years – newborn, preschool and school children and ensures guaranteed treatment and management of Defects at birth, Diseases, Deficiencies and Developmental delays along with disabilities. The successful implementation has both short term and long term dividends.

To help the States/UTs to provide effective surgical care at the public health facilities including the surgical procedure, timing of surgery, model costing, and documentation and planning for provision of timely quality treatment, there was an urgent need to have a robust guideline in place.

The "Procedures and model costing for surgeries" has evolved to serve as an effective planning and implementation tool for policy makers and program managers. This document has been prepared after extensive deliberations among medical experts, intense research, consultation of existing surgical packages and feedback from subject specialist including economists and their inputs that has helped in shaping this document. I am convinced that these guidelines will prove to be useful at National, State, District and block levels for judicious financial planning, budgeting and implementation including financial settlements.


(Dr. Rakesh Kumar)



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ACKNOWLEDGEMENT

Rashtriya Bal Swasthya Karyakram (RBSK) is an initiative launched by the Ministry of Health and Family Welfare to provide comprehensive care to all children in the community right from birth till 18 years of age. The program aims to benefit more than 27 crore children by screening and ensuring treatment & management of 4 D's –Defects at Birth, Deficiencies, Diseases and Developmental delays including disabilities, in a phased manner. The District Early Intervention Center, as the first point of referral, becomes the centre for confirmation of all diagnosis and management including referrals to Tertiary care centers for high end medical care and surgical interventions free of cost.

Aiming to provide comprehensive care to children, after extensive research and inputs from experts in various medical domains around the country, an exhaustive list of procedures along with RBSK codes has been designed. Various health packages such as CGHS, EHS, RSBY, ESIC, Aarogyasri and Yeshasvini etc have been studied and a model costing list for RBSK surgical interventions has come into existence.

This is to acknowledge the contributions of Dr Arun Singh (National Advisor-RBSK), Dr Meeta Mahar, Dr Deepti Khanna and the National RBSK Unit, Technical Resource Group members and subject expert from across the country, the Aarogyasri Trust team, the Yeshaswini team and UNDP appointed health economists which culminated in the booklet in its present form.

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ABBREVIATIONS

AFHC	Adolescent Friendly Health Clinic	ICD 10	Tenth International Classification of Diseases
ANM	Auxiliary Nurse Midwife	PCS	Procedure Coding System
ASHA	Accredited Social Health Activist	ICU	Intensive Care Unit
ASD	Atrial Septal Defect	NRHM	National Rural Health Mission
ASOM	Acute Suppurative Otitis Media	PDA	Patent Ductus Arteriosus
AV	Atrio Ventricular	PHC	Primary Health Centre
AVSD	Atrio Ventricular Septal Defect	RBSK	Rashtriya Bal Swasthya Karyakram
AWC	Anganwadi Centre	ROP	Retinopathy of Prematurity
AYUSH	Ayurveda, Yunani, Siddha and Homeopathy	RSBY	Rashtriya Swasthya Bima Yojana
BL	Bilateral	RHD	Rheumatic Heart Disease
CGHS	Central Government Health Scheme	SNCU	Sick Newborn Care Unit
CHC	Community Health Centre	TA	Truncus Arteriosus
CHD	Congenital Heart Disease	TAPVC	Total Anomalous Pulmonary Venous Connection
COA	Coarctation of the Aorta	TGA	Transposition of the Great Arteries
CSOM	Chronic Suppurative Otitis Media	TOF	Tetralogy of Fallot
CTEV	Congenital Talipes Equinovarus	TRG	Technical Resource Group
DDH	Developmental Dysplasia of the Hip	UL	Unilateral
DEIC	District Early Intervention Centre	UNDP	United Nations Development Program
DH	District Hospital	VSD	Ventricular Septal Defect
EHS	Employee Health Scheme		
ESIC	Employee's State Health Corporation		
ICD 9	Ninth International Classification of Diseases		
PCS	Procedure Coding System		

TABLE OF CONTENTS

S. No.	Title	Page No.
	Preface	3
	Acknowledgement	4
	Contributors	5
	Abbreviations	6
	Table of Contents	7
1.	INTRODUCTION	9
2.	BACKGROUND	10
3.	POPULATION COVERAGE	14
3.1	Magnitude of select health conditions	15
4.	HEALTH CONDITIONS IDENTIFIED FOR COVERAGE	17
4.1	Select health conditions requiring surgical interventions	18
5.	INDICATIONS AND TIMING OF INTERVENTIONS: SELECT CONDITIONS	19
5.1	Anencephaly	19
5.2	Spina Bifida	19
5.3	Cleft lip and cleft palate	19
5.4	Talipes (club foot)	19
5.5	Developmental Dysplasia of the Hip	20
5.6	Congenital cataract	21
5.7	Congenital deafness	21
5.8	Congenital Heart Disease	22
	5.8.1 Atrial Septal Defect (ASD) other than Primum Type	23
	5.8.2 Atrioventricular Septal Defect (AVSD)	24
	5.8.3 Ventricular Septal Defect (VSD)	24
	5.8.4 Patent Ductus Arteriosus (PDA)	25
	5.8.5 Coarctation of Aorta (COA)	26
	5.8.6 Aortic Stenosis (AS)	27
	5.8.7 Valvular Pulmonic Stenosis (PS)	27
	5.8.8 Tetralogy of Fallot (TOF)	28
	5.8.9 TOF like condition where two ventricular repair is possible (Transposition of the great arteries {TGA} with routable VSD)	28
	5.8.10 TOF like condition where two ventricular repair not possible (Tricuspid atresia, TGA with non-routable VSD)	29
	5.8.11 Transposition of Great Arteries (TGA)	29
	5.8.12 Total Anomalous Pulmonary Venous Connection (TAPVC)	29
	5.8.13 Persistent Truncus Arteriosus (TA)	30
5.9	Retinopathy of Prematurity	30

5.10	Strabismus	31
6.	METHODOLOGY ADOPTED BY RBSK	32
6.1	Selection and coding of surgical procedures	32
6.2	Methodology for costing of surgical procedures	32
6.3	Pre-authorization and claims settlement	35
7.	PROCEDURES AND MODEL COSTING OF SURGICAL PACKAGES	36
7.1	Pre-requisites for surgical management	36
7.2	Model Costing of Surgical Packages	38

Chapter 1

Introduction

Health systems, particularly in developing countries are faced with burgeoning health needs on one hand and limited resources on the other. Policy makers at various levels are engaged in developing cost-effective health interventions that ensure accessible and affordable quality care that concurrently serves the poor and vulnerable groups. They are also increasingly functioning as purchasers of care. To enable evidence based decision making, it is critical that policy makers have information about the nature of costs to be incurred for providing healthcare services. Such information of costing of health services would help in estimating the amount of resources required to provide healthcare services; become a basis for planning of budgets at the block, district, state and national levels and could become a base for negotiating with private healthcare providers on payment modalities.

The 'Rashtriya Bal Swasthya Karyakram' Programme aims at early detection and management of 30 Health Conditions under the 4Ds (Defects at birth, Diseases, Deficiency conditions and Developmental Delays including Disabilities) prevalent in children. This entails screening, detection of these health conditions, referral to the District Early Intervention Centre and management at the tertiary level. With this in view the National RBSK team embarked on an exercise of preparing a list of surgical procedure packages for health conditions requiring surgical interventions under RBSK and the costing of these packages.

The focus of the Rashtriya Bal Swasthya Karyakram (RBSK) is to have the programme within the ambit of Government involved in the programme.

This booklet contains the list of recommended surgical procedures for health conditions under RBSK along with surgical package settlement costs. Each surgical package under RBSK includes the cost of all pre-operative and post-operative investigations, cost of surgery itself, cost of post-hospital care wherein a mechanism can be worked out to pay for all surgeries and to all categories of health staff within the government sector and have reasonable package settlements for private sector if operative care including hospital stay and follow up care during follow up visits as well as the cost of drugs, consumables and implants/stents/coils/grafts. The booklet is to be used both for budgeting and for claims settlements.

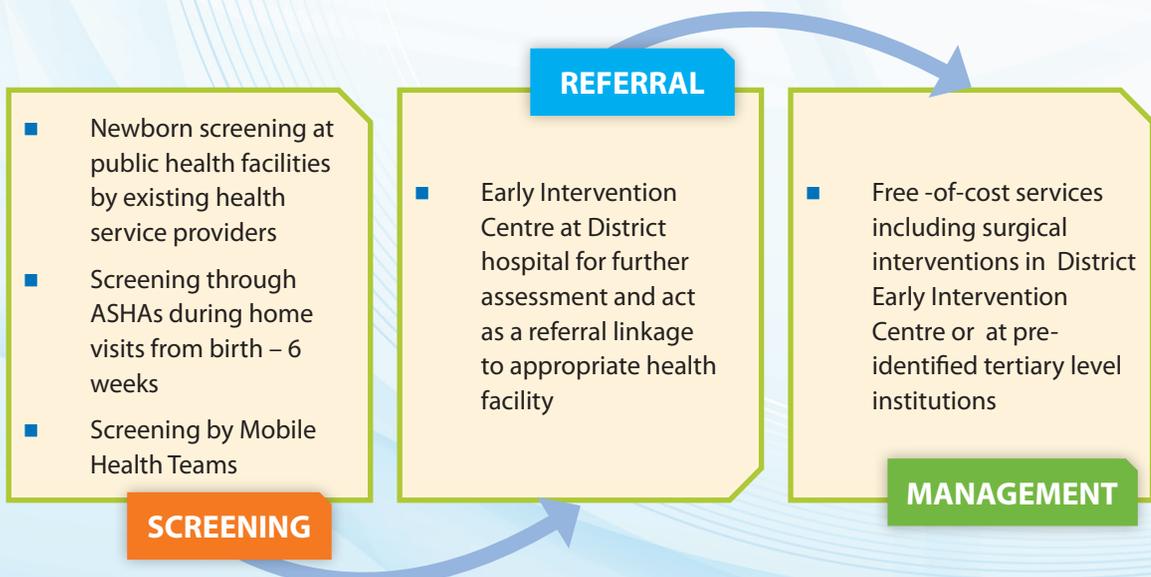
Chapter 2

Background

The Rashtriya Bal Swasthya Karyakram (RBSK) or 'Child Health Screening and Early Intervention Services' Programme under National Rural Health Mission was launched by the Ministry of Health and Family Welfare in February 2013. It is a systemic approach to early identification of 4Ds, that is, Defects at birth, Diseases, Deficiencies and Developmental delays including Disabilities prevalent in children 0 to 18 years of age. Health screening of children is a known intervention under the School Health Programme which has now been expanded to cover all children from birth to 18 years of age more comprehensively. The initiative also ensures free management and treatment including surgical interventions at tertiary level through NRHM ensuring equitable child health care.

The programme entails child screening at two levels –the community level and the facility level. While facility-based newborn screening, at public health facilities like Primary Health Centres (PHCs)/ Community Health Centres (CHCs) / District Hospitals (DH), will be by existing health manpower like Medical Officers, Staff Nurses and Auxiliary Nurse Midwives (ANMs) at birth, the community level screening will be conducted by Accredited Social Health Activitists (ASHAs) during post-natal visits in the community and by the Mobile health teams at Anganwadi Centres (AWCs) and Government and Government aided Schools covering the spectrum of children ranging from 6 weeks to 18 years of age. All pre-school children below 6 years of age would be screened by Mobile Block Health teams at least twice a year and school children age 6 to 18 years would be screened by at least once a year. The mobile health team will consist of four members- two Doctors (AYUSH - male and female), an ANM/ Staff Nurse and a Pharmacist.

