MEDICA Synergie

Redefining healthcare

FINAL REPORT

MKCG MEDICAL COLLEGE HOSPITAL, BRAHMAPUR, ORISSA

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1 EXECUTIVE SUMMARY

The apex of the healthcare delivery pyramid of the state of Orissa comprises of SCB Medical College Hospital, MKCG Medical College Hospital, VSS Medical College Hospital and Capital Hospital located in Cuttack, Brahmapur, Sambalpur and Bhubaneswar respectively. These hospitals form the epicenter of healthcare delivery to a majority of the population and at present are increasingly being confronted with challenges of high patient flow and severe resource crunch in terms of infrastructure, manpower and equipments. The Government of Orissa (GoO) has taken up the initiative to upgrade the infrastructure of these hospitals to fulfill the healthcare needs of the population. The aim of the current assignment is to develop appropriate master plans for scaling up the infrastructure in each of these facilities.

This report talks about the infrastructure up gradation at MKCG Medical College and Hospital, Brahmapur, The study was carried out in two major components - hospital facilities assessment and architectural, engineering & structural assessment of existing buildings and upcoming plans. Secondary research will supplement primary research.

In order to ensure the development of an up gradation plan that is in line with patients and providers requirements, the hospital facility assessment included the collection of data from three sources:

- Detail assessment of the existing hospital infrastructure to assess the gaps and ascertain future needs. A series of toolkits were developed and used to assess the different functional areas of the hospital.
- Understanding infrastructure related requirements from the patient's point of view through structured interviews of a sample of patients (User perspective study).
- Understanding infrastructure related requirements from the provider's point of view through structured interviews with all the clinical head of department's (Provider perspective study).

The detailed facility assessment revealed certain gaps in the current infrastructure. These were further analyzed and suitable recommendations made. Schematic layout of concept plans has then been prepared subsequently in accordance with the recommended expansion plan and space program.

This report will then be followed by a master plan that would factor in a projection of the healthcare needs in the next 20 years and the present utilization of the healthcare facilities. The design plans would also incorporate the best practices in healthcare facility design including patient friendly infrastructure and internationally accepted safety protocols. For enhancement of

skills within the department, training needs of engineers and architects have been assessed to come up with a comprehensive capacity development plan. This will form a separate section that will include guidance on the application of advanced project management tools and software for monitoring construction works to ensure speedy and timely implementation. In addition a maintenance plan will also be developed based on which will aid in a systematic and timely maintenance of the present hospital buildings.

2 INTRODUCTION

The Government of Orissa (GoO) has developed a comprehensive Orissa Health Sector Plan (OHSP) 2005-2010. This provides a unique opportunity for the government to align its own, the Government of India's and developmental partners' resources to meet the state's priorities and address the major shortcomings in both public and private health provision. The OHSP aims to achieve equity in health outcomes and has a key focus on access and utilization of services by vulnerable and marginal groups. This also envisages delivery of accountable and responsive healthcare in order to stabilize the health indicators as well as address critical health issues in the state of Orissa.

Healthcare infrastructure development is one of the major mandates of the strategies adopted by OHSP to meet its objectives of enhancing the capacity of the health system. Thus GoO is in the process of upgrading the infrastructure at its three medical college hospitals located in Cuttack, Sambalpur & Brahmapur and the Capital Hospital in Bhubaneswar. These institutions have been developed over a considerable period of time and the present infrastructure is inadequate to meet present requirements of patients, their families and the healthcare providers.

To enable best use of resources for the hospital improvement, the GoO seeks expert advice on appropriate design for facility expansion and reorganization of these medical college hospitals. These plans should essentially envisage patient friendly infrastructure and other special prerequisites for planning hospital buildings. Medica Synergie has been engaged as an external consultancy having experience in developing hospital projects to provide expert advice, technical assistance and high quality plans to GoO for upgrading the Infrastructure and facilities of all the four government hospitals.

3 MKCG MEDICAL COLLEGE HOSPITAL

3.1 Aim of the study

• To develop an infrastructural up-gradation plan comprising of 20 year Master Plans with 5 year Executable Priority Plans for MKCG Medical College Hospital, Cuttack and to prepare Cost estimates for 5 year Priority Plans for approval of Government of Orissa.

• To prioritize the activities based on the need, fund availability and commitment for 5 years from GoO based on discussion with the task force.

3.2 Specific Objectives

- To assess the current status of the existing facilities with respect to infrastructure components such as architecture, engineering, structural stability, functional work areas etc
- To assess the existing design plans of the hospital buildings and elicit the strengths and weaknesses in the same.
- To do a Gap Analysis based on the assessment findings.
- Understanding patient perspectives for patient centered facilities through a *User Perspective Study* comprising of both inpatient and outpatient respondents and their families
- Consultation with key clinical and support staff to understand provider perspectives on infrastructure requirements for safe and efficient functioning
- Suggest models of design plans which are aesthetically appropriate, patient friendly and systems oriented.
- To provide construction designs for easy maintenance of the premises.
- To provide inputs in Operation Theatre design, location and standards.

- To plan for future Telemedicine incorporation in the hospital campuses and the assessment of additional infrastructure needs in institutions where telemedicine is already functioning.
- To plan for Trauma Units in these facilities.
- Provide final architectural plans in line with the Master Plans for three medical colleges and the Capital Hospital after reviews and feedback
- Training needs assessment and capacity building plan for the government engineers involved in monitoring and supervision of construction work.
- To prepare a budget summary for realizing the suggested scaling

3.3 Methodology

The methodology for executing this assignment comprised of the following stages.

Table 1:

STAGE	PHASE	ACTIVITIES
Stage I	**Project Design Phase**	• Project Micro Planning • Development of Toolkit • Team Deployment • Secondary Literature Review
Stage II	**Data Collection**	• General Facility Description • Architectural Assessment • User Perspective Study • Key Providers' Consultation
Stage III	**Data analysis**	• Documentation of available data • Data Compilation • Gap Analysis
Stage IV	**Architectural Plan Preparation**	• Concept Plans Development • Master Plan Development • Executable Plans Preparation
Stage V	**Report Preparation**	

Stage I:

Project Design Phase: This phase consisted of preliminary activity which involved designing of the methodology for project implementation. It helped in identifying the key steps to accomplish the goal. It helped in designing that the assessment would be done in two components; firstly, hospital facilities assessment based on nationally / internationally accepted

criteria and secondly, architectural, engineering & structural assessment of existing buildings to identify deficiencies and shortcomings. Secondary research will supplement primary research.

Project Micro Planning: This step comprised of identifying delineating the micro activities and logistics for implementing the project. The time variable was attributed to each activity for the deliverables at the end of each micro-activity, persons entrusted with the activities were identified and travel plans to each of the hospitals were prepared.

Development of Toolkit & Questionnaire: Based on components of project design, toolkit was developed in three parts. Toolkits based on certain established criteria have been developed for different functional areas of the hospital. A separate questionnaire also has been developed for the user perspective study.

Team Deployment: Teams comprised of experts from three kind of expertise; namely, hospital planning, hospital management and architecture. Hospital assessment team comprised of hospital planning and hospital management professionals. Structural assessment team comprised of architects and engineers.

Stage II:

Data Collection: Data Collection has been done through hospital visits for general facility assessment and architectural assessment. Provider and user perspective has been elicited from the provider's interview and user perspective study.

The team leaders were in constant touch with the project lead who provided necessary guidance to the team for steering through the field study. This was done in order to ensure the highest level of quality in data collection.

Stage III:

Data Analysis: Different sets of data was analysed with different approach with the help of experts to ensure correct processing of data. Through this, an understanding of the situation prevailing in the hospital was obtained. This helped to reach in designing the infrastructure up-gradation plan of the concerned hospital. At the end of this stage, an architects' brief was prepared for aiding in the design process by the architect.

Stage IV: Architectural Plan Preparation

The architects' brief supplemented by architects' own independent assessment of existing hospital led to the development of the architectural concept plan preparation. This stage, essentially, comprised of the following:

- Conceptual Plans of the Proposed Expansion and Reorganization Plans
- Executable Plans of some components of the hospital

Stage V: Report Preparation

A final report has been prepared to document the activities of the entire assignment. This is the final deliverable of the project.

Data Source

- *Secondary data collection* based on the Census of India, Bureau of Indian Standards**(BIS**) standards for hospitals, Indian Public Health Standards **(IPHS)** guidelines for district hospitals, Medical Council of India **(MCI**) guidelines for Medical Colleges and other documents to project management.
- *Primary data collection* based on the toolkit prepared for data collection, questionnaires for patient feedback through observation and discussion with the key functionaries of the hospital to understand their expectations and develop common understanding of the existing scenario.

Data Collection Tools

i. Facility assessment toolkit.

ii. Interviews with the Principal, Medical Superintendant, HODs of respective clinical specialties, Hospital Manager & other key functionaries and administrative personnel at all levels of the management hierarchy of the hospital were done to elicit the information regarding the present state of functioning and the problems faced by them in smooth execution of their roles and discharging their responsibilities due to deficiencies in the hospital infrastructure. The functionaries were also asked about their vision of the future hospital to make it

responsive to the changes in demand as well as changes in medical technology and health care delivery system.

iii. Secondary literature review. This was done in order to familiarizing with the local situation, geographic characteristics, demographic parameters and with previous such studies elsewhere.

3.4 User and Provider Perspective Study

In compliance with the objective of developing patient centric infrastructure master plans for MKCG Medical College Hospital, a user and provider perspective study has been carried out to elicit their perceptions about the facility. A cross sectional study was conducted separately for the inpatients and outpatients using structured questionnaires comprising of separate set of questions for IPD and OPD respondents.

A provider perspective study was carried out with the help of a semi-structured questionnaire to obtain information regarding their present need and future vision about the hospital.

3.5 Limitations of the Study

Data collection through facility assessment has been the most challenging component of this assignment. This has been carried out by two assessment teams one of which comprising of experts in hospital planning and management while the other comprised of architects and structural engineers. Major hurdles encountered during the study have been enlisted below:

- Non availability of vital and relevant data such as ward wise occupancy rates, ALOS, inpatient caseloads etc.
- Respondents of the user perspective study were reluctant to give out their free and frank views which affected the results of the study
- Cooperation of some hospital staff was not spontaneous which hindered smooth progress of the study
- Due to restricted official timings, clinical staff & departmental HOD's were to be interviewed within this time subject to their availability, thus creating bottlenecks in obtaining their responses.
- All relevant architectural inputs such as plans and drawings were not made available, thus necessitating deployment of additional architect's and survey team. This, in turn, affected the timeline for the deliverables

MKCG MEDICAL COLLEGE HOSPITAL

AN OVERVIEW

4. OVERVIEW OF MKCG MEDICAL COLLEGE HOSPITAL

The Maharaja Krishna Chandra Gajapati Medical College & Hospital, popularly known as **MKCG Medical College and Hospital** , started at first as an extension wing of S.C.B. Medical College, Cuttack in the year 1961. The buildings were constructed in the allotted land that spread out over an area of 120 acres. The government medical college and the hospital started functioning in the years 1962 and 1966 respectively. It imparts training to both undergraduate and postgraduate medical students. This Medical College & Hospital, being the only major medical institution in Southern Orissa. The hospital has a total inpatient bed capacity of 871 beds and serves as a Tertiary Care Referral Hospital. The hospital can be easily accessed by road and rail.

Major specialties include General Medicine, General Surgery, Obstetrics and Gynaecology, Vascular Surgery, Ophthalmology, Orthopedics, Skin & VD, ENT, Pediatrics, TB & Chest Medicine, Cardiology, Gastroenterology, Urology, Nephrology and Neurology. A telemedicine unit, provided by the ISRO, is also operational.

There is a road that leads to the main hospital campus where the old IPD, OPD and the newly built IP blocks are located. On entering the hospital, the road leads to the OPD building, old IP building at the right and left of the road respectively. The emergency unit is located adjacent to the OPD building. The three storied old IP building houses all the disciplines like pediatrics, obstetrics and gynecology, medicine, general surgery, neurology, nephrology, urology, cardiology, orthopedics, cardiothoracic and ENT. All the 16 OTs and the IP departments are also distributed in the three floors with similar floor layout for each floor. The OT catering to specific disciplines is located near to its IP department. Opposite to the old IP building is located the new IP building, housing a section of the pediatric unit and the whole of the female medicine beds.

The radiotherapy unit, infectious disease ward, TB & Chest unit ophthalmology wards are located a few yards away from the main campus whereas the skin & VD and psychiatry wards are approximately 1.5 kms away from the main hospital.

The imaging department where the X-ray and CT scan is housed is located in the old IP block. The laboratory is housed in the Regional Diagnostic Centre block

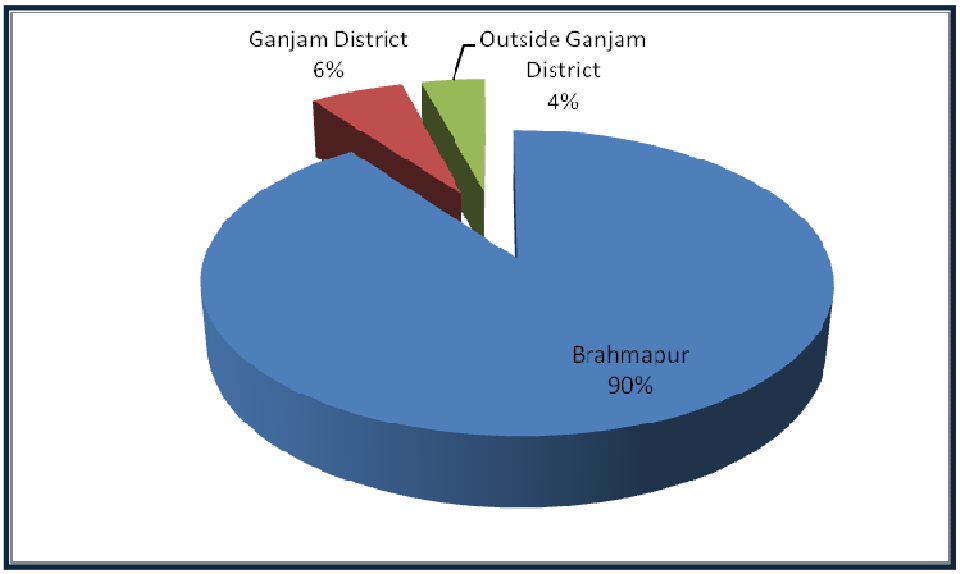
4.1 Catchment Area Overview: MKCG Medical College

A catchment is a geographical area delineated around an institution or business that describes the population that utilizes its services. Normally catchments divide geographic space into contiguous regions, but in some contexts, they can overlap to reflect competition within an area between service providers. Catchments in themselves do not necessarily reflect geographic proximity though they may and perhaps should. Differences in accessibility, priority of administrative boundaries, and supply and demand for services all impact the definition of service catchments. Hospital catchments are more likely to be affected by perception of service levels in non-catastrophic situations when distance (or travel-time) is less of a constraint.

MKCG Medical College Hospital is located in the Ganjam district of Orissa. In the absence of any scientific technique for determining the catchment area for the hospital, a cross section of the patients have been interviewed to arrive at a decision regarding the same. The patient respondents included both inpatients and outpatients across different clinical specialties to minimize the bias involved in the method.

The cross sectional study of the MKCG OPD and IPD patients depicts that a major portion of the patients seeking service are coming from Brahmapur town only. Only 6% and 4% of the patients are from the Ganjam and outside Ganjam district respectively.

Chart 1: Catchment Area - Percentage Distribution



Definition of Catchment Area for MKCG Medical College, Brahmapur

Based on the study findings, the catchment area for the MKCG Medical College Hospital has been defined in the following manner.