IMPLEMENTATION MECHANISM



Hence, the following mechanism will reach all the target groups of children for health screening:

1. **For new borns:**

- Facility based newborn screening at public health facilities, by existing health manpower.
- Community based newborn screening at home through ASHAs for newborn till 6 weeks of age during home visitation.

2. **For children 6 weeks to 6 years:**

- Anganwadi Center based screening by the dedicated Mobile Health Teams

3. **For children 6 years to 18 years:**

- Government and Government aided school based screening by dedicated Mobile Health Teams.

Screening and referral at birth, in AWCs and at school will mark the beginning of the appropriate management of 30 identified health conditions through District Early Intervention Centres (DEICs) and recognised tertiary care centres. Following the initial step of screening of children from birth to 18 years of age group for selected health conditions, the next steps are confirmation of preliminary findings, referral support, management and follow up. Under RBSK, these activities viz. confirmation, management, referral, tracking and follow-up, need to be planned.

The Referral and Management Matrix is as under:

Health Condition	Confirmation	Referral From	Management	Tracking & Follow Up
Defect at Birth	DEIC	DEIC	Tertiary Hospital	DEIC
Deficiencies (Upto 6 Years)	PHC/CHC	*	CHC/DEIC	DEIC
Deficiencies (>6 Years)	PHC/CHC	DEIC	DH/CHC/ PHC	DEIC
Diseases (Upto 6 Years)	PHC/CHC	*	CHC/DEIC	DEIC
Diseases (>6 Years)	PHC/CHC	DEIC	DH/CHC/ PHC	DEIC
Developmental Delay (Upto 6 Years)	DEIC	*	DEIC	DEIC
Developmental Delay/ Disabilities (> 6 Yrs)	DEIC	DEIC	Rehabilitation Centers#	Rehabilitation Centers#
Learning Disabilities/ ADHD (Between 6-9 Years)	DEIC	-	DEIC	DEIC
Adolescent Specific Conditions (10-18 Years)	CHC/AFHC**	DEIC	AFHC**/DH	AFHC**

*Referred only if Surgical Intervention is required

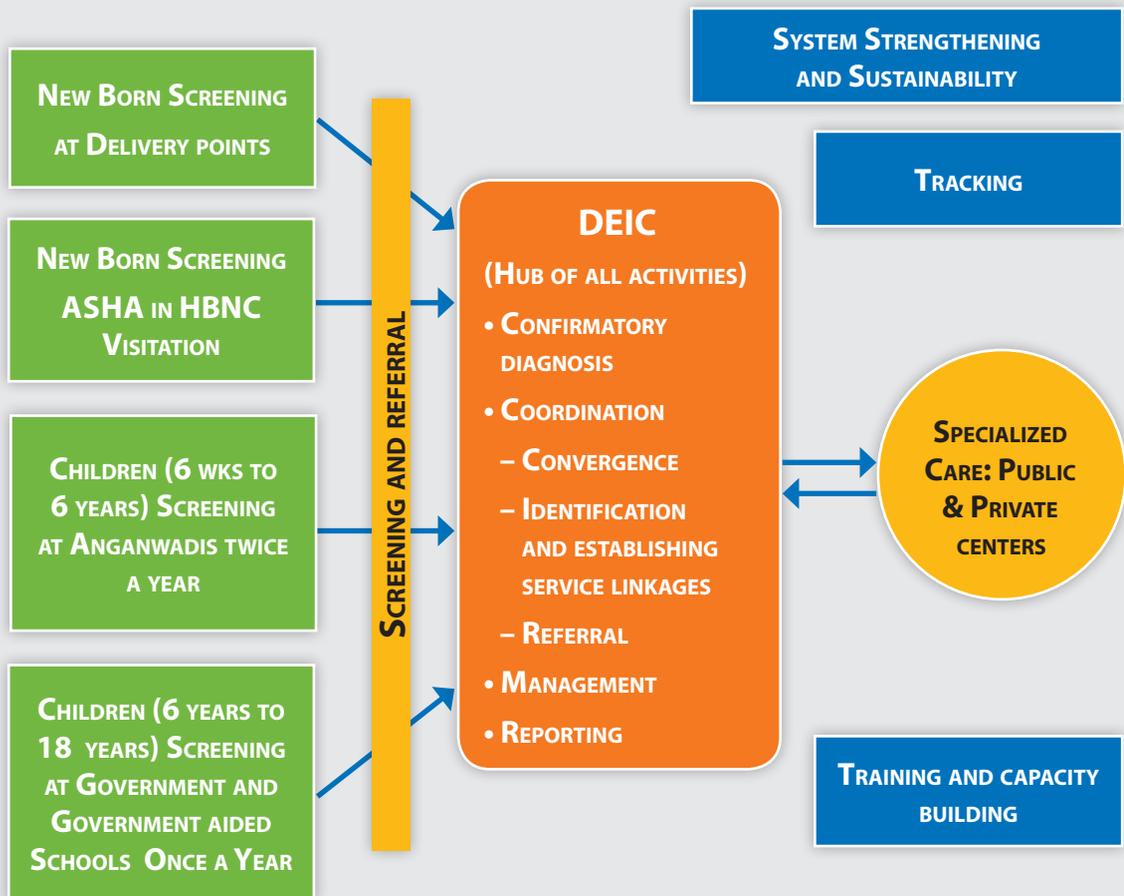
**Adolescent Friendly Health Clinics

#District Rehabilitation centres or Rehabilitation units of Govt. Hospital or Govt. Aided Rehab. Centres under MoSJE for select cases (or as per the convenience of the families)

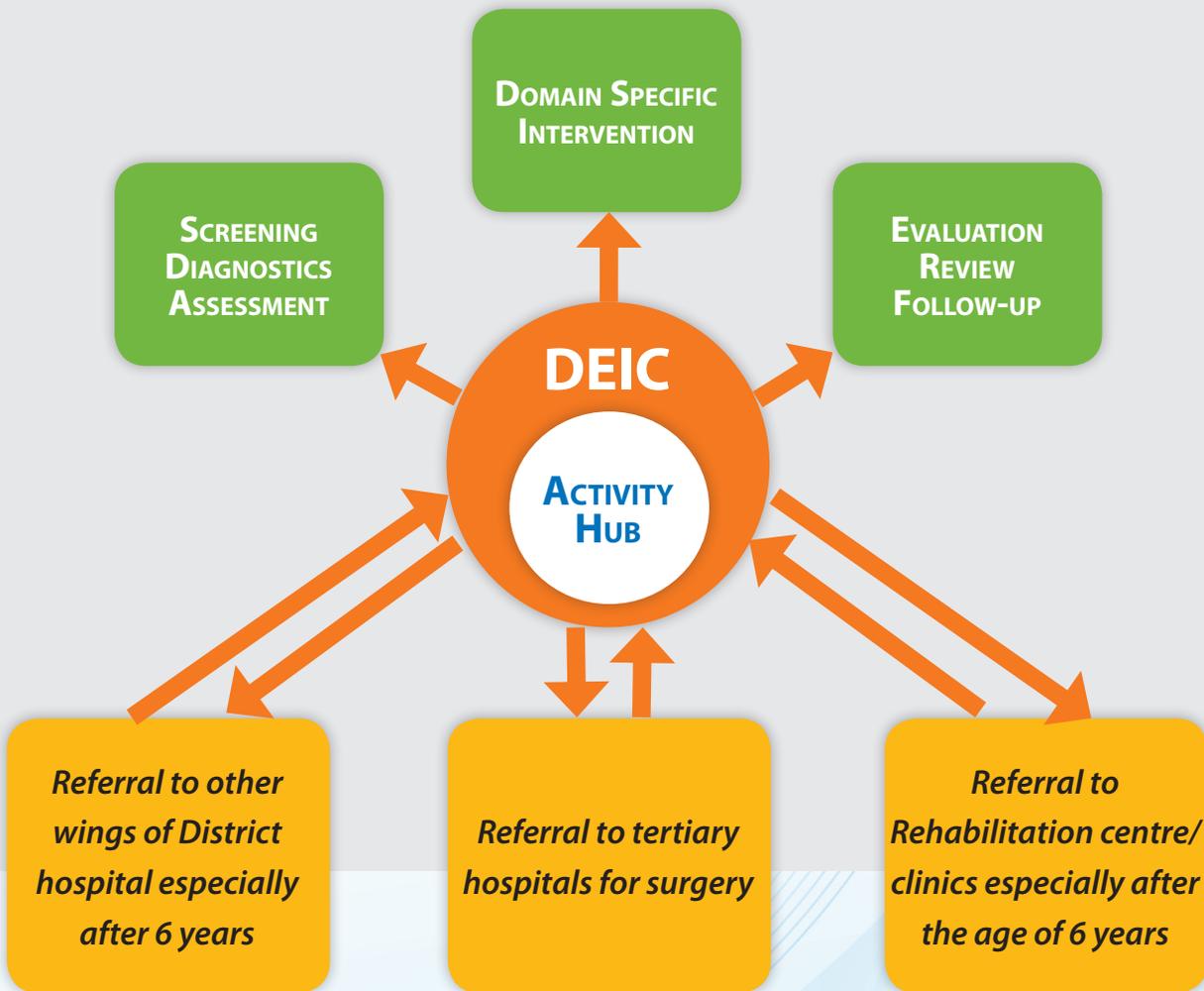
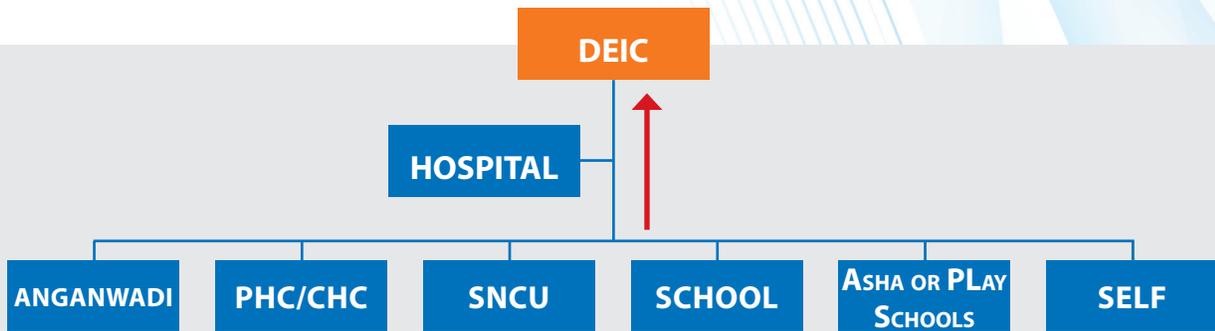
The early intervention centers or District Early Intervention Centers (DEIC) established at the District Hospital level across the country will be the first referral point for further investigations, treatment and appropriate management and will also provide referral support to children detected with health conditions during health screening, primarily for children up to 6 years of age. Tertiary care centres will be involved in the management of complicated cases requiring high-end medical care and treatment and for surgical interventions. RBSK implementation is shown diagrammatically as under:

IMPLEMENTATION OF RBSK

The DEIC will be the hub of all RBSK activities, will act as a clearing house and also provide referral linkages. Referral flow from DEIC will be as shown below:



PROCESS FLOW OF REFERRALS TO AND FROM DEIC



Chapter 3

Population Coverage

The magnitude of 4Ds in India is estimated as follows:

Defects at birth:

- An estimated 17 lakh babies are likely to be born with a birth defects
- They account for 9.6% of all newborn deaths
- 25% of all birth defects are due to:
 - - Congenital Heart Disease
 - - Neural Tube Defects
 - - Down Syndrome
 - - Hemoglobin disorder
 - - G6PD deficiencies

Diseases:

- Dental caries affects 50-60% Indian school children
- Rheumatic heart disease is estimated to affect 1.5 /1000 children

Deficiencies:

- Various deficiencies affect 4-70% preschool children
- 70% under five children anaemic
- 43% underweight

Developmental Delays & Disabilities:

- 10% children are affected with development delays leading to disabilities
- 20% of newborns discharged from SNCUs may have developmental delays

RBSK aims to cover 27 crore children through the public delivery system and thereby reduce out of pocket expenses especially for the poor and under-privileged in a phased manner. The services will cover all children of 0-6 years of age group in rural areas and urban slums through births at public health facilities or at home and at Anganwadi Centres, in addition to older children upto 18 years of age enrolled in classes 1st to 12th in Government and Government aided schools.

Target Group under Child Health Screening and Intervention Services

CATEGORIES	AGE GROUP	ESTIMATED COVERAGE
Babies born at public health facilities and home	Birth to 6 weeks	2 crores
Preschool children in rural areas and urban slums (Data Source: CCEA release 24th Sept, 2012)	6 weeks to 6 years	8 crores
Children enrolled in classes 1st to 12th in Government and Government aided schools (Data Source : Elementary Education in India, 2012, DISE 2010-11: Flash Statistics, NUEPA & DSEL, MoHRD, GOI. and State Report Cards: 2010-11 Secondary education in India, NUEPA)	6 to 18 years	17 crores

3.1 MAGNITUDE OF SELECT HEALTH CONDITIONS

Disease Prevalence Based On Existing Evidence:

DISEASE	PREVALENCE IN COUNTRY	SOURCE OF DATA
Rheumatic Heart Diseases	1.5 per 1000 in school children in the age group 5 to 9 years and 0.13 to 1.1 per 1000 in the age group of 10 to 14 years	Tandon R., Krishna Kumar R. Rheumatic fever & rheumatic heart disease: The last 50 years. Indian J Med Res. 2013 April; 137(4): 643-658
Dental carries	50-60 % among preschool	T.S, Kumar B S, .Prevalence, Severity and Associated Factors of Dental Caries in 3-6 Year Old Children. J Clin Diagn Res. 2013 Aug; 7(8): 1789-1792.
Otitis media	8.60%	Sophia A, Isaac R, Rebekah G, Brahmadathan K, Risk factors for otitis media among preschool, rural Indian children. Int J Pediatr Otorhinolaryngol. 2010 Jun; 74(6): 677-83.
Defects at Birth rate per 10,000 Live Births: 64.3 infants per 1000 live births are born annually with birth defects. Of these 7.9 have Cardiovascular defect, 4.7 have NTD, 1.2 some form of Haemoglobinopathies, 1.6 have Down Syndrome and 2.4 has G6PD deficiency: March of Dimes Report, 2006		
Neural tube defect	Overall birth prevalence of 4.1 per 1000 (41/10,000). Pockets of high prevalence in South, 11.4/1000 births	Burton H, Kar A. Systematic review of birth prevalence of neural tube defects in India. Birth Defects Res A Clin Mol Teratol. 2013 Jul; 97(7): 437-43. Kukarni M L, Mathew M. The range of neural tube defects in southern India. Archives of Disease in Childhood, 1989, 64, 201-204
Down syndrome	1.09 per 1000 live births	Verma et al. Cytogenetic studies in Down Syndrome. Indian Pediatrics. 1998, (28) 991-995.

DISEASE	PREVALENCE IN COUNTRY	SOURCE OF DATA
Cleft Lip +Cleft Palate	Cleft lip + Cleft palate 0.93 for every 1000 live births. Cleft palate alone 0.17 for every 1000 live births.	Mossey P,Julian L. Addressing the challenges of cleft lip and palate research in India. Indian J Plast Surg. 2009 October; 42(Suppl): S9–S18. Reddy G Srinivas. Incidence of cleft Lip and palate in the state of Andhra Pradesh, Indian J Plast Surg.2010 Jul-Dec; 43(2): 184–189.
Talipes (club foot)	The incidence of clubfoot is 1-2 in every 1000 live birth.	Communication from CURE International India Trust (CIIT)
Developmental dysplasia of the hip	One in 1,000 children is born with a dislocated hip, and 10 in 1,000 may have hip subluxation. (No Indian data)	Tredwell SJ. Neonatal screening for hip joint instability. Its clinical and economic relevance. Clin Orthop Relat Res. 1992; 63–8
Congenital heart diseases	Incidence is 8-10 per 1000 live births	Saxena A. Congenital Heart disease in India: A Status Report. Indian J Pediatr 2005; 72 (7): 595-598
Congenital Deafness	Incidence of congenital hearing loss in India reported 5.6 to 10 per 1000 live birth.	Report of the collaborative study on prevalence and etiology of hearing impairment. New Delhi. ICMR department of Science, 1983.16. Nagapoornima P, Rames A, Srilakshmi, Rao S, Patricia PL, Gore M et al. Universal hearing screening. Indian J Pediatr 2007; 74: 545-549
Congenital cataract	The prevalence of cataract in children has been estimated between 1-15/10,000 children	Johar SR, Savalia NK, Vasavada AR, Gupta PD. Epidemiology based etiological study of pediatric cataract in western India. Indian J Med Sci. 2004 Mar; 58(3): 115-21.
Retinopathy of maturity	The incidence of ROP in neonatal intensive care is around 20-22%, and one third of them required Laser to prevent vision loss	Chaudhuri S, Patwardhan V. Retinopathy of Prematurity in a Tertiary Care Center –Incidence, Risk Factors and Outcome. INDIAN PEDIATRICS 219 VOLUME 46,MARCH 17, 2009
<p>*Developmental disabilities: 10 % of children below the age of 6 have developmental delay and **2.5% have developmental disability. **Nair MKC. An Anganwadi based survey, 1998 *Nair MKC. Simplified developmental assessment. Indian Pediatr 1991; 28: 837-840. *C. A. Boyle, P. Decoufle, and M. Yeargin-Allsopp, "Prevalence and Health Impact of Developmental Disabilities in 2000 cases annually at every block U.S. Children," Pediatrics, Mar. 1994 93(3): 399–403.</p>		
Vision Impairment	*Prevalence of undetected vision problems in preschool children is estimated to be 5-10 % *2-4% have strabismus	As per American Academy of Pediatrics: Recommendation for preventive pediatric health care. Pediatrics 2000; 105:645-646

Chapter 4

Health Conditions Identified for Coverage

RBSK Services under NRHM will cover 30 identified health conditions for early detection, free treatment and management shown in the Table below. This booklet lists the surgical procedures and model costs for these surgical interventions required for these conditions under RBSK. Appropriate medical management or domain specific interventions will be undertaken as necessary at the DEIC, Community Health Centre (CHC)/District hospital (DH), Rehabilitation Centre or Adolescent Friendly Health Clinic (AFHC).

HEALTH CONDITIONS FOR CHILD HEALTH SCREENING AND EARLY INTERVENTION SERVICES

Defects at Birth

1. Neural Tube Defect
2. Down's Syndrome
3. Cleft Lip & Palate / Cleft Palate alone
4. Talipes (club foot)
5. Developmental Dysplasia of the Hip
6. Congenital Cataract
7. Congenital Deafness
8. Congenital Heart Diseases
9. Retinopathy of Prematurity

Childhood Diseases

15. Skin conditions (Scabies, Fungal Infection and Eczema)
16. Otitis Media
17. Rheumatic Heart Disease
18. Reactive Airway Disease
19. Dental Caries
20. Convulsive Disorders

30. Congenital Hypothyroidism, Sickle Cell Anaemia, Beta Thalassemia (Optional- based on epidemiological situation and availability of testing and specialized support)

Deficiencies

10. Anaemia especially Severe Anaemia
11. Vitamin A Deficiency (Bitot spot)
12. Vitamin D Deficiency (Rickets)
13. Severe Acute Malnutrition
14. Goiter

Developmental Delays and Disabilities

21. Vision Impairment
22. Hearing Impairment
23. Neuro-Motor Impairment
24. Motor Delay
25. Cognitive Delay
26. Language Delay
27. Behaviour Disorder (Autism)
28. Learning Disorder
29. Attention Deficit Hyperactivity Disorder

4.1 SELECT HEALTH CONDITIONS REQUIRING SURGICAL INTERVENTIONS

Of the 30 health conditions identified for coverage under RBSK, health conditions requiring surgical interventions are as follows:

Defects at birth

1. Neural Tube Defects
 - Spina Bifida
2. Down's Syndrome (depending on associated congenital malformation)
3. Cleft lip and Cleft palate
4. Talipes
5. Developmental Dysplasia of the Hip
6. Congenital Cataract
7. Congenital Deafness
8. Congenital Heart Disease
 - Atrial Septal Defect and AV Canal Defect
 - Ventricular Septal Defect
 - Patent Ductus Arteriosus
 - Truncus Arteriosus
 - Total Anomalous Pulmonary Venous Connection
 - Tetralogy of Falot
- **Pulmonary Atresia/Stenosis**
 - Tricuspid Atresia/Stenosis and Ebstein's Anomaly
 - Aortic Stenosis
 - Transposition of the Great Arteries
 - Coarctation of the Aorta
9. Retinopathy of Prematurity

Diseases

10. Otitis Media
11. Rheumatic Heart Disease
12. Dental Caries

Developmental Delays

13. Vision Impairment
 - Strabismus

Chapter 5

Indications and Timing of Interventions: Select Conditions

5.1 ANENCEPHALY

Surgical interventions are not recommended.

5.2 SPINA BIFIDA

Spina Bifida is closed surgically after birth. A head-to-toe examination is to be done, associated abnormalities (e.g. club foot) must be looked for and managed accordingly. Hydrocephalus is a common association and shunt may be required also.

5.3 CLEFT LIP AND CLEFT PALATE

Cleft lip

Within the first 3 months after birth surgery is performed to close the cleft lip. While surgery to repair a cleft lip can be performed soon after birth, the preferred age is at approximately 10 to 12 weeks of age. If the cleft is bilateral and extensive, two surgeries may be required to close the cleft, one side first, and the second side a few weeks later.

Cleft palate

Cleft palate surgery should be performed between 6 and 18 months of age, preferably between 12-18 months. A head-to-toe examination is to be done for cleft lip and cleft palate and associated abnormalities if any, must be treated.

5.4 TALIPES (CLUB FOOT)

Ponseti method

The majority of clubfeet can be corrected in infancy in about six to eight weeks by manipulation and casting using the Ponseti method. Treatment should be initiated immediately upon diagnosis, preferably within the first week of life.

Casting

Treatment for the newborn with clubfoot is by manipulation to correct the condition and then casting to maintain the correction. Casts are changed at weekly intervals for four weeks, and most deformities are corrected in two months to three months. After the last cast is removed, the foot should appear overcorrected.

Tenotomy

If the deformity does not correct after four plaster casts, tenotomy is required. The Achilles tendon is cut to complete the correction of the foot and a cast is applied. Tenotomy is required in around 90% of cases.