Table 2:

Primary Catchment Area	Brahmapur Town
Secondary Catchment Area	Ganjam District
Outer Catchment Area	Outside Ganjam District

The proportion of the population of the concerned catchment areas has been extrapolated to determine the total population strength who will be receiving the healthcare service at MKCG Hospital, Brahmapur.

Table 3:

Catchment Area	Population	% distribution	Catchment Population (Lakhs)
Brahmapur	0.36	90	0.324
Ganjam District	3.2	6	0.192
Outside Ganjam District	36.8	4	1.472

FACILITIES AVAILABLE AT

MKCG MEDICAL COLLEGE & HOSPITAL

4.2 Assessment and Findings

Specialties available at MKCG Medical College hospital, Brahmapur:

- Medicine
- Surgery
- Pediatrics
- Obstetrics and Gynecology
- Orthopedics
- Ophthalmology
- Psychiatry
- ENT
- Dental
- TB
- Skin and VD
- Pediatrics Surgery
- Plastic Surgery
- Cardiothoracic Surgery
- Cardiology
- Urology
- Nephrology
- Endocrinology
- Radiotherapy
- Neurology Medicine
- Neurology Surgery

The findings and assessment have been based upon the service areas present in the hospital. The same has been categorized as Clinical Areas, Clinical Support Areas and Support and Utility Service areas

Table 4:

PARTICULARS	SERVICE AREAS
Clinical Areas	Nursing Unit Operation Theatre Emergency and Trauma Unit Out Patient Department Intensive care Unit
Clinical Support Areas	Laboratory Imaging and Diagnostics Blood Bank Physiotherapy
Support and Utility Services	Central Sterile Stores Department (CSSD) Medical Records Department (MRD) Central Stores Kitchen Laundry Biomedical Waste Department (BMW) General Engineering Department (GED) Public Health Department (PHD)

INDIVIDUAL DEPARTMENT ASSESSMENT

4.2.1 Individual Department Assessment

4.2.1.1 Clinical Services

Nursing Unit

The nursing unit of MKCG hospital comprises of 24 disciplines of which six units are located in a separate building and the rest are housed in the IP old and new building blocks. The old IP building is three storied where most of the departments are housed. The female medicine and some of the pediatric units are located in the newly built two storied IP building.

Given below is the distribution of the wards in the buildings along with authorized beds and Bed Occupancy Rates:

Table 5

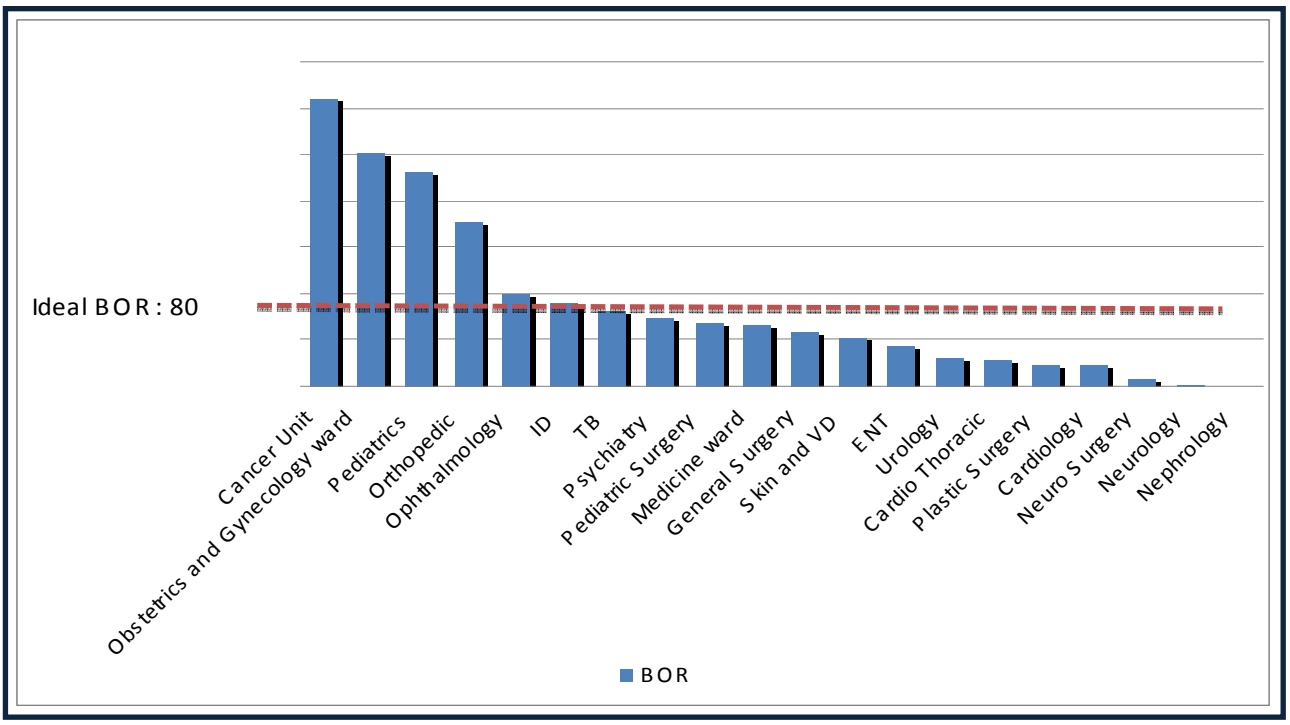
Location		Name of the Department	No. of beds	BOR
Old Building	Ground Floor	Pediatrics	*47	231
		Pediatric Surgery	10	67
		Obstetrics and Gynecology ward	114	252
		TOTAL	171	
	First Floor	General Surgery	153	58
		Plastic Surgery	16	23
		Neuro Surgery	10	7
		Nephrology	15	20
		Urology	12	30
		TOTAL	206	

Location		Name of the Department	No. of beds	BOR
	Second Floor	Medicine ward	166	66
		Neurology	10	2
		ENT	23	43
		Cardio Thoracic	22	28
		Cardiology	17	22
		Orthopedic	49	176
		TOTAL	277	
TB and Chest Block	Ground Floor	ID	30	90
	First Floor	TB	14	81
Radiotherapy Block	Ground Floor	Day care	20	311
	First Floor	Cancer Unit		
Ophthalmology Block	Ground Floor	Ophthalmology	100	63
	First Floor			
Psychiatry Block	Ground Floor	Psychiatry	16	74

Location		Name of the Department	No. of beds	BOR
Skin and VD Block	Ground Floor	Skin and VD	20	53

*Note: On discussion and also based on observation, it is found that the pediatric medicine ward is functioning with 77 beds of which 47 beds are in the old building and 30 beds are arranged in the new building. But the bed strength that has been accounted by the hospital authority is 47.

Chart 2: Departments having high bed occupancy rate against the ideal 80%



Observation and Analysis

Table 6

Old Building Ground Floor			
Particulars	**Pediatric Ward**	**Pediatric Surgery Ward**	**Obstetrics and Gynecology**
Layout	Near the maternity and gynecology ward	Beds are arranged in cubicles with 15 beds in each	Near the pediatric department
Layout of the department	The rooms are located on both sides of a central corridor approximately 6.5ft width. The nurses' duty station is located in between two wards, access to it is through doors opening into the wards.		
Ward Design	Beds are arranged in cubicles with 10 - 15 beds in each		Nightingale Pattern
Distance between two beds (centre to centre)	4.5 ft approx		
Sanitary Annexes	The pediatric medicine and surgery department have common sanitary annexes. 3 urinals and 3 water closets are being provided commonly for both the pediatric medicine and surgery patients.		In the maternity ward and gynecology ward each is provided with 1 bath and 1 water closet which is insufficient in comparison to the bed strength.

Table 7

Old Building First Floor					
Particulars	**General Surgery**	**Plastic Surgery**	**Neuro Surgery**	**Nephrology**	**Urology**
Relationship with other departments	All the surgery units are located near to each other	Near the male surgical ward	Located near the nephrology unit	Located near the surgery and neurology ward	Housed in the nephrology ward itself. Located near the surgery and neurology ward
Layout of the department	The rooms are located on both sides of a central corridor approximately 6.5ft width. The nurses' duty station is located in between two wards, access to it is through doors opening into the wards.				
Ward Design	Beds are arranged in cubicles with 10-15 beds in each.				
Distance between two beds (centre to centre)	4.5ft approx.				
Sanitary Annexes	Each of the surgery wards has 2 baths with 2 water closets each for male and female.	The plastic surgery unit shares its bath and urinals with that of the male surgery 3rd unit. There are 2 baths, 2	There is only 1 bath with 3 WCs commonly used by neurosurgery and 1st unit surgical ward.	There is common bath and urinals for nephrology and urology ward. There are 3 baths and water closets attached to each wards.	

Old Building First Floor					
Particulars	**General Surgery**	**Plastic Surgery**	**Neuro Surgery**	**Nephrology**	**Urology**
		urinals each for male and female.		Female wards has separate sanitary annexes.	

Table 8

Old Building Second Floor						
Particulars	**Medicine ward**	**Neurology**	**ENT**	**CTVS**	**Cardiology**	**Orthopedic**
Relationship with other departments	All the medical wards except female medicine are located close to each other (The female medicine ward is located in the old building ground floor opposite the pediatric	Near the medicine ward	Near the orthopedics, CTVS and cardiology department	Near the ENT, medicine and cardiology department	Near the orthopedics, CTVS and ENT unit	Near the cardiology, ENT and Dental unit

Old Building Second Floor						
	wards)					
Layout of the department	The rooms are located on both sides of a central corridor approximately 6.5ft width. The nurses' duty station is located in between two wards, access to it is through doors opening into the wards.					
Ward Design	Beds are arranged in cubicles of 10 – 15 beds each.	In all the wards the beds are arranged in cubicles with 10 – 15 beds in each.				
	In unit II the beds are arranged in rig pattern.					
Distance between two beds (centre to centre)	approximately 4 ft.					
Sanitary Annexes	Each of the units has separate sanitary annexes with 3 baths and 3 water closets.	Neurology ward and Medicine unit 1 ward share the common toilet complex.	The ENT and CTVS wards share common bath and toilets.	1 bath with 1 water closet is provided for male and female wards respectively.	There is 3 baths and 3 water closet provided for the orthopedic ward	
	Unit 1, and neurology ward share	The sanitary annexe	2 baths and 2 urinals provided for			

Old Building Second Floor					
	one toilet complex and unit 2 with neurology ward.	comprise of 3 baths and 3 water closets.	the ENT, Dental and CTVS patients		

Table 9

Ophthalmology Block	
Particulars	**Ophthalmology Ward**
Relationship with other departments	It is a standalone block with two stories located close to the main entrance of the campus.
Access to the department	The wards in the ground floor has its accessibility through a central corridor of width approximately 8ft. with a staircase is leading to the first floor
Ward Design	In the wards the beds are arranged with 10 – 15 beds in per cubicle.
Distance between two beds (centre to centre)	The beds are arranged very close to each other with not much space in between.
Sanitary Annexes	There are 3 baths and 1 urinal in the ground floor. In the first floor there are 2 toilets and 2 baths

Table 10

TB & Chest and Diarrhoea Block		
Particulars	**TB & Chest Ward**	**Diarrhoea Ward**
Relationship with other departments	The whole unit is located on the first floor. On the ground floor is located the ID ward.	The whole unit is located on the ground floor. In the first floor is located the TB & Chest ward.
Access to the department	The ward are located on each side of a central corridor, therefore, access to them is through it. On both sides of the corridor the rooms are located.	
Ward Design	In the wards the beds are arranged with 10 – 15 beds in each	
Distance between two beds (centre to centre)	approximately 8ft	approximately 6ft
Sanitary Annexes	In the female ward there are 1 bath and 2 urinals. In the male ward 2 bathroom and 2 urinals are available. The aspiration room is having 1 toilet.	There are 2 urinals and 2 baths attached to the wards for female and male wards respectively.

Table 11

Psychiatry Block	
Particulars	**Psychiatry ward**
Relationship with other departments	Located near the leprosy and STD block
Access to the department	The rooms are located on both sides of a central corridor
Ward Design	The beds are arranged in the wards with 10 – 15 beds in each ward.
Distance between two beds (centre to centre)	3ft approximately
Sanitary Annexes	There are attached toilets and baths in the respective wards.

Table 12

Leprosy and Skin and VD block		
Particulars	**Leprosy ward**	**Skin and VD Wards**
Relationship with other departments	Both departments are located close to each other	
Ward Design	The beds are arranged in cubicles with 2 – 4 beds in each cubicle in Rig pattern	
Sanitary Annexes	There are attached toilets and baths in the respective wards.	

Common problems for all the wards

Table 13

Support Areas	
Location of Nurse Duty Station	There is no nursing station inside the wards. The nurses' duty station is located in a separate room, outside the wards. The entire ward cannot be seen from the nursing station as it is connected to the wards through doors.
Treatment Room	There is no treatment room available separately. The nurses' duty room or the wards itself is utilized for the purpose.
Ward Store	Only a single store is provided. It is used for storing clean and dirty linen as well as furniture.

Support Areas	
Clean utility	There is no space dedicated as clean utility.
Dirty utility	There is no separate provision for a dirty utility. Soiled linen is stored either in the store, in the nurses' duty room or in a bucket kept in front of the toilet.
Pantry	Pantry is not available in any of the wards. Diet is directly distributed from the kitchen.
Janitor's closet	There is no provision for keeping the housekeeping materials in the respective wards.
MO's duty room	MO's duty room is absent in the ward.
Trolley Bay	No trolley /stretcher bay available in any of the wards.
Staff Toilet	In most of the wards there is no staff toilet attached with the duty station. The toilets are located at different places and at times the staffs need to share the toilets of the other unit.

Analysis:

1. With the exception of a few wards the design is that of nightingale pattern arranged in cubicles of 10 – 15 beds, with an ***inter bed distance of approximately 1.5 ft.*** An ideal centre to centre bed distance should be 8 ft (as per MCI guidelines). The reduced interbed distance is to accommodate the high patient load.

2. The main purpose of a nursing station is to provide supervision and monitoring of the patients round the clock. At MKCG the location of the nurses' duty room, prevents this objective from being achieved satisfactorily.

3. The ***auxiliary services*** such as the stores, clean utility, dirty utility, procedure room, janitor's closet have not been provisioned in the wards. Due to the absence of proper

storage facility the soiled linens are either stored in the nurses' duty room or in buckets outside the toilets.

4. No room has been provided for the medical officers the nurses' duty room is therefore being commonly used as a nursing station, doctor's discussion room as well as stores.

5. In the absence of a trolley bay, the trolleys are stationed in the nurses' duty room or in the main corridor, leading to congestion and causing obstacles for smooth traffic flow.

6. The hospital has a centralized servery attached with the kitchen and patient diet is supplied from there to the respective wards. The **sanitary annexes** have insufficient number of baths, urinals, and water closets in comparison to the number of patients they are catering to. Moreover, the same toilets are being utilized by the attendants also.

7. Pediatric medicine unit has only 47* authorized beds. Bed occupancy rate calculated on this authorized number of beds comes to 234%. The 30 beds that have been allotted for the pediatric unit in the new building have not been taken into consideration in the approved bed count. On Inclusion of beds from both locations the bed the bed complement comes to 77 and consequently the BOR comes to 108%. Since the hospital authority has not yet accounted for these beds functioning in the new building, the bed strength of 47 is taken for computation of bed need. In the pediatric ward, the PICU unit is not functioning as such and these beds are being utilized as the general bed.

8. The 12 bedded post partum ward in the gynecology and maternity unit is presently non functional. This ward is thus, presently, being used by the gynecology department to cater to the high patient load. These beds have not been taken into consideration in the gynecology ward bed count as the same is not yet been approved for this discipline.