Bracing

Despite successful initial treatment, clubfeet have a natural tendency to recur. Bracing is an integral part of the Ponseti method and is necessary for several years to prevent relapses. If the brace is not worn as prescribed there is a 90 percent recurrence rate. The Steenbeek Foot Abduction Braces (SFAB) are to be worn fulltime (23 hours per day) for the first 3 months after casting, and then at night (while the child is sleeping) until the child is about 4 years old.

5.5 DEVELOPMENTAL DYSPLASIA OF THE HIP

Pavlik harness

In newborns and infants up to four months of age, immobilization in a Pavlik harness is the treatment of choice. Pavlik harness is used full time after hip reduction by Ortolani's manoeuvre has been attempted. Reduction of the hip should be confirmed by ultrasonography within two weeks of harness placement. Treatment usually is continued for at least six weeks full-time and six weeks part-time in young infants, and may be longer in older children. The end point of brace treatment is a stable hip with normal imaging studies.

Closed reduction and hip spica

Closed reduction and hip spica is the treatment of choice in children between 4 and 18 months of age. If a dislocated hip is not reduced within two weeks or Pavlik harness is not effective, the harness should be discontinued and closed reduction under anesthesia with hip spica casting is done. Postoperative computed tomography or magnetic resonance imaging should be used to confirm concentric reduction. Immobilization in the hip spica cast after closed reduction is continued till the hip is stable with sequential cast change a 6 week intervals.

Open reduction and hip spica

If the hip is irreducible by closed means, or a reduction is not achieved, or if a child is diagnosed after 18 months of age, open reduction is indicated. The operation involves loosening the tendons around the hip and removing anything that is stopping the hip from moving freely. Once the bones are in a good position, the joint is strengthened. Children who undergo open reduction should wear a hip spica cast for a period of 12 weeks.

Femoral osteotomy, acetabular osteotomy, pelvic support osteotomy

Additionally femoral, acetabular or pelvis support osteotomy may be required to reconstruct and safely maintain the hip in a reduced position. This involves removing some parts of the bone and joint so that the hip can be kept in the right position.

5.6 CONGENITAL CATARACT

Congenital cataract produces deprivation amblyopia and can thus cause lifelong visual impairment. Successful management is dependent on early diagnosis and referral for surgery. However, all congenital cataracts do not require surgical removal. Cataracts that cloud only the peripheral portion of the lens may not need removal, because central vision remains unimpeded. Very small cataracts, too, may not require surgery.

Once visually significant cataract is detected, it should be operated as early as possible. Operations on children less than one month of age have a higher incidence of glaucoma. The ideal age for cataract operation is 4 to 6 weeks of age. In any case cataract surgery should be performed within 8 to 12 weeks to prevent development of deprivation amblyopia. Unilateral congenital cataract surgery within 6 weeks of birth produces the best outcomes. For bilateral congenital cataract, surgery should be performed within 10 weeks. In symmetrical bilateral cases, the second eye should be operated on within one to two weeks of the first. When there is significant asymmetry, the denser cataract should be removed first; surgery on the second eye may then be deferred until after the first eye receives optical correction.

5.7 CONGENITAL DEAFNESS

Profound deafness in childhood affects the development of auditory speech perception, speech production, and English language skills. Cochlear implantation is recommended as an option for children with severe-to-profound deafness (hearing only sounds that are louder than 90 dB HL at frequencies of 2 and 4 kHz without acoustic hearing aids) who do not receive adequate benefit from acoustic hearing aids. Children who are implanted before the age of 2 seem to do better than those implanted between 2 and 5 years old. RBSK will provide Cochlear implants for children below the age of 2 years.

Pre-requisites for cochlear implantation:

Candidates for cochlear implantation require (a) a medical evaluation by an otolaryngologist, including history, physical examination and (b) imaging studies of the temporal bone. High resolution computed tomography (CT) scan, magnetic resonance imaging (MRI), or both, are necessary to identify the implantable cochlea and patent internal auditory canal. Electrical promontory stimulation is indicated when auditory nerve integrity is in doubt.

Criteria for selection of a cochlear implantation:

- i. The patient should be free of active ear disease
- ii. Have an intact tympanic membrane,
- iii. A pure tone audiogram demonstrating severe-to-profound deafness

- iv. Bilateral sensorineural hearing loss should be confirmed by acoustic reflex data and by auditory brainstem responses to both clicks and tonal stimuli.
- v. Only if no improvement after repeated Behavioral audiological tests following the provision of appropriate electroacoustic amplification and training
- vi. A cochlear implant is indicated only after the child has had a sufficient trial with hearing aid amplification.

5.8 CONGENITAL HEART DISEASE

Congenital heart diseases (CHD) refer to structural or functional heart diseases, which are present at birth. Some of these lesions may be discovered later.

Prevalence of CHD

The reported incidence of congenital heart disease is 8-10/1000 live births according to various series from different parts of the world. It is believed that this incidence has not changed much over the years. Nearly 33% to 50% of these defects are critical, requiring intervention in the first year of life itself. With a believed incidence rate of 6-8 per 1000 live births; nearly 180,000 children are born with heart defects each year in India. Of these, nearly 60,000 to 90,000 suffer from critical cardiac lesions requiring early intervention. Approximately 10% of present infant mortality in India may be accounted for by congenital heart diseases alone.

CHD Guidelines

The Working Group on Management of Congenital Heart Diseases in India have devised guidelines for the Management of Congenital Heart Diseases in India published in 2008 following a National Consensus Meeting held on 26th August 2007 at AIIMS.

These guidelines would help determine:

- A. Documentation of the pre-operative investigations which are mandatory for authorization prior to surgery.
- B. Ideal age for intervention or timing of surgery.
- C. Cases where surgery is not indicated.
- D. Chances of spontaneous improvement and by which age.

Every pediatrician/ cardiologist/ other health care provider must strive to get a complete diagnosis on a child suspected of having heart disease, even if that requires referral to a higher center.

These guidelines are meant to assist the health care provider for managing cases with congenital heart diseases. While these may be applicable to the majority, each case needs individualized care based on clinical judgment and exceptions may have to be made.

Categorization of Recommendations for surgery

The recommendations are classified into three categories according to their strength of agreement:

Class I: General agreement exists that the treatment is useful and effective.

Class II: Conflicting evidence or divergence of opinion or both about the usefulness/ efficacy of treatment.

Ila: Weight of evidence/ opinion is in favor of heart disease of the primary health care provider usefulness/ efficacy.

Ilb: Usefulness/ efficacy is less well established.

Class III: Evidence and/or general agreement that the treatment is not useful and in some cases may be harmful. These procedures should not be undertaken for surgery as evidence goes against it.

5.8.1 ATRIAL SEPTAL DEFECT (ASD) OTHER THAN PRIMUM TYPE

ASD	
<p>Mode of diagnosis: Physical examination, ECG, X-ray Chest, transthoracic echocardiography (transesophageal echo in select cases).</p>	<p>Spontaneous closure: Rare if defect >8 mm at birth. Rare after age 2 years. Very rarely an ASD can enlarge on follow up.</p>
<p>Patent foramen ovale: Echocardiographic detection of a small defect in fossa ovalis region with a flap with no evidence of right heart volume over-load (dilatation of right atrium and right ventricle). Patent foramen ovale is a normal finding in newborns.</p>	<p>Indication for closure: ASD associated with right ventricular volume overload</p>
<p>Ideal age of closure:</p> <p>(i) In asymptomatic child: 2-4 years (<i>Class I</i>). (For sinus venosus defect surgery may be delayed to 4-5 years (<i>Class IIa</i>)).</p> <p>(ii) Symptomatic ASD in infancy (congestive heart failure, severe pulmonary artery hypertension): seen in about 8%-10% of cases. Rule out associated lesions (e.g., total anomalous pulmonary venous drainage, left ventricular inflow obstruction, aorto-pulmonary window). Early closure is recommended (<i>Class I</i>).</p> <p>(iii) If presenting beyond ideal age: Elective closure irrespective of age as long as there is right heart volume overload and pulmonary vascular resistance is in operable range (<i>Class I</i>).</p>	
<p>Method of closure:</p> <p>Surgical: Established mode.</p> <p>Device closure: More recent mode, may be used in children weighing >10 kg and having a central ASD (<i>Class IIa</i>).</p>	

contd.

5.8.2 ATRIOVENTRICULAR SEPTAL DEFECT (AVSD)

AVSD

Mode of diagnosis:

Physical exam, ECG (left axis deviation of QRS), X-ray chest, echocardiography.

Types:

- Complete form: Primum ASD, Inlet VSD (nonrestrictive), large left to right shunt, pulmonary artery hypertension. Congestive heart failure often present.
- Partial form: Primum ASD with or without restrictive inlet VSD. Congestive heart failure and severe pulmonary hypertension unlikely.

Either type may be associated with variable degree of AV regurgitation or Down's syndrome; early pulmonary hypertension may develop in these children.

Timing of intervention:

- Complete AVSD with uncontrolled congestive heart failure: Surgery as soon as possible; complete repair / pulmonary artery banding according to institution policy (Class I).
- Complete AVSD with controlled heart failure: Complete surgical repair by 3-6 months of age (Class I). Pulmonary artery banding if risk of cardiopulmonary bypass is considered high (Class IIb).
- Partial AVSD, stable: Surgery at about 2-3 years of age (Class I).

Associated significant AV regurgitation may necessitate early surgery.

5.8.3 VENTRICULAR SEPTAL DEFECT (VSD)

VSD

Mode of diagnosis:

Physical examination, ECG, X-ray chest and echocardiography.

Location of the defect:

Type I: Subarterial (outlet, subpulmonic, supracristal or infundibular)
 Type II: Perimembranous (subaortic)
 Type III: Inlet
 Type IV: Muscular.

Size of the defect:

- **Large (nonrestrictive):** Diameter of defect is approximately equal to diameter of the aortic orifice, right ventricular systolic pressure is systemic, and degree of left to right shunt depends on pulmonary vascular resistance.
- **Moderate (restrictive):** Diameter of the defect is less than that of the aortic orifice. Right ventricular pressure is half to two third systemic and left to right shunt is >2:1.
- **Small (restrictive):** Diameter of the defect is less than one third the size of the orifice. Right ventricular pressure is normal and the left to right shunt is <2:1.

Natural History:

About 10% of large nonrestrictive VSDs die in first year, primarily due to congestive heart failure. Spontaneous closure is uncommon in large VSDs. 30%-40% of moderate or small defects (restrictive) close spontaneously, majority by 3-5 years of age. Decrease in size of VSD is seen in 25%.

VSD

Timing of closure:

(Class of recommendation: I, except for the last one)

- Large VSD with uncontrolled congestive heart failure: As soon as possible.
- Large VSD with severe pulmonary artery hypertension: 3-6 months.
- Moderate VSD with pulmonary artery systolic pressure 50%-66% of systemic pressure: Between 1-2 years of age, earlier if one episode of life threatening lower respiratory tract infection or failure to thrive.
- Small sized VSD with normal pulmonary artery pressure, left to right shunt >1.5:1: Closure by 2-4 years.
- Small outlet VSD (<3mm) without aortic valve prolapse: 1-2 yearly follow up to look for development of aortic valve prolapse.
- Small outlet VSD with aortic valve prolapse without aortic regurgitation: Closure by 2-3 years of age irrespective of the size and magnitude of left to right shunt.
- Small outlet VSD with any degree of aortic regurgitation: Surgery whenever aortic regurgitation is detected.
- Small perimembranous VSD with aortic valve prolapse with no or mild aortic regurgitation: 1-2 yearly follow up to look for any increase in aortic regurgitation.
- Small perimembranous VSD with aortic cusp prolapse with more than mild aortic regurgitation: Surgery whenever aortic regurgitation is detected.
- Small VSD with more than one episode of infective endocarditis: Early VSD closure recommended.
- Small VSD with one previous episode of infective endocarditis: Early VSD closure recommended (Class IIb).