Operation Theatre

The MKCG Medical College Hospital has 16 O.Ts for different clinical specialties spread across three stories of the surgical block. The surgical block is connected to the inpatient areas through corridors in each of the floors. Except for a few differences the floor plan of all the surgical units are the same. Each of the O.T is under the jurisdiction of the respective specialty HOD. Observations and analysis has been detailed below.

Table 14

Location	Name of Department	Room/ OT Type	Number of Operating Room
Ground Floor	Department of O&G	Labor Room	2
		Gynaecology	1
		Emergency Gynaecology	1
		Post Partum	1
First Floor	Department of Nephrology	Nephrology	1
	Department of Neuro Surgery	Neurosurgery	1
	Department of Surgery	Main OT (General)	2
	Department of Surgery	Laparoscopy OT	1
	Department of surgery	Emergency Major OT	1
Second Floor	Department of Cardiothoracic Surgery	CTVS	1

Location	Name of Department	Room/ OT Type	Number of Operating Room
	Department of Orthopedics	Orthopaedics	1
	Department of ENT	ENT	1
OPD	Dental Department	Dental	1
	Emergency and Casualty Unit	Minor OT	1
Ophthalmology Block	Department of Ophthalmology	Major OT	1
		Septic OT	1

* caseload is per month

Observation and Analysis

Table 15

Ground Floor				
Type of OT	Labour Room	Gynaecology	Emergency Gynaecology	Post Partum
No. of Operating Rooms (OR)	2	1	1	1
No. of OT Tables	4 + 3	2	2	2
Floor Area (approx)	375 Sq ft	621 Sq ft	621 Sq ft	288 Sq ft
Location	Located near the gynaecological OT complex.	This OT complex is located in the back side of the labour room and controlled from patient	This OT complex is located in the back side of the labour room and controlled from patient	This OT is located inside the post-partum ward

Ground Floor				
		traffic by three doors	traffic by three doors	
Ventilation	2 window ACs of 1.5 ton each are available. The ACs are not functioning all the time. Ventilation therefore takes place through the several small window opening.	2 window A.Cs of 1.5 ton each are available in each of the ORs.		The mode of ventilation is only through the window. No ac is provided.
Circulation		Separate entry and exit is there		No separate entry or exit
Ancillary services	There is nurses' duty station. The same is used for doctors' room. No separate store is there for clean and dirty linen. Trolleys are kept in the corridor itself as there is no trolley bay.	Male Surgeons' Room, Female Surgeons' Room, Nurses' Rooms, OT Store and sterilization room and trolley bays for the respective OTs.		No ancillary facilities were present apart from the OR. In the OR there is a instrument sterilizer but no separate sterilization room is available.
Type of Services	Normal Deliveries	C-Sections, MTP	Emergency gynaecological surgeries	Tubectomy, Vasectomy, MTP

Table 16

First Floor					
Type of OT	Nephrology *	Neurosurgery	Main OT (General)	Laparoscopy OT	Emergency Major OT
No. of Operating Rooms (OR)	1	1	2	1	1
No. of OT Tables	2	2	2+2	2	1
Floor Area (approx sq ft)	350 sqft	280 Sq ft	576 Sq ft for each OR	500 Sq ft	525 Sq ft
Location	Located in the first floor surgical block	The OT is located inside the main OT complex.	It is in the surgical block first floor.	O.T. is located in the first floor of the Main Surgical Block.	The Emergency O.T. is located in the first floor of the surgical block
Ventilation	Ventilation is through window ACs				

First Floor					
Ancillary services		No proper waiting arrangement for patient attendants outside the OT complex.	No proper waiting arrangement for patient attendants outside the OT complex.	No proper waiting arrangement for patient attendants outside the OT complex.	
		The neurosurgery OT does not have dedicated facilities for staff changing, patient preparation, OT reception. Only one room is present which serves as the store and reception	The doctors' duty room and sisters' duty room are used as changing room as there is no dedicated changing room	The OT does not have dedicated facilities for staff changing, patient preparation, OT reception. Only one room is present which serves as the store and reception.	
		No clean utility store is there	Two scrub stations used by the operating rooms, Neuro surgery and laparoscopic operating room	No clean utility store is there	
Type of Services			General surgeries, urology, paediatrics, plastic surgeries	Lap-chole, cystectomy	General emergency cases, orthopaedics & paediatric

First Floor					
					cases

*mainly functioning for dialysis.

Table 17

SECOND FLOOR			
Type of OT	CTVS	Orthopaedics	ENT
No. of Operating Rooms (OR)	1	1	1
No. of OT Tables	2	2	2
Floor Area (approx sq ft)	450 Sq ft	350 Sq ft	350 Sq ft
Location	The CTVS and orthopaedic OT are located in one complex.	The CTVS and orthopaedic OT are located in one complex.	The ENT OT is located adjacent to the orthopaedics OT but not in the same complex.
Ventilation	2 Window A.C.'s - 1.5 Ton + 2 Split AC's - 1.5 Ton capacity each located inside the O.T. Room.	3 window AC's of 1.5 ton each are available in each of the OTs.	2 Window AC's- each of 1.5 ton are available
Ancillary services	There is no patient preparation/induction room. The same is done in the OTs	There is no patient preparation/induction room. The same is done in the OTs.	
	No toilet facilities for staff/doctors in the entire OT	No toilet facilities for staff/doctors in the entire OT.	

SECOND FLOOR		
	The CTVS OT has a lot of inbuilt racks in the walls for storing sterile items. No recovery beds have been planned in the OT Complex	No recovery beds have been planned in the OT Complex.
	A single scrub area exists between the CTVS OT and the orthopedic OT, access to it is through the OTs.	

Table 18

OPD		
Type of OT	Dental OT	Emergency and Casualty Minor OT
No. of Operating Rooms (OR)	1	1
No. of OT Tables	2 dental chairs are there	1
Floor Area (approx sq ft)	224 sqft	500 sqft
Location	Located in the first floor near the dental OPD	Located in the ground floor OPD block near the casualty observation block.
Ventilation	2 split ACs of 2 tons each available	2 window ACs of 1.5 tons each.
Ancillary services	No proper waiting arrangements for patient attendants outside the OT complex.	
	The OT does not have dedicated facilities for staff changing, patient preparation, OT reception. Only one room is present which serves as the store and reception	
	No clean utility store is there	

Ophthalmology Block		
Type of OT	Major OT	Septic OT
No. of Operating Rooms (OR)	1	1
No. of OT Tables	1	1
Floor Area (approx sq ft)	32ft x 25ft	
Location	Located in the first floor of the block adjoining the septic OT	Located in the first floor of the block adjoining the major OT
Ventilation	There are 3 window ACs of 1.5 ton each for ventilation	The mode of ventilation is only through the window. No AC's provided.
Ancillary services	No proper waiting arrangements for patient attendants outside the OT complex.	
	The OT does not have dedicated facilities for staff changing, patient preparation, OT reception. Only one room is present which serves as the store and reception	
	No clean utility store is there	
	There is a single store utilized as linen, appliances, disposable and instrument store.	

The matrices provided above give a detailed insight of the observations pertaining to the operation theatres of the respective disciplines. Accordingly certain salient observations have been found to be common to all the operation theatres. The same has been enlisted as follows:

Common observation for all the operation theatres:

- No zoning with increasing degree of cleanliness is observed. There is no planned access and traffic flow in the OTs. The entry and exit of patients, staff, supplies and sterile and dirty linen is through one common gate.
- Air Conditioning is used for cooling and not for environmental control for the OT's, only window type AC's are used. This exposes the patient to surgical site infection.
- Fungal growth is seen on all the walls in the OTs.
- Sitting arrangement for attendants and relatives outside the Operation Theatre is not adequate.
- No post operative beds available for post surgery patients.
- No OT preparation room present.
- Central piped medical gas system is seen only in some of the Operation Theatres.
- Storage areas are not adequate in Operation Theatres.
- No UPS facility for life saving equipments in OT.
- There is no patient preparation/induction room. Inadequate toilet facilities for staff/doctors in the entire OT.
- Inadequate toilet facilities for staff/doctors in the entire OT
- Most of the operating rooms have more than one OT table which results in overcrowding of the OT. .
- No clean utility store. Presently clean items are stored in the Operating Rooms
- OTs located on the same floor are not grouped in to one OT complex.

Analysis:

- OTs in same floor are not grouped in to one OT complex. This leads to duplication of ancillary functional areas like , change rooms, toilets, stores, patient preparation room, and doctors' lounges which could have been shared in an OT complex.

- The ventilation system in most of the OTs is through window ACs. Installation of a well planned HVAC system is required.

- With reference to the circulation pattern in the OT, the flow of the patient, hospital staffs and materials in all the OTs is bidirectional. There is only one entry and exit for the patient, hospital staffs and materials to the OT. A circulation plan will be required for the OT which would include a circulation corridor, a clean corridor and a dirty corridor.
- Traffic flow for all the OTs is from change room to scrub through the OT, when it should ideally be from change room-to OT through scrub.
- Ancillary facilities are either not available or insufficient.
- A proper zoning system has to be created by maintaining a differential decreasing positive pressure ventilation gradient from the inner operating area to the outer operational area.

Gynecology Operation Theatre MKCG Medical College Hospital, Brahmapur

Emergency and Casualty Unit

The emergency and casualty unit of MKCG Hospital is located in the ground floor of the OPD block near the main entrance of the hospital building. The emergency department can be accessed through the OPD entry. There is no separate entrance for ambulance and ambulatory patients. The emergency unit is functioning with 20 observation beds, distributed in 2 wards with 10 beds in each. There is no triage area for sorting the patients. Patients are directly admitted to the casualty ward. A minor OT is also provisioned in the emergency department. There is one plaster room with toilet, an attached room functioning as a store, sterilization and nursing station.

Table 20

Particulars	Remarks
Reception	NA
Triage	NA
Resuscitation Area	NA
Acute treatment Area	NA
Consultation Area	There is one consultation room where the patients come directly and if required get admitted to the casualty unit.
Procedure room	All the procedures are executed in the minor OT present in the emergency unit.
Plaster room with storage for plaster, bandages, splint and crutch store	A room attached with the minor OT is used as a multipurpose store.
Treatment room	NA
Administrative area	NA
Storage	A store attached with the consultation room is used for storing consumables,

Particulars	Remarks
	medicines etc.
Clean utility	NA
Dirty utility	NA
Cleaners' room	NA
Diagnostic area (Imaging / Laboratory)	NA
Doctor's room	The doctor's room is used as both staff duty room and MO rest room.
Nursing station	NA
Security room	NA
Room for police personnel	NA
Disaster equipment store	NA
PMGV supply	NA
Relatives' waiting area with toilet	NA
Nurse staff room with toilet facility	NA

The Emergency and Casualty unit is also responsible for treatment and admission of all walk in patients during the non OPD hours of the hospital. The space provided for it seems insufficient considering the load it caters to. The consultation area also functions as a nursing station for the observation ward. There is no duty doctors' room for the emergency M.O.

Emergency and Casualty Unit

Intensive Care Units (ICU)

The intensive care unit of MKCG hospital is located in the old building IP block. There are four ICUs of which one is dedicated as neonatal intensive care unit located in the ground floor near the pediatric department. The other three are located in the second floor, are dedicated as medicine ICU (MICU), cardiology ICU (ICCU), CTVS ICU. The ICUs are located near their respective departments.

Neonatal Intensive Care Unit

The department is located on the ground floor in the pediatric department on one side of the nursing station of the wards. The department has one room with 5 beds and 4 phototherapy units, one room with 8 baby warmers and one room at the entrance used for changing shoes and clinical test. The department is Non AC and the condition of the doors are broken. Lighting is very poor with only bulbs.

The major observations made in the NICU are:

- There is no separate reception to receive the patients
- The trolley bay is not available in the unit. The trolleys are kept in the corridor outside the unit as no separate trolley bay is available.
- A shoe change room is present at the doorway of the unit.
- No separate toilet facility is provisioned.
- There is no dedicated nurses' duty room, doctors' duty room. Only a nursing station is there for multipurpose usage.
- There is only a single store room used for storing linen, equipments. The same is also used as treatment room.

- No X-ray facility is dedicated for this unit.
- There is no pantry, feeding room, formula room, examination area, and breast feeding room
- There is no exclusive zone to accommodate the scrub up room, intermediate care area and septic care area.
- There is no dirty utility and soiled linen room. All the materials are kept in the staff toilet.
- To keep the housekeeping materials the janitor's closet is unavailable.
- The toilet facility is commonly used with that of the pediatric medicine department.
- The medical gas provision is through cylinders only.

Analysis:

- The entry and exit to the NICU is through the nursing station. The shoe change room and the clinical test room are located in the same place. The baby cribs, phototherapy units and the baby warmers are all accommodated inside one room with a partition.
- There is no zoning system, in the absence of a proper waiting area the mothers are allowed to stay inside with the babies.

Medicine ICU, Cardiology ICU, CTVS ICU

Table 21

Particulars	MICU	ICCU	CTVS ICU
1. No of beds	4	3	4
2. Location	Located at the 2nd floor near the medicine ward and the neurosurgery ward.	Located at the 2nd floor near the cardio thoracic ward in the corridor behind ECHO, ECG room	Located at the 2nd floor, in between the CTVS and ENT ward.
3. Ancillary space			
(a) Waiting Room with toilet	There is no separate waiting room for the units as well as no separate toilets.		
(b) Trolley Bay	There is no designated area for stationing the trolleys. These are adjusted in the corridor itself.		
(c) Shoe change room	For shoe change no specific area has been provided. The entrances of the units are used for the same.		
(d) Doctor' duty room	A small room adjacent to the ICU is used as doctor's room.	The doctor's duty room for wards and ICU are common.	
(e) Sister's duty room	Available with toilet	There is no separate sisters' duty room. The monitoring is done from the nursing station located in the respective wards.	
(f) Clean Utility/treatment/dressing	No separate area is designated for the same.		
(g) Store	No	The store is common for wards and ICU	
(h) Equipment room	No separate equipment room available.		
(i) Pantry	The dietary service is centralized in the hospital. No pantry is available for the ICU		

Particulars	MICU	ICCU	CTVS ICU
j) Clinical test room	No clinical test room is available		
(j) Dirty utility & Soiled linen room	No separate room designated.		
(k) Nursing Station	Yes	The nursing station is common for wards and ICU	
(l) Toilets	The toilet is commonly used by the patients and attendants.		
(m) Janitor's closet	No availability of janitor's closet to store the housekeeping materials.		
3. Ventilation	1.5 ton split AC	1.5 ton window AC	1.5 ton split AC
4. Wash Hand Basins (No provided)	1 wash basin is there in the bathroom		
5. PMGV System	No	There is provision of PMGV system but it is not in use.	

Analysis:

- In the ICUs there is unavailability of proper hygienic and sterile environment as there is no proper segregation of clean area, protective area. No specific area has been provided for shoe change. The ***auxiliary services*** such as the stores, clean utility, dirty utility, procedure room, janitor's closet have not been provided.

- There is no separate storage facility for the soiled an***d clean linen. Due*** to the absence of proper storage facility the soiled linens are either stored in the nurses' duty room or in buckets outside the toilets.

- The nursing station is located in a separate room, defeating the very purpose of intensive care which requires constant monitoring.

- The ICU complex does not have a trolley bay, the trolleys are kept in the nurses' duty room or in the main corridor.

- An ICU is a place where critical patients are treated, a well planned PMGV system is a necessity.

Maternity and Delivery Unit

The maternity and the delivery unit of MKCG Hospital is located in the ground floor of the old IP building. The unit is close to the gynaecology and pediatric department. The unit is located at one corner of the corridor leading to the gynaecology department. There are two labor rooms with 7 labor tables.