Method of closure:

- Surgical closure.
- Device closure for muscular VSD in those weighing >15 Kg. (Class IIa). For peri-membranous VSD (Class IIb).
- Pulmonary artery banding is indicated for multiple (Swiss cheese) (Class I), or very large VSD, almost single ventricle (Class IIa), infants with low weight (<2 Kg) (Class IIa), and those with associated co-morbidity like chest infection (Class IIb).

5.8.4 PATENT DUCTUS ARTERIOSUS (PDA)

PDA

Mode of diagnosis:

Physical examination, ECG, X-ray chest and echocardiography.

Size of PDA:

Large PDA: Associated with significant left heart volume overload, congestive heart failure, severe pulmonary arterial hyper-tension. PDA murmur is unlikely to be loud or continuous.

- Moderate PDA: Some degree of left heart overload, mild to moderate pulmonary artery hypertension, no/mild congestive heart failure. Murmur is continuous.
- Small PDA: Minimal or no left heart overload. No pulmonary hypertension or congestive heart failure. Murmur may be continuous or only systolic.
- Silent PDA: No murmur, no pulmonary hyper-tension. Diagnosed only on echo Doppler.

Spontaneous closure:

Small PDAs in full term baby may close up to 3 mo of age, large PDAs are unlikely to close.

Timing of closure:

- Large/ moderate PDA, with congestive heart failure, pulmonary artery hypertension: Early closure (by 3-6 months) (*Class I*).
- Moderate PDA, no congestive heart failure: 6 months-1 year (*Class I*). If failure to thrive, closure can be accomplished earlier (*Class IIa*).
- Small PDA: At 12-18 months (*Class I*).
- Silent PDA: Closure not recommended (*Class III*).

Mode of closure:

Can be individualized. Device closure, coils occlusion or surgical ligation in children >6 months of age. Surgical ligation if <6 months of age. Device/ coils in <6 months (*Class IIb*). Indomethacin/ ibuprofen not to be used in term babies (*Class III*).

PDA in a preterm baby:

- Intervene if baby in heart failure (small PDAs may close spontaneously).
- Indomethacin or Ibuprofen (if no contraindication) (*Class I*).
- Surgical ligation if above drugs fail or are contraindicated (*Class I*).
- Prophylactic indomethacin or ibuprofen therapy: Not recommended (*Class III*).

5.8.5 COARCTATION OF AORTA (COA)

COA

Mode of diagnosis:

Femoral pulse exam (may not be weak in neonates with associated patent ductus arteriosus), blood pressure in upper and lower limbs, X-ray chest, echo. In select cases CT angiography/ magnetic resonance imaging may be required.

Timing of Intervention:

- With left ventricular dysfunction / congestive heart failure or severe upper limb hypertension (for age): Immediate intervention (*Class I*).
- Normal left ventricular function, no congestive heart failure and mild upper limb hypertension: Intervention beyond 3-6 months of age (*Class IIa*).
- No hypertension, no heart failure, normal ventricular function: Intervention at 1-2 of age (*Class IIa*).

Intervention is not indicated if Doppler gradient across coarct segment is <20 mmHg with normal left ventricular function (*Class III*).

COA

Mode of intervention:

- Balloon dilatation or surgery for children >6 mo of age.
- Surgical repair for infants <6 mo of age.
- Balloon dilatation with stent deployment can be considered in children >10 years of age if required (*Class IIb*).
- Elective endovascular stenting of aorta is contraindicated for children <10 years of age (*Class III*).

5.8.6 AORTIC STENOSIS (AS)

AS

Mode of diagnosis:

Physical examination, ECG, echocardiography.

Timing of intervention: Valvular AS:

- **For infants and older children:**
 - Left ventricular dysfunction: Immediate intervention by balloon dilatation, irrespective of gradients (*Class I*).
 - Normal left ventricular function: Balloon dilatation if any of these present:
 - (i) gradient >80 mmHg peak and 50 mmHg mean by echo-Doppler (*Class I*)
 - (ii) ST-T changes ECG with peak gradient of >50 mmHg (*Class I*)
 - (iii) symptoms due to AS with peak gradient of >50 mmHg (*Class IIa*). In case of doubt about severity/symptoms, an exercise test may be done for older children (*Class IIb*).
- **For neonates:**

Balloon dilatation if symptomatic or there is evidence of left ventricular dysfunction/ mild left ventricular hypoplasia (*Class I*), or if doppler gradient (peak) >75 mmHg (*Class IIa*).

Subvalvular AS due to subaortic membrane:

Surgical intervention if any of the following (*Class I*): Peak gradient >64 mmHg; or aortic regurgitation of more than mild degree.

5.8.7 VALVULAR PULMONIC STENOSIS (PS)

PS

Mode of diagnosis:

Physical examination, ECG, echocardiography.

PS

Timing of intervention: Valvular AS:

- Right ventricular dysfunction: Immediate intervention irrespective of gradient (*Class I*).
- Normal right ventricular function: Balloon dilatation if Doppler gradient (peak) >60mmHg (*Class I*).
- In neonates: Balloon dilatation indicated if right ventricle dysfunction/ mild hypoplasia or hypoxia present (*Class I*).

5.8.8 TETRALOGY OF FALLOT (TOF)

TOF

Mode of diagnosis:

Physical exam, ECG, X-ray chest, Echocardiography. In select cases, cardiac catheterization, CT angio and / or Magnetic resonance imaging may be required.

Medical Therapy:

Maintain Hb >14 g/dL (by using oral iron or blood transfusion). Beta blockers to be given in highest tolerated doses (usual dose 1-4 mg/kg/day in 2 to 3 divided doses).

Timing of surgery:

All patients need surgical repair.

- Stable, minimally cyanosed: Total correction at 1-2 years of age or earlier according to the institutional policy (*Class I*).
- Significant cyanosis (SaO < 70%) or history of spells despite therapy
- <3 months: systemic to pulmonary artery shunt (*Class I*).
- >3 months: shunt or correction depending on anatomy and surgical centers' experience (*Class I*).
- VSD with pulmonary atresia, adequate PAs: Repair at 3-4 years, if right ventricle to pulmonary artery conduit required (*Class I*). Systemic to pulmonary artery shunt if symptomatic earlier and repair without conduit is not possible.

5.8.9 TOF LIKE CONDITION WHERE TWO VENTRICULAR REPAIR IS POSSIBLE (TRANSPOSITION OF THE GREAT ARTERIES {TGA} WITH ROUTABLE VSD)

TOF LIKE CONDITION WHERE TWO VENTRICULAR REPAIR IS POSSIBLE

Timing of surgery:

For stable cases who are mildly blue (*Class I*): repair at 1-2 years of age if conduit not required; repair at 3-4 years of age if conduit required. Perform a systemic to pulmonary shunt if the child presents earlier with significant cyanosis (SaO <70%).

5.8.10 TOF LIKE CONDITION WHERE TWO VENTRICULAR REPAIR NOT POSSIBLE (TRICUSPID ATRESIA, TGA WITH NON-ROUTABLE VSD)

TOF LIKE CONDITION WHERE TWO VENTRICULAR REPAIR IS POSSIBLE

Timing of surgery:

- Stable, mildly cyanosed: Direct Fontan operation (total cavopulmonary shunt) at 3-4 years (*Class I*).
- Stable, mildly cyanosed: Glenn (superior vena cava to pulmonary artery shunt) at 1 year, Fontan at 3-4 years (*Class IIa*).
- Significant cyanosis (SaO <70%) <6 mo: Systemic to pulmonary shunt followed by Glenn at 9 mo-1 year and Fontan at 3-4 years (*Class I*).
- Significant cyanosis (SaO <70%) >6 mo: Bidirectional Glenn followed by Fontan at 3-4 years of age (*Class I*).

5.8.11 TRANSPOSITION OF GREAT ARTERIES (TGA)

TGA

Mode of diagnosis:

Physical exam, X-ray chest, Echocardiography.

Balloon atrial septostomy:

Indicated (if ASD is restrictive) in: TGA with intact ventricular septum (*Class I*); TGA with VSD and/or PDA if surgery has to be delayed for a few weeks due to some reason (*Class IIa*).

Timing of surgery:

- TGA with Intact interventricular septum
 - If <3-4 wks of age: Arterial switch immediately (*Class I*).
 - If >3-4 wks of age at presentation: Assess left ventricle by echo. If the left ventricle is decompressed: Senning / Mustard at 3-6 mo (*Class IIa*), or rapid two stage arterial switch (*Class IIb*). Approach would depend on institutional practice. If the left ventricle is still prepared, very early arterial switch operation (*Class IIa*) is indicated. In borderline left ventricle: Senning or Mustard (*Class IIa*); or arterial switch operation (*Class IIb*) is indicated. Adequacy of left ventricle for arterial switch operation can be assessed by echo in most cases.
- TGA with ventricular septal defect: Arterial switch operation, by 3 months of age (*Class I*).

5.8.12 TOTAL ANOMALOUS PULMONARY VENOUS CONNECTION (TAPVC)

TAPVC

Mode of diagnosis:

Physical exam, X-ray chest, ECG and Echo. Cath / CT angio may be required in select cases.

TAPVC

Types of TAPVC:

- Type I: Anomalous connection at supracardiac level (to innominate vein or right superior vena cava).
- Type II: Anomalous connection at cardiac level (to coronary sinus or right atrium).
- Type III: Anomalous connection at infradiaphragmatic level (to portal vein or inferior vena cava).
- Type IV: Anomalous connection at two or more of the above levels.

Each type can be obstructive (obstruction at one of the anatomic sites in the anomalous pulmonary venous channel) or non-obstructive. Type III is almost always obstructive.

Timing of surgery:

- Obstructive type: Emergency surgery (*Class I*).
- Non obstructive type: As soon as possible (beyond neonatal period if baby is clinically stable) (*Class I*).
- Those presenting after 2 years of age: Elective surgery whenever diagnosed, as long as pulmonary vascular resistance is in operable range.

5.8.13 PERSISTENT TRUNCUS ARTERIOSUS (TA)

TA

Mode of diagnosis:

Physical exam, X-ray chest and Echo.

Timing of surgery:

Total repair using right ventricle to pulmonary artery conduit. If congestive heart failure remains uncontrolled despite therapy: as soon as possible (*Class I*). If stable, controlled congestive heart failure: by 6-12 weeks of age (*Class I*). The prospects of repeat surgeries for conduit obstruction should be discussed with parents. Pulmonary artery banding if total repair not possible (*Class IIb*).

(Source: Working Group on Management of Congenital Heart Diseases in India. Consensus on Timing of Intervention for Common Congenital Heart Diseases. *Indian Pediatr.* 2008 Feb; 45(2): 117-126.)

5.9 RETINOPATHY OF PREMATURE (ROP)

Retinopathy of prematurity (ROP) is a disorder of the developing retina of low birth weight preterm infants that potentially leads to blindness in a small but significant percentage of those infants.

Screening for ROP aims to identify treatable stage of disease, there being a narrow window for screening and treatment as any delay may result in blindness or visual impairment as below.

- i. All children with birth weight < 1750 gms and period of gestation < 34 weeks should be screened for ROP.