Table 22

Particulars	Availability
1) Reception cum waiting area	There is no reception counter for admitting the patients. Patients are directly taken to the required area.
2) Admission/examination/triage	No admission counter is available. Admission procedure takes place in the nurses' duty room only.
3) Nurses locker/change/rest room	There is a nurses change room
4) Doctors' locker/ change/ rest area	For resident surgeons the facility is available
5) First stage labour cubicles with numbers	NA
6) Delivery Rooms	
a) Number of rooms	Two rooms are there
b) Number of delivery tables	There are seven delivery tables of which six delivery tables arranged in two rooms and one for high risk patients.
c) Baby resuscitation room	In between the high risk and the main delivery area.
d) Recovery room	Yes
e) Septic delivery room	NA
7) Instrument sterilizing room	No separate room is there. Sterilization is done in the labor room itself.

8) Sterile store room	NA
9) Scrubbing room	NA
10) Dirty utility room	NA
11) Operating delivery room	
a) OT recovery room	NA
12) Eclampsia room	There is an eclampsia room but not utilized presently.

Other than the specified observations detailed above certain other observations pertaining to the delivery care are stated below:

- One room with 6 beds is there to treat the critical case as there is no ICU.
- There is one room named as the septic labour room with 5 beds but no infection control measures are taken.
- The ventilation in the delivery room is provided through 2 window ACs.
- The delivery rooms are accommodated with multiple labor tables leading to a lot of chaos.
- There is a room earmarked for eclampsia patients but there are no appropriate facilities for such patients.
- The entry to the OT area is unrestricted, no zoning system is available.

Out Patient Department

MKCG Medical College Hospital has centralized OPD services housed within a two storied standalone building located in front of the main entrance. Apart from the OPD, it also accommodates the emergency & casualty unit, physiotherapy and anti retroviral therapy (ART) centre. Vertical circulation within the OPD comprises of a staircase and a ramp. The main entrance of the OPD block leads to the OP registration counters and IP admission counter.

Table 23

Location	Specialty	Description	No. of consultation chambers
Ground Floor	General medicine	Male medicine, female medicine	2
	General surgery	Sr consultant, surgery OPD	2
	Orthopedic	Orthopedic OPD, orthopedic consultant, plaster room, dressing room(M & F),	5
	Neurosurgery	No separate neurosurgery OPD. Currently one room is shared by neurology & neurosurgery	1
	OBG	OBG Store, Consultant OBG, FW& Pap smear OPD,	4
	Cardiology	OPD for Cardiology HOD. No separate consultation room	1
	Neurology	No separate neurology OPD. Currently one room is shared by neurology & neurosurgery	
	Endocrinology	No separate endocrinology OPD. A super specialty clinic is present from where the service is rendered.	

Location	Specialty	Description	No. of consultation chambers
	Gastroenterology	Surgical gastroenterology	1
First floor	ENT	ENT OPD, ENT surgery, ENT minor OT, audiometry	4
	Ophthalmology	Ophthalmology OPD, refraction room, dark room, ophthalmology Professor - OPD, vision testing room, contact lens clinic, glaucoma clinic, minor OT	8
	Pediatric	Pediatric OPD, neonatal follow-up clinic, paediatric professors OPD	3
	Psychiatry	Psychiatry OPD	1
	Dental	Dental OPD, dental HOD OPD	2
	Skin & VD	Skin & VD OPD, skin & VD professors OPD, skin & VD lab	3
	TB & chest	RNTCP OPD& lab	2
	Geriatric	Preventive geriatric clinic	1
	Others	Community medicine OPD, ART	
	CTVS	No CTVS OPD	
	Plastic surgery	No separate plastic surgery OPD	
	Nephrology	No separate nephrology OPD.	

Location	Specialty	Description	No. of consultation chambers
	Urology	Urology OPD	1
	Pediatric surgery	No separate pediatric surgery OPD	

Other facilities that are included in the OPD are:

Ground Floor

- Well baby clinic
- OPD dispensary (with 4 counters)
- RNTCP OPD & lab
- Surgical oncology
- Surgical gastroenterology
- OPD - cardiology HOD
- OPD – Asst prof (medicine)
- OPD – Family welfare & pap smear clinic

Analysis

Currently there are 4 registration counters for the OPD and a single window counter for all inpatient admissions, the area infront of the counters is usually congested during the OPD hours. There is no provision of a central waiting space but sub waiting areas are available in front of each consultation room. Some of the consultation rooms were found to be overcrowded since there were multiple doctors attending to patients simultaneously. Public amenities such as toilets and drinking water facilities are inadequate in the OPD.

OPD Clinics at MKCG Medical College Hospital, Brahmapur

4.2.1.2 Clinical Support Service

Blood Bank

The blood bank is located in a standalone building near the new trauma centre. The building design to some extent is a circular pattern. The ground floor of the two storied building is mainly dedicated for the administrative and the blood donation purpose. There is provision for quality control room, medical officer's chamber in the unit

The first floor is dedicated for administrative work only. The site layout depicts that there is enough space available for extension. All major components of a blood bank were found to be present with a few exceptions as enlisted below.

Table 24

Particulars	Availability
Room for registration and Medical Examination	In the ground floor near the entrance is located the registration and the reception counter.
Lab for blood group serology (A/C)	Yes
Lab for blood transmissible diseases (Syphilis, Malaria, HIV-antibodies, Hepatitis-antibodies) (A/C)	Yes
Blood collection room (A/C) – 100m^2	Yes
Blood component Preparation (Shall be A/C) – 50 m^2	Yes
Sterilization cum washing	Yes
Blood storage Area	Yes. There are three fridges, one at the component, counseling and at the testing

Particulars	Availability
	room.
Area for quarantine of blood and reagents not suitable for use	NA
Store cum Records Room	Yes. There is separate room for store and record room.
Staff Room	Yes
Blood Bank In charge room	Yes
Patient waiting area	NA
Patient refreshment/ rest room	NA
ICTC Counseling Room	Yes
PPTCT Counseling Room	NA

Blood Bank at MKCG Medical College Hospital, Brahmapur

Imaging Department

The department is located in two buildings one on the ground floor of the main IP building in front of the Pediatric department and the other on the ground floor of the regional diagnostic department. The IP building has the X-ray, USG, Color Doppler, CT Scan housed in it. The RDC ground floor is housed with only the X-ray facilities.

The registration of patients undergoing any radiological investigation is decentralized for all treatment modalities. Other tests like TMT, ECHO, ECG & Holter are provided from three rooms in the cardiology department (2nd floor) located near the cardiology ICU.

The RDC building houses four X-ray units- two 500 MA X-ray machines in one room with a partition; one Dental X-ray room; one 100 MA X-ray room and one dark room. The department is a new block with marble flooring and aluminum doors

Other ancillary rooms that are required for the X-ray unit have been reflected by the following table. Waiting area and other basic amenities such as toilets and drinking water for patients is of utmost importance which is not available adequately.

There is a Color Doppler USG room in the IP building. Toilet facility is very important for patients undergoing USG but presently there is only one toilet in the common patient waiting area. Toilet facilities nearby to this room should be adequately provided for.

Table 25

Particulars	Availability
X-Ray	
a) Reception and Registration counter	The counter is commonly shared with CT scan waiting area
b) Waiting room with toilet	The corridor utilized as the common waiting area has a toilet.
c) Fluoroscopy and radiography rooms	There are three 500 MA X-ray machines of which two are housed in the RDC building and one in the IP block. The Dental X-Ray and 100 MA machines are housed in 3 separate rooms. There are two 60 MA mobile X-ray machine in the IP block
d) Attached dressing cubicle with toilet	NA
e) Film developing and dark room	The film developing and drying room is used as a registration room also.
f) Film drying room	
g) Office, Record and computer room	NA
h) Radiographic work room	NA
i) Stores	Presently there are no stores designated separately for storing films, chemical

Particulars	Availability
	and equipments, only a single store is there for all purposes.
1) Radiologists' rooms	NA
2) Injection and Barium meal preparation room	NA
3) Trolley Bay	NA
4) Observation room	NA
5) Room for patients lying on a stretcher	NA
Ultrasonography	
a) Sub waiting room	NA
b) USG room (Black & White)	Yes
c) Colour Doppler room	Yes
d) Toilet	The toilet facility located in the corridor is common for all.
6) Mammography room	The mammography room and the colour Doppler room are sharing the same room with a partition.
a) Change room	NA
7) Film Library	NA
8) Seminar room	NA
CT Scan	
a) Trolley Bay	NA
b) Patient Change Cubicle	NA
c) Radiologist's room	Yes
d) Technician room	Yes

Particulars	Availability
e) Gantry room (=>25 M^2)	Yes
f) Console room	Yes
g) Record room/Computer room/Reporting room	There is common room for all.
h) Dark room	Yes
i) Toilets	NA
j) Store room	NA

Analysis

- The imaging department has been housed in two blocks, however due to non-availability of manpower only the imaging department is fully functional.
- The radio diagnosis department in the IP block is located adjacent to the paediatric block, the area is always crowded as there is no proper waiting area causing congestion even in the paediatric area.
- The condition of the civil infrastructure in the department is very poor with water leakage and peeling of paint seen in many areas.
- Public amenities like toilets, drinking water facility, waiting areas are not adequately provided.

Hospital Laboratory

The hospital laboratory is located on the first floor of the regional diagnostic center block. It is located beside the OPD block and can be accessed through a separate entrance. There is a sample collection room which doubles as a report distribution room. Inadequate waiting space has been provided for the patient/attendants. The microbiology, biochemistry and hematology sections are partially present in the laboratory while the complete histopathology is present in the medical college. The details of physical infrastructure present in the laboratory have been elaborated as follows:

Table 26

Particulars	Availability
Reception & registration	No separate reception and registration is available
Specimen collection and distribution	Available
Examination cum sample collection room	Available
Waiting Room with Toilet	NA
Pathologists' Office	NA
Stores	Available There are two stores; one for the biochemistry laboratory and the other for the microbiology laboratory.
Stores-in-charge's room	NA
Staff changing with toilets	Available for endoscopy
LPG Bank	NA
Histopathology Section	The section is available in Medical College
Hematology Section	Available
Biochemistry Section	Available. Two rooms are available for the same.
Microbiology Section	Available in the medical college.
Immunology Section	Available in the medical college.
Clinical Pathology Section	There is one Processing room and one examination room.
Virology Section	NA
Equipment Cleaning Section	NA
Photography & Illustration, Pathology	NA

Particulars	Availability
Museum and other facilities	
Computer and reporting room.	Available

4.2.1.3 Support and Utility Services

Central Sterile and Supply Department (CSSD)

The CSSD is located in the ground floor of Surgical Block. Currently the CSSD is under repair and renovation. Thus a make shift sterilization unit is currently functioning in the lecture hall. The ventilation, humidity, temperature is not controlled in the CSSD. In the new unit, which is under construction the same is planned. The CSSD has been planned to accommodate the following functional areas.

Table 27

Particulars	Availability
Receiving area for soiled articles	Available
Sorting area	Available
Cleaning area	Available
Packing area	Available
Sterilizing and cooling area	Available
Storage area for clean stocks (not sterile)	NA
Storage area for sterile stocks	Available
Dispatch area for the sterile packs	Available
CSSD supervisor's room	Available
Staff change room with toilets and lockers	Available

Pharmacy

The medical store maintains inventory of all technical (Instrument, chemicals, gas) and non technical (Bedding, clothing, electrical) items, and the department is spread across various areas inside the hospital. The main store area has one toilet for staffs which is in a very poor condition without lights, broken door and poor maintenance. There are 11 rooms including seven store rooms, one store in charge room, one medical gas store and two dispatch rooms for daily medicine requirements of the hospital. The department has two gates one for entry/exit and another gate which is at the back side of the hospital used for receiving inventory. Due to lack of space, the corridor is also used for storing goods and dispatching diesel for generators. The department has also occupied few rooms of other departments for storing goods i.e. three rooms of the patient's attendant rest rooms, three rooms of diet department, two rooms of medical record department, and one room in the RDC building for CT scan room. The flooring of the main store is cemented, walls are old painted, old wirings excluding the in charge room which is renovated with wall tiles and new paint and wiring. The condemned items are disposed yearly through tenders, items valued at more than a lakh rupees require permission from the government before being condemned. The repairing of the non medical equipments has been outsourced to a private agency due to lack of space and manpower.

Analysis:

- The space constraint is one of the main problems of the store. Due to lack of storage facility, the items are stored in other rooms, thereby preventing their use for the purpose it is meant for.

- All the technical and non technical items are stored at the same place. Such items need separate space for storage.

- The supply of consumables, equipments from the store is centralized in the hospital.

Engineering Service

GED- The department is located near the main entrance gate of the medical college near the ophthalmology department. The department is in charge of the electrical maintenance of the entire medical college & hospital. The main supply of electricity is through a substation (33/11 KV) stepped down by eleven transformers (includes two to be installed). The department is also in charge of installing and maintaining generators in the hospital, the existing generators are: one 25 KVA upgraded to 75 KVA for 14 OTs, 75 KVA generator to be installed for CT Scan, radiology, ICU medicine, plastic surgery. The lifts of the hospital is also maintained by the GED but due to lack of manpower they have outsourced the maintenance to a private agency (EVM Company). There are a total of 240 A.Cs in the hospital of 2 ton and 1.5 ton capacities. These ACs are also maintained by them.

Fire Protection

The hospital does not have any smoke detectors, sprinkler system, fire alarm, fire shield doors as well as fire signages and no fire training has been given to all the staffs of the hospital. Six sets of fire extinguishers are there but they are never refilled or maintained so that during any emergency they can be suitably used. Fire extinguishers are present only in limited areas within the hospital building complex. Area housing inflammable items such as the stores, manifold room should have facilities for combating any calamity resulting from fire.

In the absence of any designated fire escape route, the ramp has been identified to be used for the same since it is centrally located from all patient rooms. There is water reservoir to fight any emergency.

Vertical Circulation

To enable vertical circulation in the hospital, lift as well as staircases has been provided. There are two lifts operating up to the second floor. The main purpose of these elevators is to carry patients and the staffs. There are no elevators dedicated to carry the disposal of waste or for food distribution. The hospital has four staircases in the IP block, two in the OP block and two in the IP medicine and pediatric new block. To carry the patient trolleys and to enable a handicapped patient friendly environment, a ramp is provided both in the IP block and in the OP block.

Ambulance Services

The hospital has two vehicles one Eicher Van and one Mahindra Bolero Jeep used as ambulances with no life support equipments in it. The ambulance service is managed by the casualty department. The service is chargeable and available with a separate booking counter at the OPD registration counter and one near the new pediatric department. There is no earmarked space or covered garage for the ambulances. As a result, the ambulance is parked outside the casualty department in the public parking area in front of the OPD.

Medical Records Department

The medical records department is on the first floor in front of the administrative department. The department has one room for in-charge with six record achieving rooms opposite to one common corridor with an approx area of 2100 sq ft. There is a separate MLC record room, registration records room, death/birth record room and room for maintaining records of all departments.. All the records are stored year wise in steel/wooden racks in all the rooms. There is one common toilet in the outer corridor of the MRD department which is used by the MRD department and the nursing matrons.

Two rooms of the medical records department are being occupied by the store as they do not have sufficient space to store the items.

Dietary Services

The kitchen and dietary department is located in the ground floor of the IPD building in front of the central store. This department includes one general store, the dietician's office and a kitchen. Though the space is provided by the hospital, dietary services are outsourced to a private contractor who is responsible for food preparation and distribution.

- The area of the kitchen is about 1750sqft accommodating the cooking area along with washing area and store. No segregation is done within the available area.
- The cooking area and washing area has cement asbestos roofing and the civil structure is in a state of disrepair.
- Essential ancillaries such as staff rest rooms, change rooms, toilets are not present.
- The dietician's room is present but state of civil maintenance is poor.
- No separate area for food distribution like a server or food trolley bay is present.