- ii. Screening should begin 4 weeks (30 days) after birth and once before discharge from NICU/ SNCU.
- iii. Screening should be done by an ophthalmologist who knows indirect ophthalmoscopy and has a basic knowledge of ROP staging.

Laser surgery should generally be accomplished within 72 hours of determination of treatable disease to minimize the risk of retinal detachment. For Aggressive Posterior ROP, which is an emergency, the window is reduced to 48 hours.

5.10 STRABISMUS

Strabismus may lead to a failure to develop binocular vision, and amblyopia. Timely diagnosis and appropriate treatment of children with strabismus can reduce the prevalence of amblyopia and ocular misalignment in later childhood and adult life.

Intermittent deviation of the eyes is a quite common finding in healthy neonates and should not cause undue concern. Normal binocular coordination becomes evident at about three months and any persistent strabismus, after this age, is significant.

In many cases, the management of strabismus in children commences with glasses. A period of refractive adaption is recommended after glasses have been prescribed, until the vision is stable, as the visual acuity can improve with glasses alone. This may take up to 18 weeks. Following this, surgery may be required.

Chapter 6

Methodology Adopted by RBSK

This section describes the methodology adopted in selecting surgical procedures for the 13 identified health conditions and determining model costs for these procedures.

6.1 SELECTION AND CODING OF SURGICAL PROCEDURES

A list of surgical therapy packages was prepared for health conditions under RBSK by compiling therapies listed under Employees Health Scheme (EHS) for the State of Andhra Pradesh (2014), Rajiv Aarogyasri Health Insurance Scheme for BPL and others in the Andhra Pradesh (2014), Central Government Health Scheme (CGHS) packages (2010/11), Yeshasvini Health Insurance Scheme for rural farmers in Karnataka (2012), Rashtriya Swasthya Bima Yojana (RSBY) packages (2013), Employee's State Insurance Corporation (ESIC) packages and as per the recommendations of various experts from the Technical Resource Group (TRG) on Birth Defects for the health conditions under RBSK, approved by the ministry.

The list was circulated among TRG members for their comments. Surgical procedures which were found to be most useful were retained in the list. Procedures which were found to be obsolete, had poor outcomes or were not recommended by the experts were removed from the list. Additional procedures recommended by experts, which were not in the original list, were added as per their recommendations and the revised list of surgical procedures was circulated to the TRG experts before finalization.

The Ninth International Classification of Diseases Procedure Coding System (ICD 9 PCS) codes were assigned to surgical packages. The International Classification of Disease is the standard diagnostic tool for epidemiological, health management and clinical recording, reporting, monitoring, compilation, analytic and decision-making purposes. Since the tenth ICD procedure codes (ICD 10 PCS - to be implemented from October 2014 internationally) were found to be too complicated to follow even by specialists, RBSK procedures were coded using ICD 9 PCS codes. Surgical Procedures to be undertaken under RBSK were also assigned RBSK procedure codes serially, for convenience.

6.2 METHODOLOGY FOR COSTING OF SURGICAL PROCEDURES

In order to arrive at package prices for surgical procedures under RBSK, package prices for surgical therapies under EHS for the State of Andhra Pradesh (2014), Rajiv Aarogyasri Health Insurance Scheme for BPL and others in the Andhra Pradesh (2014), CGHS packages (2010/11),

Yeshasvini Health Insurance Scheme for rural farmers in Karnataka (2012), RBSY packages (2013), ESIC packages, private sector recommendations based on inputs from private sector experts / members of Technical Resource Group (TRG) on Birth defects Welfare for RBSK and inputs from a UNDP appointed health economist from the Public Health Foundation of India (PHFI) were considered.

Pricing of therapies was done based on a reasonable estimate of costing for the next few years from the sources consulted as mentioned above. A reasonable estimate was taken to be the highest government approved package for a surgical procedure, from the sources consulted, since the package rates would be futuristic and would apply for the next few years. Representatives from the National RBSK Unit and the health economist, visited the Aarogyasri Trust to study the methodology by which package prices were arrived at by the Trust for the Andhra Pradesh government for their satisfaction. While fixing costs, the team relied heavily on the EHS package of AP developed by Aarogyasri Trust since the trust had followed a scientific approach based on collection and compilation of clinical inputs on surgery costs, hospital stay, laboratory investigations, imaging investigations, drugs, consumables and implants for each procedure at current 2014 prices.

EACH SURGICAL PACKAGE UNDER RBSK INCLUDES COST OF ALL PRE-OPERATIVE AND POST-OPERATIVE INVESTIGATIONS, COST OF SURGERY, COST OF POST-OPERATIVE CARE INCLUDING HOSPITAL STAY AND FOLLOW UP CARE, DRUGS, CONSUMABLES AND IMPLANTS/STENTS/COILS/GRAFTS.

The list of suggested procedures and estimated costs under RBSK prepared by the National RBSK Unit were shared with TRG members, Aarogyasri Trust and the health economist for suggestions along with justifications. In order to further reconcile differences in pricing between schemes (e.g Arogyasri and Yeshasvini packages), the actual claim settlements made were also studied for 2012-13 besides package costs. Based on inputs received from experts and claim settlements made, the list was revised and resent to TRG members for comments. The list was revised once again based on inputs received. Approval from the Health Economist on costing of procedures was also obtained. Approval on the final list was obtained individually from TRG member representatives of each specialty on the list of procedures and costing for surgical packages.

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- Mr. Asis Ghosh (Consultant, RBSK)

As an example of how packages were derived, the methodology adopted for the pricing of cardiology procedures, which are most cost intensive, is described. After the list and suggested pricing for cardiology procedures was prepared as described above, inputs were taken from

paediatric cardiologists. Three eminent paediatric cardiologists were involved in the process from All India Institute of Medical Sciences, BLK Children's Heart Institute Delhi and Amrita Institute of Medical Sciences Cochin, with final decisions being taken by the Paediatric Cardiologist from AIIMS. Based on their inputs changes in the list of cardiology procedures were made as follows:

- Routine operations for Congenital Heart Disease and Rheumatic Heart Disease were retained.
- Some procedures which were found to be outdated or too complicated with poor outcomes were removed.
- The package rates of neonates and infants requiring special attention postoperatively were enhanced.
- To prevent unnecessary procedures and misuse of funding, cardiology procedures would receive pre-authorization / pre-operative approval from RBSK identified cardiologists. Broad indications and contra-indications for cardiology procedures are mentioned in the list. For detailed indications and contra-indications for cardiology procedures, the article 'Consensus on Timing of Intervention for Common Congenital Heart Diseases' by the Working Group on management of Congenital Heart Diseases in India (Indian Pediatrics, Volume 45 – February 17, 2008) can be referred to.

Other package costs were derived in consultation with TRG experts on the subject in a similar manner.

6.3 PRE-AUTHORIZATION AND CLAIMS SETTLEMENT

It is mandatory to do pre-operative investigations as advised and to get pre-authorization from RBSK authorized experts prior to conducting surgical procedures under RBSK. Once the DEIC or Tertiary care institution has made a diagnosis, the details of the case, including pre-operative investigations will be sent to the DEIC Manager by email. The DEIC manager will refer the details of the case to pre-authorization experts for approval of surgery. The approval obtained will be communicated to the treating institution in a time-bound period. A list of government institutions of academic excellence will be consulted and identified for being a part of the pre-authorization process.

Similarly, claim settlements post-operatively will be made on furnishing post-operative evidence as prescribed by RBSK and when reasonable follow up required for the procedure has been done.

'LETTER OF DISCLAIMER' IS TO BE SUBMITTED BY THE HEAD OF THE INSTITUTION INDICATING THAT "NO FUNDS IS COLLECTED/RAISED FROM QUASI-GOVERNMENT INSTITUTIONS, CORPORATES, PROFESSIONAL BODIES OR INDIVIDUALS TOWARDS THE PROCEDURE BEFORE AND AFTER" BEFORE CLAIMS SETTLEMENT IS MADE FOR EACH CASE.

The Ministry of Health & Family Welfare, Govt. of India, in consultation with various stakeholders has prepared a master list of 2179 procedures under various Government and private insurance schemes for CGHS. Once costing of packages in this list is finalized by the ministry, RBSK will also adhere to this list. Till then, the suggested recommendations will be followed in Table 1 given on the next page. A comparison of suggested Treatment packages under RBSK with other treatment packages consulted is given in Table 2.

Chapter 7

Procedures and Model Costing of Surgical Packages

7.1 PRE-REQUISITES FOR SURGICAL MANAGEMENT

It is mandatory that states ensure that the following guidelines are met before undertaking surgical management of health conditions under RBSK.

1. States/UTs to map Secondary and Tertiary health institutes in the public sector to serve as management and referral centres for various surgical interventions under RBSK. A committee of domain experts, preferably from State Medical Colleges will assess institutes for:
 - a. Capacity of any institution specifically for equipment/infrastructure/manpower for feasibility of conducting any (one or more) particular surgery
 - b. Assess existing waiting period for surgeries after confirmation of diagnosis, if the institution is already catering to this age group
 - c. Assess capacity of the institution to train manpower in the respective domains.

Referrals to these identified institutions for specific health conditions would then accelerate the services accessed by children requiring surgical interventions.

2. Tertiary health care facilities which are thus found 'eligible' would then be entitled for respective surgical packages according to RBSK model costing. Part of the total cost may also be used for strengthening the institute and part should also be earmarked to the surgical team as an incentive.
3. A committee of technical experts (from the public sector) of a particular Government institute should be constituted to authorize the surgery (that is, whether required or not, type of surgical procedure to be undertaken and timing of surgery) based on the medical records of the patient communicated electronically to the committee and its decision communicated to the State/District RBSK nodal person electronically. These records are to be maintained by the by the RBSK nodal person for medical audit.
4. Claims are to be cleared only when pre-operative and post-operative records are maintained and pre-operative authorization has been obtained as per the guidelines. Such records are also to be maintained by the institutions for medical audit.

The following records will checked for reimbursements and the amount will be disbursed as given in these guidelines, without any deviations:

- a. Pre-authorization procedures followed including:
 - i. Findings in Screening cum referral form
 - ii. Pre-authorization investigations done (bare minimum investigations should be conducted)
 - iii. Pre-authorization approval in writing for treatment undertaken
 - b. Operative procedures followed:
 - i. Pre-operative and post-operative photographs
 - ii. Other evidence as per these procedures and model costing guidelines
 - iii. Case records
 - c. Post-operative procedures followed
 - i. Documentation of post-operative hospital stay
 - ii. Records of post-operative follow up undertaken including investigations
 - iii. Documentation of any supportive care given.
5. A 'Letter of Disclaimer' by the Head of the Institution identified to undertake surgical procedures under RBSK must indicate that "No funds is collected/raised from quasi-government institutions, corporates, professional bodies or individuals towards the procedure before and after". This signed disclaimer must accompany each claim put up for settlement for each case surgically managed.
 6. Documentation before the operation and after the operation based on the guidelines, including follow up of such cases, must also be maintained by the State/UT for each surgical procedure for audit.
 7. The surgical procedures undertaken under RBSK and their costing will be reviewed and updated periodically as per the recommendations of technical experts as new evidence emerges and management practice and costing patterns change.
 8. Tertiary care institutes in private sector may be considered as referral centres by technical experts only if the public sector does not have the facility for a particular procedure. A committee of domain experts, preferably from State Medical Colleges will assess the private institutes for:
 - a. Capacity of any institution specifically for equipment/infrastructure/manpower for feasibility of conducting any (one or more) particular surgery
 - b. Assess existing waiting period for surgeries after confirmation of diagnosis, if the institution is already catering to this age group
 - c. Assess capacity of the institution to train manpower in the respective domains.
 - d. The Committee shall also prepare a plan with a time line to develop capabilities within the existing government sector.