- No dedicated area for preparation of therapeutic diets is available

Refrigeration facilities are present in the form of a deep freezer and a domestic refrigerator. No walk in freezers is present

Linen and Laundry

The laundry services are rendered from a single storied building located at the rear of the hospital campus in front of the oncology block. The total built up area of this newly constructed block is about 1200 sqft. There are three rooms out of which two are used for storing, washing materials, washing and drying linen. The laundry being a non mechanized one does not have any laundry equipment. There are 20 launderers who have been engaged on contract for washing all linen of the hospital. Hand washing of linen is done by soap cakes and detergent powder**.**

Dirty linen is transported from all areas of the hospital by rickshaws. No dedicated areas for reception/collection, sorting and change room, autoclaving facility is present within the laundry. Daily average workload is 300-350 pieces of linen /day and about 350 pieces of OT Linen. No boiler facility is available. There is a heater where linen is put in boiling water for dislodging stains. There is a water tank of about 2000 Ltrs located in the roof.

An ideal mechanized laundry should have the above mentioned functional areas none of which is present.

Bio medical Waste Management

The biomedical unit is outsourced to a private agency (Life line Pharma) and it is located at the back side of the IP building near the staff parking area. The unit is in a separate area surrounded by a boundary wall with one separate area for segregating wastes, four garage rooms (two shredder rooms, one microwave room & one incinerator room) for machines and one in charge room. The wastes are disposed by microwave (60 kg capacity) & incinerator (double chamber/burner of 70kg/hr capacity). The outsourced staffs are provided with gloves, aprons, shoes, & masks while disposing wastes by the agency. All the equipments are owned by the hospital but the management of waste is outsourced. Every morning by 9:30 am the hospital wastes are deposited at the waste unit collected by the hospital house keeping staff.

The waste are collected form waste bins of each department in covered baskets in a trolley by the hospital staff. Most of the time the wastes are not segregated from the collection point as a result again at he disposal unit it is segregated by the outsourced staffs. Wastes are generated in the units and disposed in deep burials (covered space with boundary wall close to the waste unit) provided by the hospital inside the campus.

The house keeping staffs have under gone training for managing wastes, yet they collect wastes in open baskets sometimes without segregating at the point of collection.

Physiotherapy

The physiotherapy department is located on the 1st floor of the OPD building adjacent to ENT OPD department. This department includes one reception room, one large area fenced with iron net & a small room where some equipments are kept. The approximate area of the department is 1100 Sq ft which accommodates the reception along with Gymnasium & Electrotherapy room.

Table 28

Particulars	Availability
Reception / Office / Records	A reception is there where the records are also maintained.
Waiting rooms with toilets	NA
Electrotherapy cubicles	
(a) Infrared cubicle	NA
(b) Ultraviolet room	NA
(c) Combined treatment	Yes
Gymnasium	
(d) Changing cubicles	Yes
Stores	NA

Particulars	Availability
Sanitary (Separately for male and female)	NA

The physiotherapy unit is functioning without the required public amenities. No waiting space has been provisioned for the patients separately. Thus they need to adjust with the other waiting space. There is even no sufficient sanitary facility thus causing patient inconvenience, particularly for the disabled patients who need special provision.

Parking

The parking area of the hospital is divided into three areas, one for hospital staffs and doctors, one for patients, and one for public transport. For staffs and doctors the parking area is at the back side of the IP building, for patients/visitors the space for parking is earmarked inside the main gate of the hospital and for public transport like auto rickshaw and rickshaw the parking space is in front of the entrance gate of the hospital at both sides of the service road. The management of parking lots has been outsourced by the hospital to a private agency. The ophthalmology department has a separate parking area within the ophthalmology building area. There are clearly visible signages for all the parking areas.

Parking for Patient/Visitor:

Though there are dedicated patient/visitor vehicle parking zone, yet there is no space marked separately for two wheelers and four wheelers. Some two wheelers were seen to be parked in corridors inside the building. All the vehicles are parked randomly wherever space is available. The total area for patient vehicle parking is 10,000 sq ft approx which includes the one in front of the OPD and one adjacent to the OPD. The parking area beside the OPD has two entrances one from the entrance gate and one entrance from the way to the trauma centre behind the OPD. There is a parking fee for all the vehicles which are collected by the private agency. The parking lot is an open piece of land without any fencing and overhead shade. At peak hours the parking lot accommodates 150 two wheelers and around 22 four wheelers. Apart from that a lot of vehicles had to be parked in other places since the current space is not adequate.

Parking for Doctors & Staffs:

The approx area for parking is around 3000 sq ft for both two wheelers and four wheelers. But there is no earmarked space for two wheelers and four wheelers. The entrance and exit to the parking has a separate service road which passes through the P.G hostel of the medical college.

Parking for Public Transport:

Since there is no earmarked space for public transport, they are parked in front of the entrance gate at both sides of the service road of the hospital. Autorickshaws and rickshaws are generally parked in the same area.

Parking of Ophthalmology Department:

The department has a separate parking space for staff/doctor parking with asbestos roof with an approx area of around 800 sq ft. The parking for patient/visitor parking is not earmarked but there is ample space for parking vehicle inside the premises.
It is not easy to park vehicles in the parking area during the peak hours as there is a heavy concentration of two wheelers which are parked in a disorderly manner wherever there is free space available. At the peak hours vehicles are also parked outside the parking area in the field, by the road side behind the OPD where there is ample space available

There is only one security guard at the entrance of the hospital gate and 3 staffs from the outsourced agency who are responsible for the security of the vehicles. There is no security for the staff/visitor parking.

Parking Facility at MKCG Medical College Hospital

USER PERSPECTIVE STUDY OF

MKCG MEDICAL COLLEGE & HOSPITAL, BRAHMAPUR

4.2.2 User Perspective Study MKCG Medical College Hospital, Brahmapur

The success of a hospital is generally measured by the quality of patient care it provides and the efficiency with which it operates. The healthcare facility planning should be conducive enough for both the users and the providers so as to ensure delivery of effective and efficient patient care. A user perspective study has been conducted for patients receiving treatment at MKCG Medical College Hospital, Brahmapur to envisage the patient's inputs in the expansion plan for the facility. The sole objective of the study was to feel the patients' pulse while determining the future needs of this hospital.

The user perspective study has been carried out through a structured questionnaire. Two different sets of questionnaire have been prepared for OPD and IPD respondents. The same is based on various criteria upon which patient's perception of a healthcare facility depends. Since OPD and IPD are the key patient care area in hospital respondents of this study primarily comprises of people using this services.

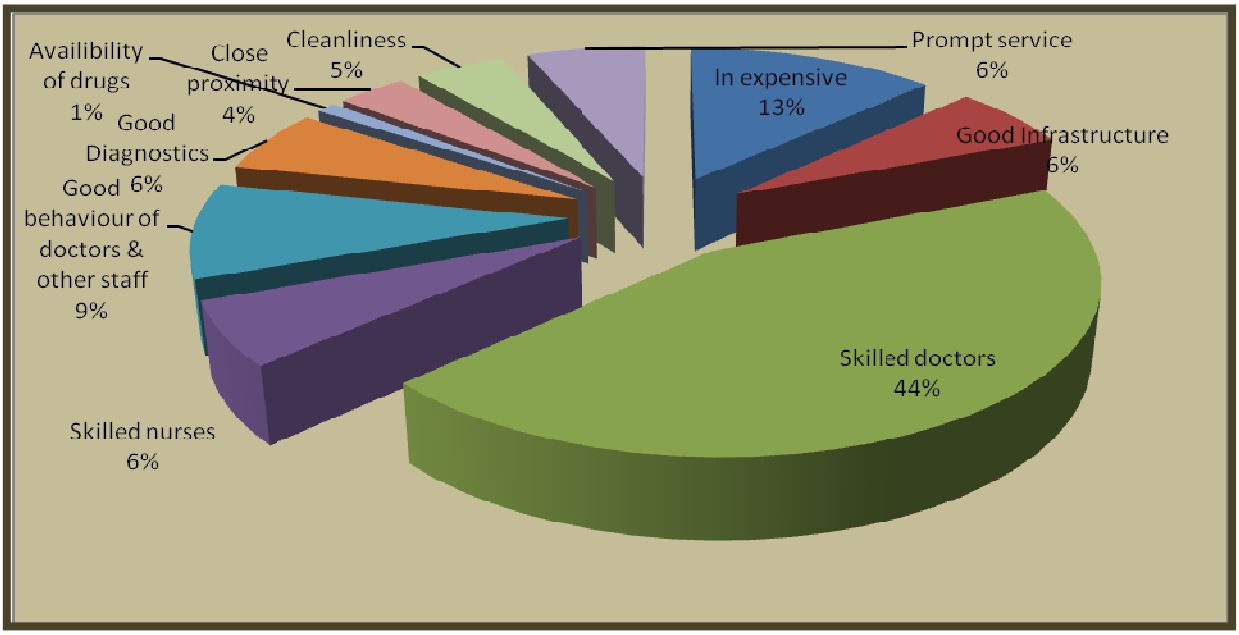
A cross section of patients both from the OPD as well as the IPD has been chosen. Among the outpatients patients from all OPDs and specialty OPDs have been included. The inpatients also have been distributed into respondents of different specialty wards. The findings of the study have been detailed out as follows.

CRITERIA FOR SELECTING THE FACILITY

The user perspective survey carried in MKCG Hospital upon the patients reveals that majority of the respondents have chosen this hospital for their service due to the competent and reliable team of doctors and inexpensive treatment. A combined response of the OPD and IPD respondents are represented in the graph below.

The graph shows that 44% of the patients choose the hospital because of the skilled doctors.

Chart 3



4.2.2.1 OPD Users' Survey: Key Findings & Analysis

The Outpatient Department is a key patient care area in the hospital. Though the span of stay for patients is less in the OPD as compared to the inpatient wards, yet patient satisfaction is greatly influenced by the services and facilities provided in the OPD and other related ancillary areas. A cross section study has been conducted for OPD patients of MKCG Medical College based on certain predetermined criteria to elicit patient perspective about the same. The criteria have been enlisted as follows:

- Criteria for selecting the facility
- Facilities, Amenities & Conveniences for patients in the OPD
- Availability & Adequacy of service provision
- Feedback about general quality parameters
- Patient Friendliness

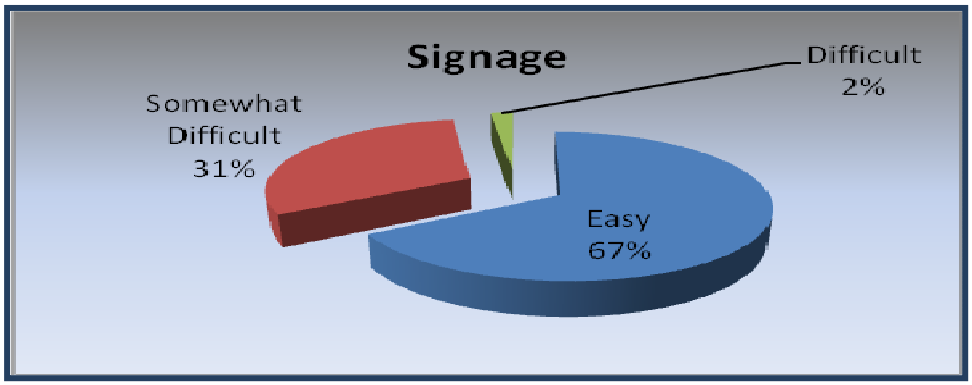
A series of questions under each of the above heads were asked to the patient respondents to infer a holistic view of the patient perspective of the OPD at MKCG Medical College, Brahmapur. The feedback thus received has been compiled and analyzed through statistical techniques. Key findings of the same have been illustrated below. These findings formed an essential ingredient in planning patient friendly reorganization and expansion plans for the hospital.

FEEDBACK ABOUT FACILITIES, AMENITIES & CONVINIENCES

Signage

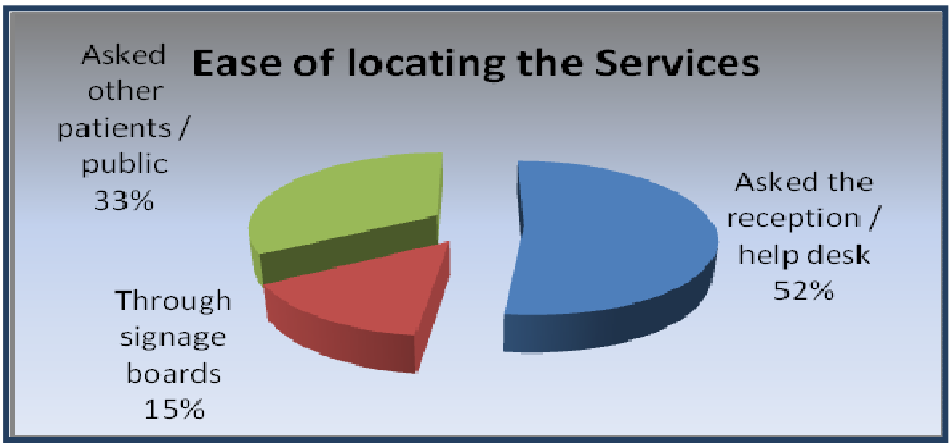
From the patient survey analysis it is seen that most of the patients did not have much problem in locating the desired locations. But on physical verification it has been found that the signages are not given in the appropriate areas for easy identification. External signages are hardly present in the campus while the internal signages are not placed at convenient areas for easy identification.

Chart 4



Due to lack of prominent signages at appropriate locations patients generally tend to take help of the reception desk for way findings in the OPD. Signages are also used but their usage can be increased by refurbishing the signage system in the hospital. Local language should be essentially incorporated in all of the same.

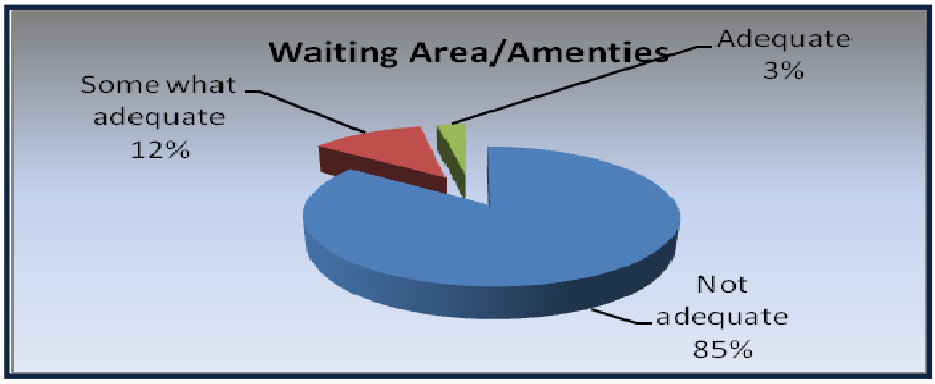
Chart 5



Waiting Area and Amenities

Majority of the patients rated the public amenities in the OPD as inadequate due to the acute shortage of the same. Basic facilities such as waiting area, drinking water facilities, toilets are insufficient to cater to an enormous daily OPD caseload of about 650 patients per day. Patients are forced to wait outside the OPD block because of such deficiencies.

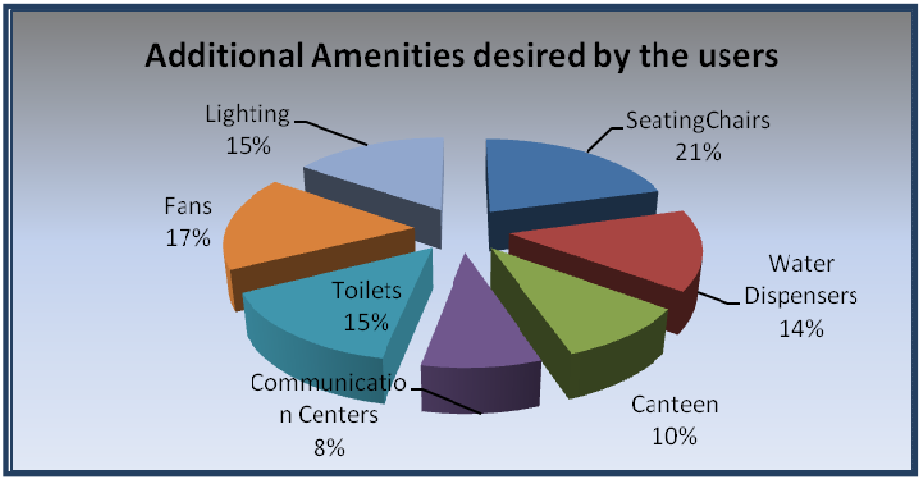
Chart 6



User Perspective Requirement of Facilities / amenities

Seating chairs, toilets & drinking water dispensers, fans are the most sought after facilities in the OPD premises. The OPD also should be well lit and properly ventilated to ensure maximum patient satisfaction.

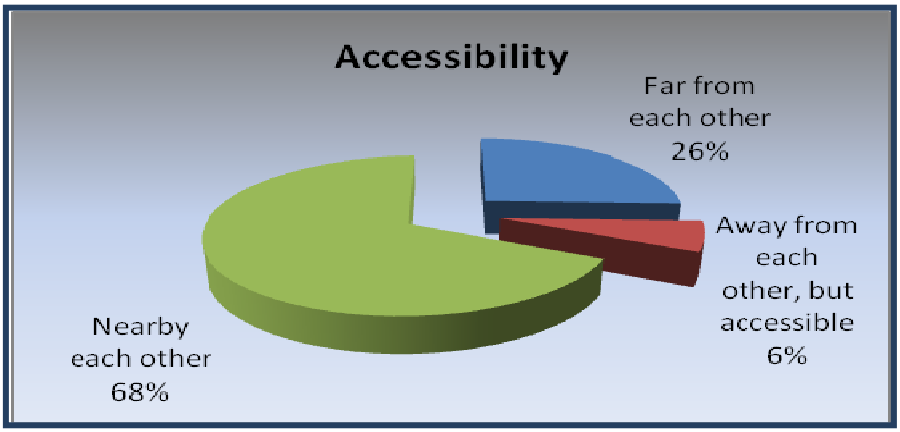
Chart 7



Accessibility

From the user perspective survey it is revealed that the patients did not face much problem while seeking service in the hospital as all the buildings are located nearby to each other. Some of the departments like the psychiatry, ophthalmology, skin and VD department are located at a distance from the main building. To reach these places patients need to traverse certain distance. This is reflected from the 26% of the respondents saying the departments are located far from each other.

Chart 8



General Quality Parameters

The section on general quality parameters included an array of questions pertaining to the following issues of concern for the patients:

- Infrastructure
- Cleanliness
- Promptness in the service
- Signage/marking system
- Availability of drugs
- Availability of diagnostics services

Chart 9

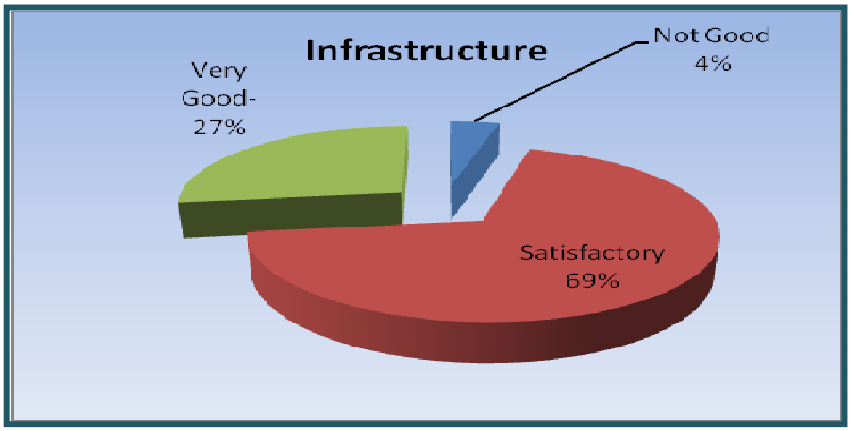


Chart 10

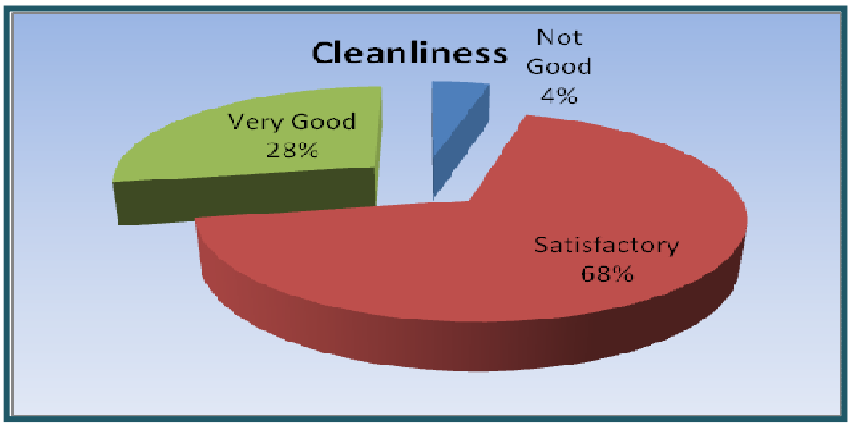


Chart 11

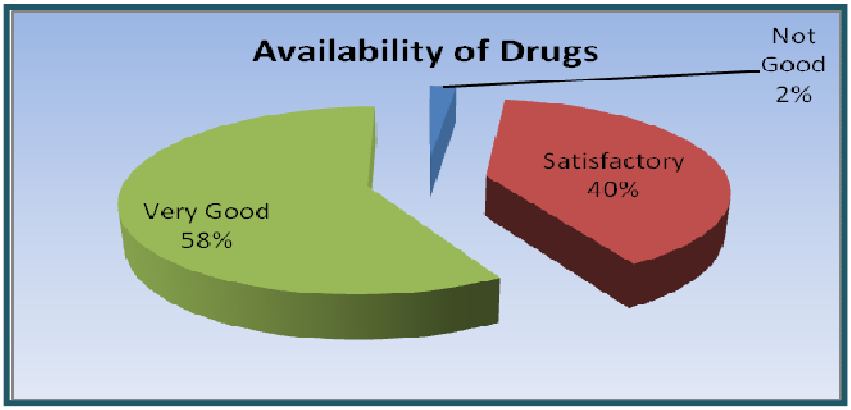


Chart 12

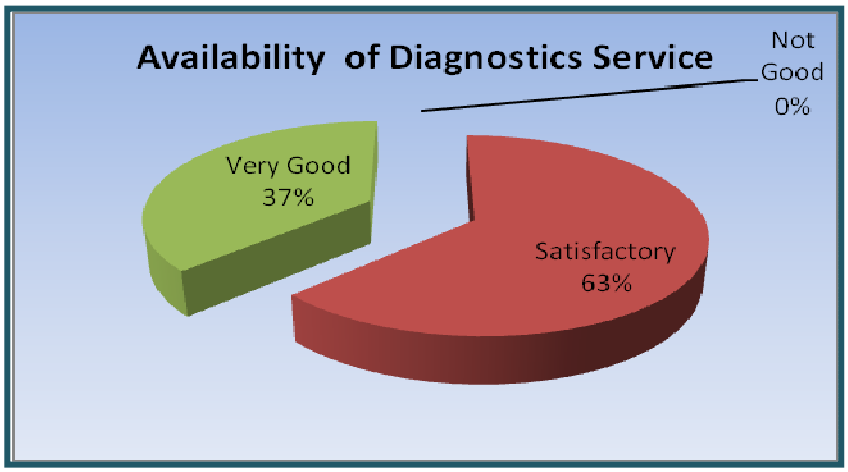
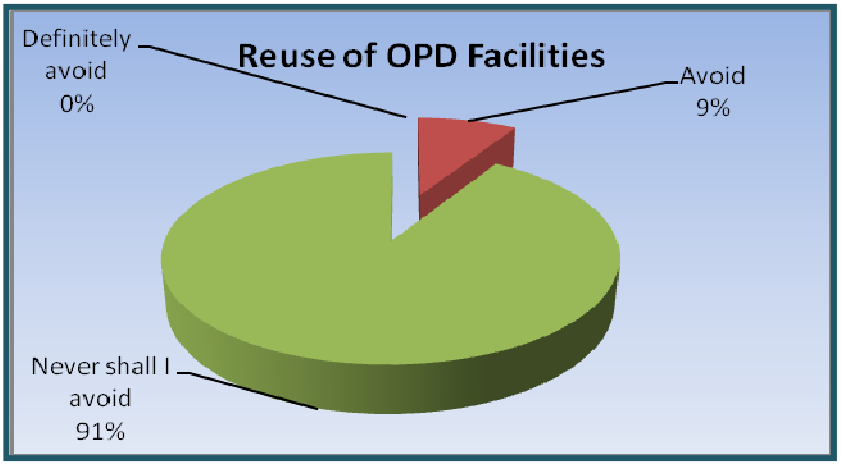
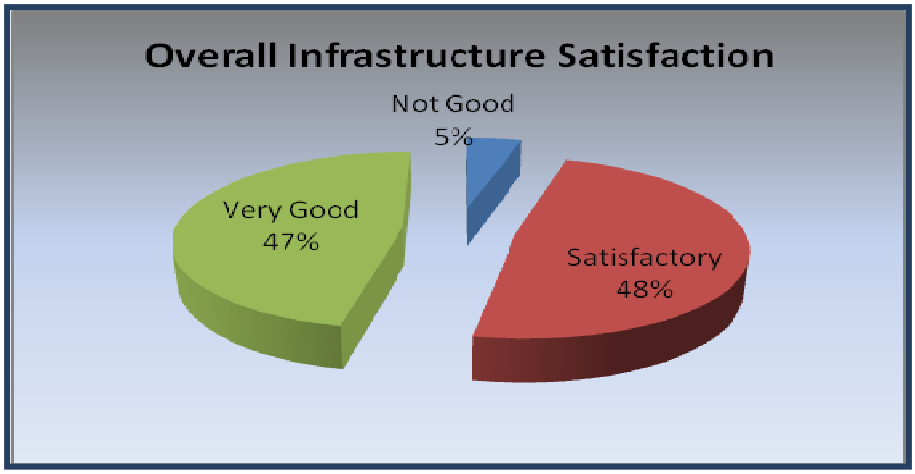


Chart 13



Majority of the patients are satisfied with hospital infrastructure and cleanliness of the hospital. The behavior of the hospital staff and the doctors has been rated satisfactory by the majority which is again a major cause of choosing to seek services from this hospital. Data analysis of all responses combined have revealed that about 55% of the patients are satisfied with the services and facilities in the OPD while a miniscule feel that they were not good. Since the patients are generally from a lower economic strata, their expectation is only restricted to the basic needs which is reflected by their responses.

Chart 14

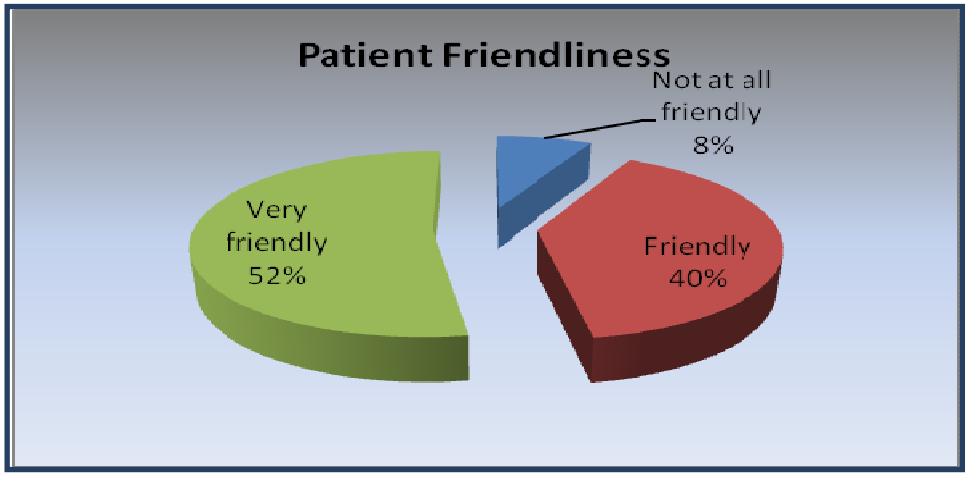


Patient Friendliness

Apart from the service delivery and provision, the built environment of the hospital should be patient friendly to ensure effective healthcare delivery. Questions relating to various aspects of the following were asked to the respondents

- General environment in the OPD
- Ease of obtaining required information
- Patient/attendants education about their treatment modalities
- Waiting time in the OPDs
- Staff friendliness

Chart 15



Data analysis reveals that a majority of the respondents found the OPD to be a patient friendly service area.

4.2.2.2 IPD Users' Survey: Key Findings & Analysis

A cross section study has been conducted for in patients of MKCG Medical College based on certain predetermined criteria to elicit patient perspective about the same. Respondents for the same have been drawn from patients of different specialties. The criteria have been enlisted as follows:

- Criteria for selecting the facility
- Facilities, Amenities & Conveniences for patients in the OPD
- Availability & Adequacy of service provision
- Feedback about general quality parameters
- Patient Friendliness

A series of questions under each of the above heads were asked to the patient respondents to infer a holistic view of the patient perspective of the IPD at MKCG Medical College, Brahmapur. The feedback thus received has been compiled and analyzed through various statistical techniques. Key findings of the same have been illustrated below. These findings will be an essential ingredient in planning patient friendly reorganization and expansion plans for the hospital.

Facilities, Amenities & Conveniences

Sanitary Annexes

Sanitary annexes such as drinking water facility, toilets, baths, and wash basins are one of the major components of the basic amenities that should be provisioned for. The users gave a mixed response with respect to provision of these facilities.