The modalities of such private sector collaboration must be clearly explained and worked out through a clearly defined Memorandum of Understanding (MoU). This exercise needs to be reviewed after every 12 months and renewal of MoU will be based on past experience and requirement. States/UTs however, are simultaneously required to work towards improving capacity of respective public sector institutions. Identified National Collaborative Centres would technically support State/UT in this capacity improvement.

7.2 Model Costing of Surgical Packages

This section outlines the Model costs of surgical packages under RBSK to be used as a reference by the states. A surgical package includes the cost of all pre-operative investigations, cost of surgery, cost of post-operative care including hospital stay and follow up care. (Any additional stay in case of undue and unforeseen complications may be included separately provided proper justification has been made)

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
DEFECTS AT BIRTH								
1	Neural tube defects	Anencephaly Spina Bifida	Spina Bifida Surgery	No surgical procedure is required 2.1 (cerebral) / 3.5 (spinal)	1	35,000	MRI local area/ X-ray dorso -lumbar spine/ CT spine (cervical, dorsal, lumbar, sacral) without contrast	Clinical photograph (Cl. photo)/ X-ray dorso-lumbar spine
			Ventriculo-peritoneal shunt for hydrocephalus	2.34	2	20,000	CT scan head without contrast/ CT angio of brain (head)/MRI brain without contrast/ X-ray skull	Cl. photo/ Scan head without contrast, CT angio of brain (head)/ MRI brain without contrast, Cerebrospinal Fluid (CSF) analysis cell count
2	Down Syndrome		Surgery will depend on associated congenital malformations					
3	Cleft lip and Cleft palate	Cleft lip Cleft palate	Repair of Cleft lip Correction of Cleft palate	27.54 27.62	3 4	15,000 18,000	Cl. photo Cl. photo	Cl. photo, Case sheet with operation notes Cl. photo, Case sheet with operation notes

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
4	Talipes (club foot)	Talipes	CTEV correction - Casting (UL)	83.84	5	1,250	Cl. photo	Cl. photo
			CTEV correction - Casting (BL)	83.84	6	2,500	Cl. photo	Cl. photo
			CTEV correction -Tenotomy (UL)	83.84	7	1,000	Cl. photo	Cl. photo
			CTEV correction -Tenotomy (BL)	83.84	8	1,500	Cl. photo	Cl. photo
			CTEV correction - Bracing	83.84	9	2,000	Cl. photo	Cl. photo
			CTEV correction - Ponseti (Total)	83.84	10	8,000 (maximum)	Cl. photo	Cl. photo
			Pavlik Harness	93.5	11	1,000	X-ray/ Cl. photo	Physiotherapy Report
			Closed reduction and Hip spica	79.7 & 93.5	12	15,000	X-ray Hip - AP/lateral view/ Cl. photo	Physiotherapy Report
			Open reduction and Hip spica	79.8 & 93.5	13	30,000	X-ray Hip - AP/lateral view/ Cl. photo	X-ray, Intra-op photo, Case Sheet with operation notes,
			Open reduction with Femoral Osteotomy	79.8 & 86.89	14	45,000	X-ray/ MRI / Cl. photo	X ray, Intra-op photo, Case Sheet with operation notes, Physiotherapy Report
5	Developmental Dysplasia of the Hip (DDH)	DDH						

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
	Developmental Dysplasia of the Hip (DDH) (Contd.)		Open reduction with Femoral and Acetabular Osteotomy	79.8 & 86.89	15	60,000	X-ray/ MRI / Ci. photo	X ray, Intra-op photo, Case Sheet with operation notes, Physiotherapy Report
			Femoral Osteotomy	77.3	16	30,000	X-ray/ MRI / Ci. photo	X ray, Intra-op photo, Case Sheet with operation Notes, Physiotherapy Report
			Acetabular Osteotomy	77.35	17	40,000	X-ray/ MRI / Ci. photo	X ray, Intra-op photo, Case Sheet with operation notes, Physiotherapy Report
			Pelvic Support Osteotomy	77.3	18	40,000	X-ray/ MRI / Ci. photo	X ray, Intra-op photo, Case Sheet with operation notes, Physiotherapy Report
6	Congenital Cataract	Congenital Cataract	Paediatric Cataract Surgery (Phacoemulsification IOL)	13.71.3	19	20,000	Fundus florescence photo	Ci. photo, Fundus florescence

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
7	Congenital Deafness	Congenital Deafness	Cataract surgery (Phacoemulsification)	13.41	20	20,000	Fundus florescence photo	Cl. photo, Fundus florescence
			Behind Ear Analogue Hearing Aid	20.95	21	10,000	Pure Tone Audiometry (PTA)/ Impedance Audiometry (IA) (with Stapedial Reflex)	Cl. photo with hearing aid
			Cochlear Implant Surgery for children below 2 years	20.9	22	5,20,000	Hearing Aid Trial/ IA (with Stapedial Reflex)/ Brainstem Auditory Evoked Response (BERA)/ MRI Brain with Contrast/ CT scan Brain-plain and contrast	PTA, IA (with Stapedial Reflex), Implant registration form, Warranty, invoice, Telemetry report, Scar photo
8	Congenital Heart Disease (CHD)*	Atrial Septal Defect (ASD)	ASD Device Closure	35.51	23	95,000	Echocardiogram (Echo) / ECG (Electro Cardiogram)/ Chest X-ray PA view (1 film)/ Cardiac CATH/ TEE (Transesophageal Echocardiogram)	Echo, ECG, Procedure CD
			ASD Surgical Closure (Intracardiac repair)	35.71	24	85,000	Echo/ ECG / Chest X-ray PA view (1 film)/ TEE / CT angiography (Coronary angiography)	Echo

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
	CHD (-cont-)	AV Canal defect	AVSD / AV Canal Defect repair	35.71	25	1,60,000	Echo/ ECG/ Chest X-ray PA view (1 film)/ TEE / CT angiography	Echo
		Ventricular Septal Defect (VSD)	VSD Device Closure with PDA device	35.53	26	75,000	Echo/ ECG / Chest X-ray PA view (1 film)	Echo, ECG, Procedure CD
			VSD Device Closure with VSD device	35.53	27	95,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo, ECG, Procedure CD
		Patent Ductus Arteriosus (PDA)	VSD Device Closure with VSD device in infants	35.53	28	125,000	Echo/ ECG / Chest X-ray PA view (1 film)	Echo, ECG, Procedure CD
			VSD Surgical Closure (Intracardiac repair)	35.72	29	90,000	Echo/ ECG/ Chest X-ray PA view (1 film)/ CT angiography	Echo
		Patent Ductus Arteriosus (PDA)	PDA Device Closure	35.83.2	30	75,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG, Procedure CD, Device empty pouch
			PDA coil closure: single coil	35.83.3	31	30,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Stent In Situ, Chest X-Ray PA View (1 film), Procedure CD, Device empty pouch

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE			
	CHD (-cont-)		PDA coil closure: multiple coil	35.83.4	32	40,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG, Procedure CD, Device empty pouch			
			Surgical closure of PDA (PDA ligation)	35.83	33	45,000	Echo/ ECG / Chest X-ray PA view (1 film)	Scar photo/ Echo/ ECG / Chest X-ray PA View (1 film)			
			PDA stenting	35.83.1	34	80,000	Echo/ ECG/ Chest X-ray PA view (1 film)/ TEE	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG			
			Truncus Arteriosus Surgery	35.83	35	1,50,000	Echo/ ECG/ Chest X-ray PA view (1 film)/ CT angiography	Echo, ECG, Procedure CD			
			CHD (-cont-)	TAPVC	Surgical correction of TAPVC	35.82	36	1,50,000	Echo/ ECG / Chest X-ray PA view (1 film)/ TEE/ CT angiography	Echo-showing Stent In Situ, Chest X-ray PA view (1 film)	
					Total correction of TOF	35.81	37	1,50,000	Echo/ ECG/ CT angio/ Chest X-ray PA view (1 film)/ MRI angio/Cardiac CATH	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG	
				Tetrology of Fallot (TOF)	Systemic Pulmonary Shunts with graft		39	38	60,000	ECG/ Echo/ CT angiography/ Cardiac CATH	Echo-showing Graft In Situ, Procedure CD, Scar photo, Chest X-ray PA view (1 Film)

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
	CHD (-cont-)	Pulmonary Atresia /	Open pulmonary valvotomy	35.13	39	90,000	Echo/ ECG	Echo, ECG, Procedure CD, Chest X-Ray PA View (1 film)
		Pulmonary Stenosis	Balloon pulmonary valvotomy	35.03	40	40,000	Echo/ ECG	Echo-Showing Stent In Situ, Chest X-ray PA view (1 film), ECG, Procedure CD
		Tricuspid Atresia / Tricuspid Stenosis and Ebstein's Anomaly	Glenn procedure	35.94	41	1,00,000	ECG/Echo/ CT angiography/ Cardiac CATH	Echo-showing Graft In Situ, Procedure CD, Scar photo, Chest X-Ray PA view (1 film)
			Fontan procedure	35.94	42	1,70,000	ECG/Echo/ CT Angiography/ Cardiac CATH	Echo-showing Graft In Situ, Procedure CD, Scar photo, Chest X-Ray PA view (1 film)
		Aortic valve Stenosis	Aortic valve replacement (with valve)	35.23	43	1,45,000	Echo/ ECG/ Chest X-ray PA view (1 film)/ Cardiac CATH/ TEE	Echo-showing Stent In Situ, Procedure CD
			Aortic valve replacement (with Bioprosthetic valve)	35.22.3	44	1,60,000	Echo/ ECG / Chest X-Ray PA View (1 Film)/ Cardiac CATH/ TEE	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), Procedure CD
			Open aortic valvotomy	35.11	45	90,000	Echo/ ECG / CT Angiography / Cardiac CATH	Echo, ECG, Procedure CD, Chest X-Ray PA View (1 film)

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE	
			Ross procedure without conduits	35.22.1	46	1,20,000	Echo/ ECG/ CT angiography/ Cardiac CATH/ Chest X-ray PA view (1 film)/ MRI angiogram	Echo-showing Prosthetic Ring In Situ	
	CHD (-cont-)	Aortic valve Stenosis (-cont-)	Ross procedure with conduits	35.22.1	47	1,55,000	Echo/ ECG/ CT angiography/ Cardiac CATH/ Chest X-ray PA view (1 film)/ MRI angiogram	Echo-showing Prosthetic Ring In Situ	
			Balloon aortic valvotomy	35.01	48	40,000	Echo/ TEE/ Chest X-ray PA view (1 film)/ ECG	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG	
			Surgery not covered under RBSK						
		Hypoplastic Left Heart Syndrome							
		Transposition of the great arteries (TGA)	TGA Arterial Switch	35.84	49	1,55,000	Echo/ CT scan Chest without contrast/ CT angiography / Chest X-ray PA view (1 film)	Chest X-ray PA view (1 film), Echo	
			TGA Sennings Procedure	35.91	50	1,55,000	Echo/ CT scan Chest without contrast/ CT angio	Echo, Chest X-ray PA view (1 film)	
			TGA Mustards Procedure	35.91	51	1,55,000	Echo/ CT scan Chest without contrast/ CT angio	Chest X-ray PA view (1 film), Echo	