Chart 16

Drinking Water Facility

Chart 17

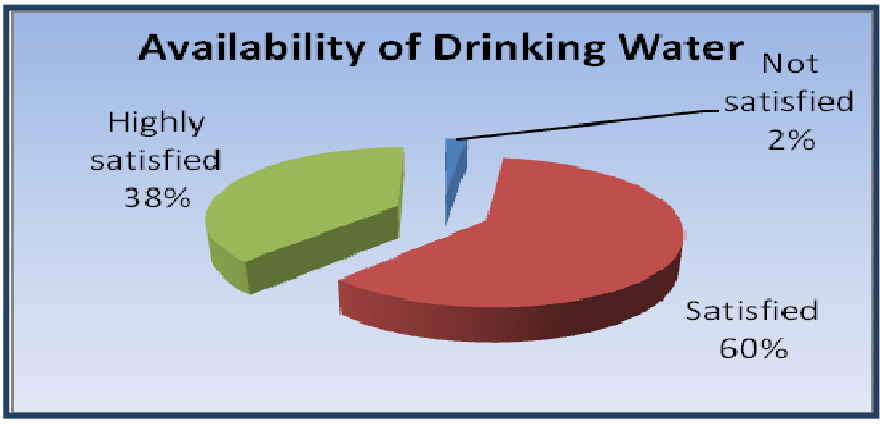
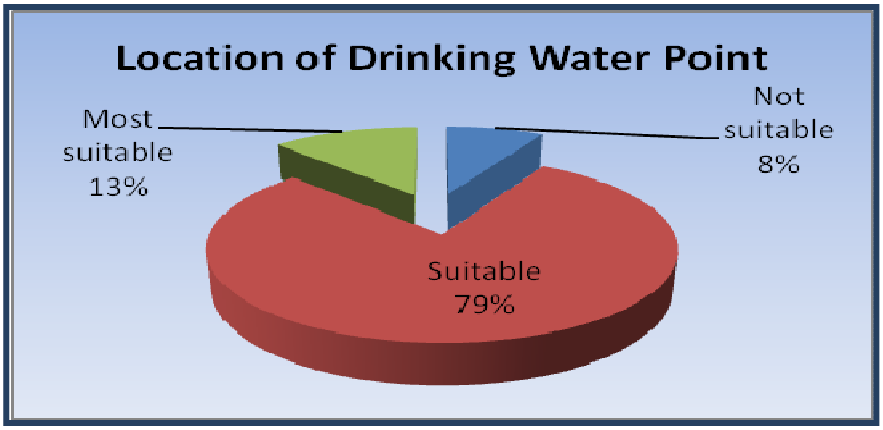
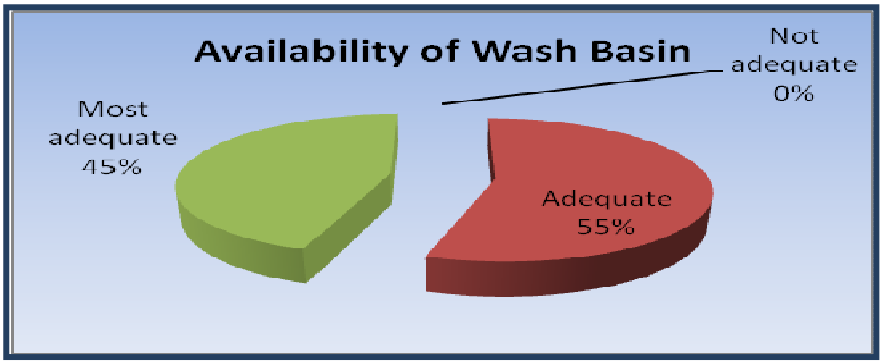


Chart 18



Availability of Wash Basin

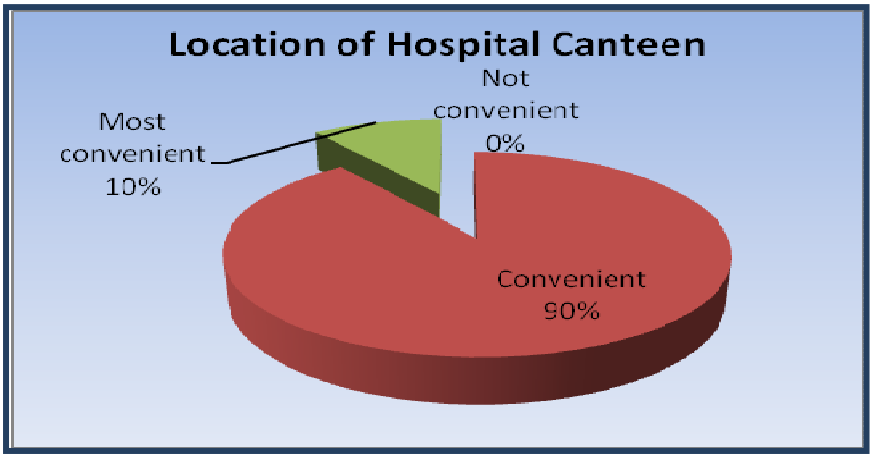
Chart 19



Food and Diet Amenities

Food supply at MKCG Medical College Hospital is quite regular and patients have an option to choose from semisolid, liquid, solid and diabetic diets. 90% of patients perceive food and diet amenities to be convenient.

Chart 20



Parking facilities for patients/attendants having own/hired vehicles

There is a designated parking area within the hospital, however a majority of the respondents were of the opinion that the parking space should be close to the main entrance.

Chart 21

The graph illustrated above reflects that 95% of the patients are satisfied with the parking facility. On further discussion it was found that the reason for the satisfaction is because of the fact that vehicles are parked in any location of the hospital campus and presently there is no objection for the same.

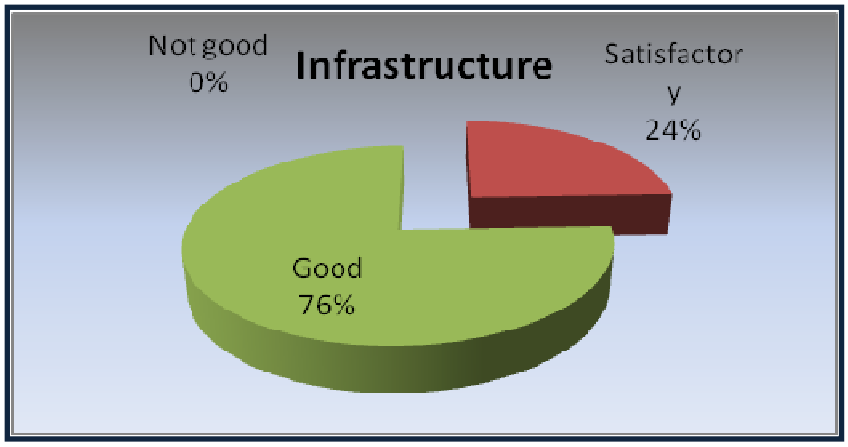
General Quality Parameters

The section on general quality parameters included an array of questions pertaining to the following issues of concern for the patients:

- Infrastructure
- Cleanliness
- Promptness in the service
- Signage/marking system
- Availability of drugs
- Availability of diagnostics services

Infrastructure

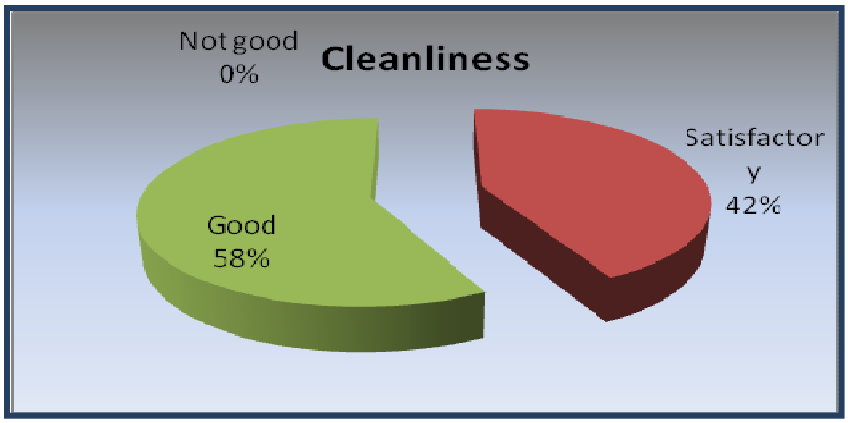
Chart 22



76% of the respondents found the infrastructure to be good

Cleanliness

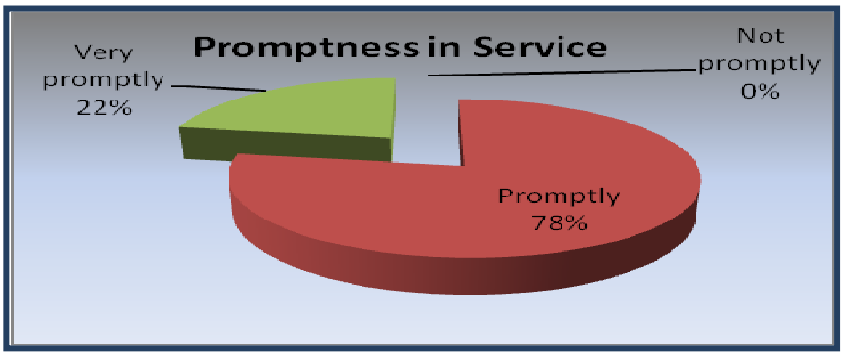
Chart 23



58% of the respondents found the hospital to be clean. The 42% who found it just satisfactory were of the opinion that the water seepage and garbage collection in multiple areas needs to be addressed

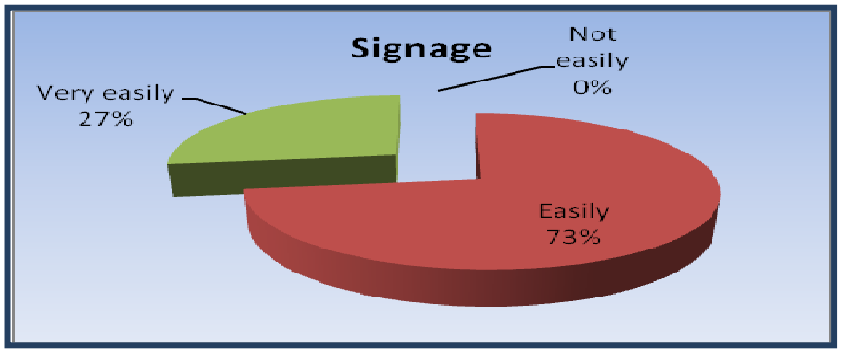
Promptness in Service

Chart 24



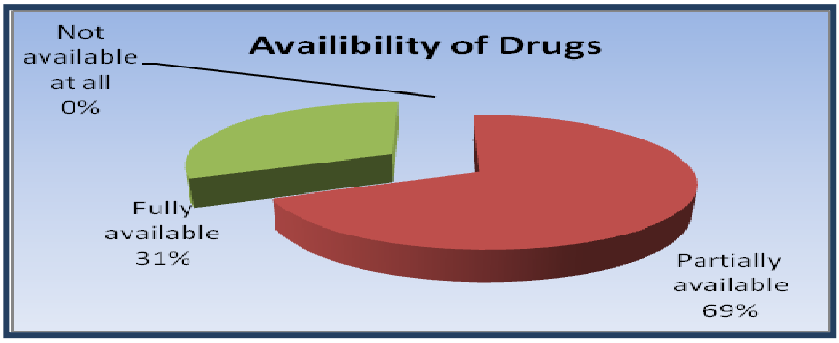
Signage

Chart 25



Availability of Drugs

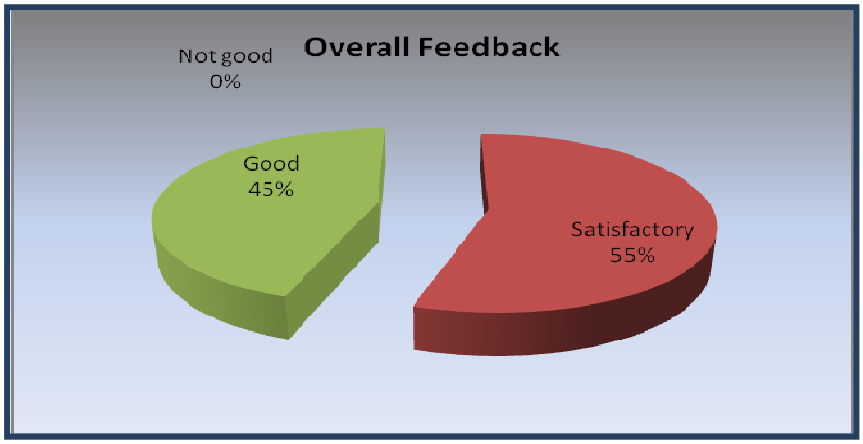
Chart 26



Majority of the respondents voiced out the fact that many times drugs are not available within the hospital and the attendants have to go running outside for them.

Overall Feedback

Chart 27



Majority of the patients are satisfied with hospital infrastructure, cleanliness of the hospital. The behavior of the hospital staff and the doctors has been rated satisfactory by the majority. Data analysis of all responses combined have revealed that about 55% of the patients are satisfied with the services and facilities in the OPD while a miniscule feel that they were not good.

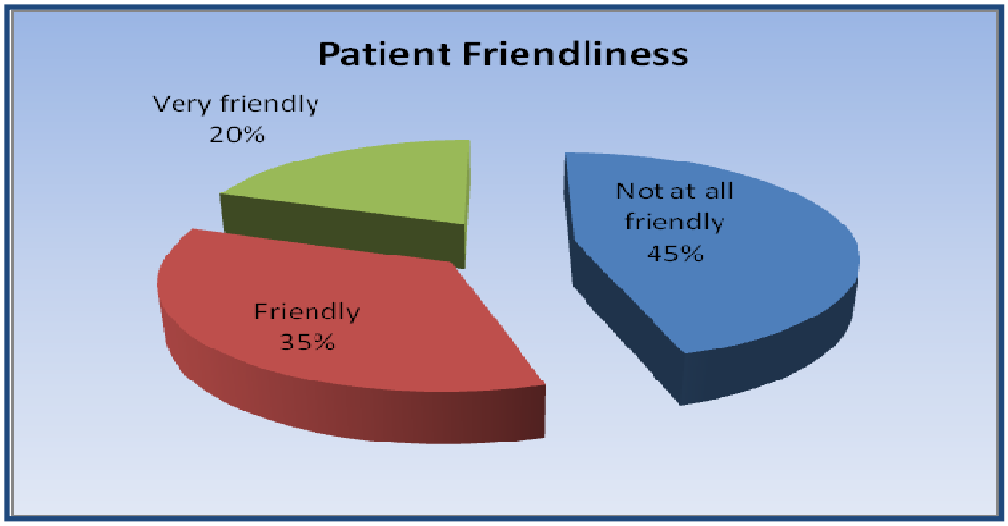
PATIENT FRIENDILINESS

Apart from the service delivery and provision, the built environment of the hospital should be patient friendly to ensure effective healthcare delivery. Questions relating to various aspects of the following were asked to the respondents

- General Environment in the IPD
- Ease of obtaining required information
- Admission/Discharge Procedures
- Patient/Attendants education about their treatment modalities
- Visiting Time for attendants/relatives
- Staff Friendliness

Data analysis reveals that 45% of the respondents found the IPD to be a not at all patient friendly service as most of them found difficulties in obtaining the required information of all the proceedings in the hospital.

Chart 28



4.2.3 Providers Perspective Study of MKCG Medical College Hospital, Brahmapur

Table 29

DEPARTMENT	NAME OF HOD	CONSTRAINTS	OTHER SUGGESTIONS
Cardiology	Prof. (Dr). P.K.Rath	There is an immediate requirement for a cardiac catheterization lab as at present patients requiring this service is referred outside the hospital.	There is shortage of 2 teaching staffs, 4 senior resident doctors
		There is lack of space to provide accommodation for the HOD and associate professors.	The female cardiothoracic ward can be redesigned to accommodate a cath lab. Another suggestion is the utilization of the seminar and store for the same.
Pediatric Medicine	Prof. (Dr.) D. Samal	There is an acute shortage of space to accommodate the required bed strength.	
		A total 90-bedded ward in the old building with a 30-bedded SNCU, 10 bedded PICU is desired by the HOD.	
Urology	Dr. K.K.Panigrahi	One separate dedicated OT for this discipline is required. Presently the OT table is being shared with general surgery OT.	The unit is having no modern equipment to render better service. Only a cytoscope is available as equipment.