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
	CHD (-cont-)	Coarctation of the aorta (COA)	Coarctation dilatation	39.5	52	40,000	Echo/ CT angiography/ Chest X-ray PA view (1 film)	Doppler
			Coarctation dilatation with stent	39.5	53	80,000	Echo/ CT angiography/ Chest X-ray PA view (1 film)	Doppler
			Coarctation aorta repair with graft	39.5	54	1,00,000	Echo/ CT angiography , Color doppler sonography/ Chest X-ray PA view (1 film)	Color doppler sonography single study, Scar photo
			Coarctation aorta repair without graft	39.5	55	70,000	Echo/ CT angiography/ Chest X-ray PA view (1 film)	Color doppler sonography single study, Scar photo
9	Retinopa -thy of Pre- maturity	ROP	Photocoagulation for ROP	14.25	56	10,000	Fundus photo	Cl. photo, Fundus florescence
DEFICIENCIES								
10	Anaemia especially Severe Anaemia							
11	Vitamin A deficiency (Bitot spot)							
12	Vitamin D deficiency (Rickets)							
13	Severe Acute Malnutrition / Stunting							
14	Goiter							
CHILDHOOD DISEASES								
15	Skin conditions							Appropriate medical management

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
16	Otitis Media	Acute and Chronic Suppurative Otitis Media (ASOM and CSOM)	Myringotomy with grommet for one ear	20.01	57	10,000	PTA/ IA (with stapedial reflex)/ OTO endoscopy/ OTO endoscopy photos	PTA, IA (with stapedial reflex), Grommet in position photo
			Myringotomy with grommet for both ears	20.01	58	15,000	PTA/ IA (with Stapedial Reflex)/ OTO endoscopy/ OTO endoscopy photos	PTA, IA (with stapedial reflex), Grommet in position photo
			Myringoplasty	19.4	59	16,000	PTA	PTA
		Chronic Suppurative Otitis Media (CSOM)	Myringoplasty with ossiculoplasty	19.4	60	17,000	PTA/ IA (with stapedial reflex)/ X-Ray of both Mastoids/ OTO endoscopy/ OTO endoscopy photos	PTA
			Tympanoplasty / Cortical mastoidectomy	19.5	61	17,000	PTA/ IA (with stapedial reflex)/ X-Ray of both Mastoids/ OTO endoscopy/ OTO endoscopy photos	X ray, PTA, Scar and graft photos
			Radical / Modified radical Mastoidectomy	20.4	62	18,000	PTA / IA (with stapedial reflex)/ X-Ray of both Mastoids/ OTO endoscopy/ OTO endoscopy photos	X ray, PTA, Scar and graft photos, IA (with stapedial reflex), X-ray both mastoids after 6 weeks, Scar photo

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
17	Rheumatic Heart Disease*	Mitral valve Stenosis	Closed mitral valvotomy	35.02	63	40,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo, Chest X-ray PA view (1 film)
			Open mitral valvotomy	35.12	64	1,10,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG, Procedure CD
			Balloon Mitral valvotomy	35.02	65	30,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Stent In Situ, Chest X-ray PA view (1 film), ECG, Procedure CD
			Mitral valve replacement (with valve)	35.23	66	1,45,000	Echo/ ECG/ Chest X-Ray PA view (1 film)/ Cardiac CATH/ TEE	Echo-showing Valve In Situ, Procedure CD
			Mitral valve replacement (Bioprosthetic valve)	35.24	67	1,60,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo-showing Valve In Situ, Procedure CD
			Mitral valve repair (without Prosthetic ring)	35.24	68	1,10,000	Echo/ ECG/ Chest X-ray PA view (1 film)	Echo Showing Valve In Situ, Procedure CD
			Mitral valve repair (with Prosthetic ring)	35.24	69	1,40,000	Echo/ ECG/ Chest X-Ray PA View (1 Film)	Echo Showing Valve In Situ, Procedure CD
			Double valve replacement (with valve)	35.20.2	70	1,80,000	Echo/ ECG/ Cardiac CATH/ Chest X-ray PA view (1 film)	Echo, Chest X-ray PA view (1 film)

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
			Double valve replacement (Bioprosthetic valve)	35.20.3	71	2,00,000	Echo/ ECG/ Cardiac CATH/ Chest X-Ray PA View (1 Film)	Echo Showing Valve In Situ, Procedure CD
18	Reactive Airway Disease			Appropriate medical management				
19	Dental Caries	Dental Caries	Extraction of Tooth	23.01	72	200	X ray/ Intra Oral Periapical (Iopa) / RVG (Radiovisiography)	X ray, Iopa/ RVG
	Dental Caries (-cont-)	Dental Caries (-cont-)	Application of Pit & Fissure Sealants (Pedo Full mouth)	23.2.1	73	300	Cl. photo/ RVG	Cl. photo, Iopa/ RVG
			Amalgam Restoration Per Tooth	23.2.2	74	150	X-ray/ Iopa	X-ray, Iopa/ RVG
			Temporary Filling Per Tooth	23.2.3	75	100	X-ray/ photo/ Iopa	X-ray/ photo, Iopa/ RVG
			Tooth Coloured Restoration Per Tooth (GIC)	23.2.4	76	200	X-ray/ photo/ Iopa	X-ray/ photo, Iopa
			Tooth Coloured Restoration Per Tooth (Composite)	23.2.4	77	250	X-ray/ photo/ Iopa	X-ray/ photo, Iopa
			Flouride Varnish Application (Pedo Full mouth)	23.4.1	78	150	Cl. photo	Intra-op photo
			Atraumatic Restorative Treatment	23.4.6	79	200	X-ray/ photo/ Iopa	X-ray/ photo, Iopa

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
			Pulpectomy With Ssc (Stainless Steel Crown)	23.4.7	80	700	X-ray/ lopa /RVG	X-ray, lopa/ RVG
			Root Canal Treatment – Deciduous Tooth	23.7.1	81	500	X-ray/ OPG	X-ray, lopa
	Dental caries (-cont-)	Dental caries (-cont-)	Anterior Root Canal Treatment	23.7.2	82	1,200	X-ray/ lopa	X-ray, lopa
			Apicectomy	23.7.3	83	2,000	X-ray/ lopa	X-ray, lopa
			Posterior Root Canal Treatment with Permanent Restoration	23.7.5	84	1,800	X-ray/ lopa	X-ray, lopa
			Extraction Of Ill Molar / Impacted Tooth under L.A	23.19.1	85	2,000	X-ray/ OPG	X-ray, lopa/ RVG
			Surgical Extraction of Tooth	23.19.2	86	1,000	X-ray/ OPG	X-ray, lopa/ RVG
			Fabrication & Cementation of Metal Ceramic Crown per unit	23.41.2	87	800	Cl. photo/ lopa/ Lab charges - Model pouring (Gingival mollage)	Cl. photo, Case sheet with operation notes
			Placement of Stainless Steel crown per Tooth	23.41.4	88	500	Cl. photo/ lopa	Cl. photo, lopa
			Metal Post & Core Restoration with Metal Ceramic Crown (Anterior)	23.41.7	89	2,290	X-ray & Cl. photo/ lopa/ Lab charges - Model pouring (Gingival mollage)	X-ray & Cl. photo, lopa, Case sheet with operation notes

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
			Treatment with Expansion Plate	23.42.2	90	1,500	Cl. photo/OPG/Lab charges - Model pouring (Gingival mollage)	Cl. photo, OPG
	Dental caries (-cont-)	Dental caries (-cont-)	Fabrication & Insertion of Removable Appliance (Upper/Lower)	23.43.2	91	1,200	Cl. photo/ Lab charges - Model pouring (Gingival mollage)	Cl. photo, Case sheet with operation notes
			Fabrication & Insertion of Removable Partial Denture - Single Tooth (Anterior)	23.43.4	92	550 (+ 50 per tooth)	Cl. photo/ Lab charges - Model pouring (Gingival mollage)	Cl. photo, Case sheet with operation notes
			Fabrication & Insertion of Fixed Space Maintainers / Space Retainer	23.43.6	93	1280	Cl. photo/ (OPG/ Lab charges - Model pouring (Gingival mollage)	Cl. photo, Intra-op photo, Study model
			Fabrication & Insertion of Removable Space Maintainers (Pedo)	23.43.7	94	1,000	Cl. photo/OPG/ Lab charges - Model pouring (Gingival mollage)	Cl. photo, Case sheet with operation notes
			Fixed Orthodontics Treatment-Metal Braces for Cleft palate only	24.7.5	95	10,680	X-ray & Cl. photo/ OPG/ Lab charges - Model pouring (Gingival mollage)/ Lateral Cephalogram	X ray & Cl. photo, OPG, Lab charges - Model pouring (Gingival mollage), Lateral Cephalogram

S. No	HEALTH CONDITION	DISEASE	SURGICAL PROCEDURE	ICD-9 PROCEDURE CODE	RBSK PROCEDURE CODE	RBSK MODEL COSTING (RUPEES)	PRE-OPERATIVE INVESTIGATIONS	POST-OPERATIVE EVIDENCE
			Fabrication & Insertion of Feeding Plate (Acrylic)	24.7.8	96	1,200	Cl. photo/ OPG/ Lab charges - Model pouring (Gingival mollage)	
	Dental caries (-cont-)	Dental caries (-cont-)	Fabrication & Insertion of Obturator -Acrylic	24.7.9	97	1,200	Cl. photo/ Lab charges - Model pouring (Gingival mollage)/ RVG	Cl. Photo, Case sheet with operation notes
			Fabrication & Insertion of Obturator & Speech Bulb-Acrylic	24.7.10	98	1,500	Cl. photo/ Lab charges - Model pouring (Gingival mollage)/ RVG	Cl. photo, Case sheet with operation notes
			Incision & Drainage of Simple Abscess (per Tooth)	27.10	99	500	Cl. photo/ OPG/ Cl. photo	Cl. photo, lopa, Intra-op photo
			Incision & Drainage of Facial Abscess Under LA	27.30	100	2,500	X-ray & Cl. photo/ OPG	X-ray & Cl. photo, lopa, Intra-op photo
			Oral Prophylaxis - calculi (Upper/ Lower)	96.54.2	101	250	Cl. photo	Cl. photo
			Dental IOPA X ray		102	50		X ray
20	Convulsive Disorders		Appropriate medical management					
DEVELOPMENTAL DELAYS								
21	Vision Impairment	Strabismus	Single muscle surgery	15.2.	103	8,500	Cl. photo	Cl. photo
			Two or three muscles surgery	15.4	104	11,000	Cl. photo	Cl. photo

*** The following additional instructions apply for cardiac surgery (Congenital Heart Disease and Rheumatic Heart Disease):**

- Procedures on neonates (0-1 month age) will have additional package costs of Rs. 30,000/- besides costs stated above to account for longer ICU/hospital stay, except where already mentioned in the package.
- Cardiac procedures on infants (1 month-1 year) will have additional package costs of Rs. 20,000/- besides costs stated above to account for longer ICU/hospital stay, except where already included in the package.
- In general, all cyanotic cases should be operated. Silent PDAs, small shunt lesions and mild valve obstructions should not be operated.
- However, all cardiac procedures will be routed through RBSK identified specialists for preauthorization/preoperative approvals.
- Refer to Guidelines on Indications and Timing of Interventions for Congenital Heart Disease under Section 5.8. These are to be followed in letter and spirit under RBSK.



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