DEPARTMENT	NAME OF HOD	CONSTRAINTS	OTHER SUGGESTIONS
		Since only 1 day a week OT is allotted for this discipline at times desired patients are refused admission	
Nephrology	Dr. S.K.Panda	There is no generator backup	Uninterrupted power supply and generator should be provided for critical areas of the hospital.
		There is no infrastructure to support lifelong dialysis patients.	
		There is no in-house Biomedical engineer for maintenance of the equipments as and when required	
General medicine	Prof. (Dr.) I.K,Meher	An ID ward with at least 40 beds is required**.** Presently there are 16 beds in the ID block	In the ICU and casualty an intensivist or a qualified anesthetist is required
Obstetrics and Gynecology	Prof. (Dr.) K.B.Subudhi	Presently the unit is functioning with 120 beds and 30 more beds are desired.	Presently the unit is having 2 OT rooms with 2 OT tables in each. Out of the 2 OTs, only 1 OT is functioning due to lack of boyle's apparatus, anesthesia equipments, anesthesia staff.
		A separate building for obstetrics	For the PPC

DEPARTMENT	NAME OF HOD	CONSTRAINTS	OTHER SUGGESTIONS
		and gynecology is desired	department a cauteryand a laproscopy machine is required
		A separate building for obstetrics and gynecology is required.	
		There should be provision of separate seminar room	
		There is no separate toilet for male staffs. The staffs use the toilet attached to the HOD's room. Thus a separate staff toilet is required.	
Neurosurgery	Prof. (Dr.) Sanjib Mishra	Presently the unit is functioning with 10 beds and 10 more beds are required to be able to accommodate all patients requiring admissions.	
		There is no separate dedicated ICU for this discipline.	A 4 bed ICU if provided will cater to the present requirement
		The OT does not have room for anesthesia, staff room, lounge, changing room.	A complete OT suite should be provided
Pediatric Surgery	Prof. (Dr.) Pradeep K.	The No of beds allocated for the department are too less	All the super specialty disciplines should be accommodated in a

DEPARTMENT	NAME OF HOD	CONSTRAINTS	OTHER SUGGESTIONS
	Jena		separate building.
			Presently the unit is functioning with 12 beds. A total of 30 beds is desired of which 16 beds will be for pre operative, 8 for post operative and 6 beds for ICU.
Orthopedics	Prof. (Dr.) S. Pattanaik	There is no emergency orthopedic OT.	There is a requirement of 90 beds as a MCI regulation for 150 students.
			An emergency Orthopaedic OT can come up in the new block
Radiodiagnosis		The building is in a dilapidated condition.	
		Insufficient space for installing MRI and Computerized	

DEPARTMENT	NAME OF HOD	CONSTRAINTS	OTHER SUGGESTIONS
		Radiography in the near future.	
		No room for the faculties	
		Several rooms are desired by the HOD which mainly includes: Store room Reception Room Office room Staff room with toilet Seminar Room DMRT teaching room General Room	

*A common constraint voiced out by almost all the Head of Departments is the shortage of manpower

4.2.4 Key Findings

This section of the report discusses the overall analysis based on the study findings. The hospital is functioning with 24 specialties located in various buildings and locations. There are no proper signages to guide patients and attendants to various areas as a result many were found wandering in the hospital in search for departments.

1. There is dedicated parking facility for the patients and visitors near the OPD but no space is earmarked for two wheelers and four wheelers. All the vehicles are parked wherever space is available.

2. The IPD section of the hospital has beds placed with a centre to centre distance of approximately 1.2metre or 4ft therefore leading to a lot of congestion.

3. The ***nursing station*** is located in a separate room in between two wards with doors opening into each. Monitoring of patients becomes difficult in such a setup where there is no direct vision. In the absence of a medical officers duty room the nursing station also becomes the doctors discussion area.

4. No dedicated clean and dirty utility is available Due to the absence of proper storage facility the soiled linens are either stored in the nurses' duty room or in buckets outside the toilets.

5. The number of ***sanitary annexes*** are inadequate as compared to the number of patients they are catering to. Attendants also use the same toilets therefore adding to the inadequacy.

6. The OTs do not have a proper zoning system, there is no marked / architectural demarcation of progression from protected to clean to sterile zones. A circulation plan will be required for the OT.

7. The OTs at MKCG are located along with the respective departments, however the plan of the hospital is such that almost all OTs are located on the same side of the building. The OTs should have been clubbed together into one complex that will allow sharing of

ancillary facilities like central sterilization, change rooms, toilets, stores, patient preparation room and doctors lounges.

8. Except for the medical ICU all other ICUs have there nursing station outside defeats the basic purpose of an intensive care facility.

9. ICUs do not have ancillary facilities like a clean utility, dirty utility, store, trolley bay, and pantry.

10. The central medical gas supply system is either not available or where available it is not being used

11. The emergency and casualty unit of the hospital caters to medical emergency as well as trauma patients; all these patients are treated and observed in one room.

12. The maternity and delivery unit needs reorganization to ensure proper utilization of all facilities. The delivery rooms do not have any provision of privacy for the patients as 7 tables are placed in one room.

13. The imaging department is in a very poor condition with seepage from the walls. The regional diagnostic centre and the imaging department should have been housed in the same location.

14. The hospital is currently having no **fire fighting system.** There is no detector, sprinkler system to fight fire.

15. There should be separately earmarked lifts restricted to carry only patients and staffs and others for materials. Even a separate circulatory pathway should be dedicated for food distribution to prevent contamination of food with the hospital environment.

16. The **linen and laundry** service should be upgraded to a mechanized one.

RECOMMENDATIONS

5 RECOMMENDATION

This section of the report will be detailing with infrastructure strengthening plan of the MKCG Medical College Hospital, Brahmapur commensurate with the identified gaps and analysis. After getting a deep insight of the current status through the infrastructure assessment, the infrastructure strengthening of the hospital has been mapped out. To impart a holistic approach in the infrastructure strengthening plan, the plan has been subdivided into two main parts: i) The Infrastructure Expansion Plan and ii) Space Planning.

5.1Infrastructure Expansion Plan

The infrastructure expansion plan will be demonstrating the scaling up plan of the existing hospital focusing the increase in bed compliment as well as the expansion of other related areas. The recommendation will be based on the bed occupancy rate of the hospital and ward specific occupancy as well as the population projection to cater the future need. The bed need identification has also been formulated in compliance with the MCI guidelines recommended for a medical college of 150 annual intakes. To support the expansion plan schematic master plan has been provided.

5.2 Infrastructure Space Planning

The second part of the infrastructure strengthening plan will be detailing the reorganization plan. To ensure optimum utilization of the presently functioning services the shifting plans of the floors and departments will be discussed. The other component based on which the space planning will be recommended is the space scheduling for the additional infrastructural set up in the hospital. The facility requirement has been mapped against the MCI guidelines for a medical college of 150 annual intake will be subsequently included in the plans. Area statement will be portrayed in the proposed locations of the newly added facilities and in the site layout. Schematic representations of the same will be furnished to support the plans.

5.1 Infrastructure Expansion: Determination of Future Bed Needs

A hospital should ideally be planned for the next 20 years to ensure its viability in the long run. The bed compliment of a hospital should therefore be planned in direct reliance with a variety of factors such as catchment area, presence of other healthcare delivery infrastructure in the vicinity, population growth & migration rate, demographic composition of the patient population etc.

To come up with a viable infrastructure plan, the major determinants based on which the future bed needs are calculated for MKCG Medical College Hospital, Brahmapur are:

a) Population projection of the catchment area seeking service

b) Hospital Utilization Statistics

c) MCI guidelines

5.1.1 Determination of Bed Needs based on Population Projection

Table 30

Determination of Bed Needs based on Population Projection			
Year	**Total Catchment Area Population**	**Admissions based on current hospitalization rate**	**Estimated bed needs at 80% occupancy**
2008	2221633	46113	1579
2009	2257179	46851	1604
2010	2293294	47601	1630
2011	2329987	48362	1656
2012	2367267	49136	1683
2013	2405143	49922	1710
2014	2443625	50721	1737
2015	2482723	51532	1765
2016	2522447	52357	1793
2017	2562806	53195	1822
2018	2603811	54046	1851
2019	2645472	54910	1880
2020	2687799	55789	1911
2021	2730804	56682	1941

2022	2774497	57589	1972
2023	2818889	58510	2004
2024	2863991	59446	2036
2025	2909815	60397	2068
2026	2956372	61364	2101
2027	3003674	62345	2135
2028	3051733	63343	2169

From the above table it can be concluded that based on the projected population growth the immediate bed need for MKCG hospital is of 1579 beds. By the year 2028, an increase of 590 beds will be required to cater to the increased population. The bed need has been calculated by considering the population growth rate of the respective catchment area population seeking service from this hospital. But while determining the bed need it has been observed the other determinants which influence the up scaling of the bed need is the hospital bed occupancy rate, ward specific occupancy. The MCI guidelines have been taken into account to provide the teaching facility requirement accordingly.

The MCI has now recommended (July 2009) inter bed distance (from edge to edge) of about 5 feet considering the width of a standard hospital bed of approximately 3 feet. The earlier planning used to be based on inter bed distance of 3 feet. This would mean that the wards will now be able to accommodate approximately 19% less number of beds. These displaced beds have to be accommodated elsewhere.

At an occupancy rate of 80% the hospital will require around 1755 beds five years from 2010. The bed need calculation done on a linear progression method can not be taken on its face value. Many other compounding factors affect this calculation. Above will be true only under the following assumptions:

Assumptions:

The bed need requirement for the hospital is based on certain assumptions:

- The annual population growth rate is 1.6 %
- Bed Occupancy Rate (BOR) is 80 %
- The Average Length of Stay (ALOS) for a hospital inpatient is 10 days (average of department specific ALOS). The ALS is more than recommended. The hospital bottlenecks needs to be identified and taken care of appropriately
- Rate of hospitalization will remain constant.
- Factors like population shift and migration will not take place.
- Private sector facilities will be at its present level.
- Morbidity patterns will be unaltered.
- The present status of public health in Brahmapur will remain the same.

5.1.2 Determination of Bed Needs based on Hospital Utilization Statistics and MCI Guidelines

Table 31

Name of the Department	Existing Total bed Strength	Bed Occupancy Rate (BOR)	Beds Proposed as per 80% BOR	MCI Guidelines for Teaching Facility - Bed Strength	Gaps	Total Bed Strength (Patient need +teaching facility)
Cardiology	17	22	17			17
CTVS	22	28	22			22
Dental	6	1	6			6
ENT	23	43	23	30		23
ID	30	**90**	34			34
Medicine	156	70	156	180	24	180
Nephrology	15	0	15			15
Endocrinology*1	10					10
Neurology	10	2	10			10
Neurosurgery	10	7	10			10
Obs& Gynae	**109**	**275**	375	90		375
Post Partum *2	10	63				
Ophthalmology	100	**176**	100	30		100
Orthopedic	**49**	**231**	96	90		96

Pediatric *3	**47**	67	155	90		155
Pediatric Surgery	12	23	12			12
Plastic Surgery	10	74	10			10
Psychiatry	16	**311**	16	15		16
Radiotherapy	**20**	53	78			78
Skin & VD	20	58	20	15		20
Surgery	153	81	153	180	27	180
TB& Chest	**14**	30	20	30	10	30
Casualty	10	2				10
Urology	12	7				12
Burn Ward	0				8	8

*1 the endocrinology department is non functional presently due to absence of manpower.

*2 the post partum unit is being utilized by the obstetrics and gynecology department as for the same no doctor is available.

*3 though the official bed count of the pediatric department is given as 47, the department is presently functioning with 90 beds accommodated both in the old and new building.

Table 32

Category	Present Bed Strength	Recommended (10% of total bed strength)	Additional Beds
Private Beds	17	143	129

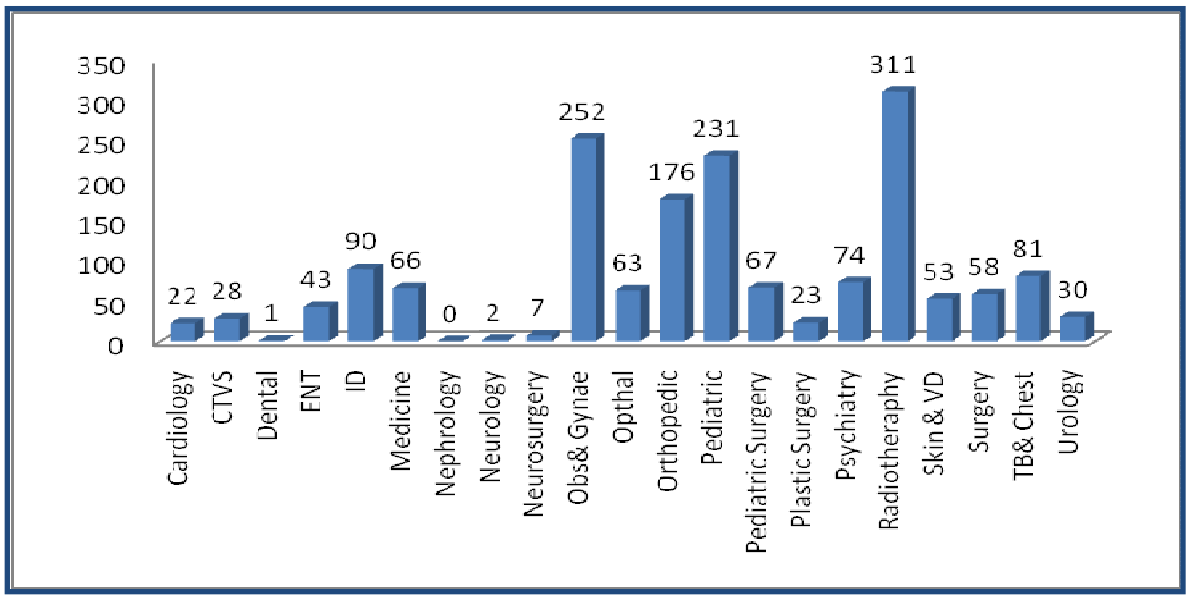
ICU Bed Need

Table 33

CATEGORY	PRESENT BED STRENGTH	RECOMMENDED
NICU	5	8
MICU	4	6
Cardiology ICU*	3	5
Surgical ICU	0	5
CTVS ICU*	4	5
Neurosurgery ICU*	0	5
PICU	0	17

** based on the utilization statistics of the presently functioning intensive care units of the respective disciplines, the bed need for cardiology ICU, CTVS ICU and Neurosurgery ICU has been found to be 3. However to ensure viability of running the ICU in terms of optimum utilization of resources and keeping in view future needs, the bed strength of the same has been recommended as 5.

Graph 29: Ward wise Bed Occupancy Rate



Recommended Bed Strength

Table 34

Recommended Bed Distribution			
Ward Type	Existing Bed Distribution	Total number of bed recommended	Additional Beds Proposed
Cardiology	17	17	0
CTVS	22	22	0
Dental	6	6	0
ENT	23	23	0
ID	30	34	4
Medicine	156	180	24
Nephrology	15	15	0

Endocrinology	10	10	0
Neurology	10	10	0
Neurosurgery	10	10	0
Obs & Gynae	**109**	375	266
Post Partum	10	10	0
Ophthalmology	100	100	0
Orthopedic	**49**	96	47
Pediatric	**47**	155	108
Pediatric Surgery	12	12	0
Plastic Surgery	10	10	0
Psychiatry	16	16	0
Radiotherapy	**20**	78	58
Skin & VD	20	20	0
Surgery	153	180	27
TB& Chest	**14**	30	16
Casualty	10	10	
Urology	12	12	
Burns Ward	0		33
Total	**881**	**1431**	**583**

Table 35

Private Cabin			
Department	Present beds	Required Beds	Additional
Special Private Cabin	17	143	126

Table 36

ICU			
Department	Present beds	Recommended	Additional
NICU	5	8	3
MICU	4	6	2
Cardiology ICU*	3	4	1
Surgical ICU	0	5	5
CTVS ICU*	4	5	1
Neurosurgery ICU*	0	5	5
PICU	0	17	17

5.1.3 Additional Infrastructure Required

5.1.3.1 Clinical Services

Nursing Units

1. The (centre to centre) distance between beds is to be maintained as 8 ft (as per MCI guidelines) so that there is ease of circulation for students, doctors and nurses and also lower chances of Hospital Acquired Infection.

   The nursing station needs to be redesigned to allow the nurses to have a direct vision of the patients in the wards. In the existing wards, the best option to achieve this is by breaking down the side walls of the nursing station.. In the event that the walls are load bearing or minimum breakage is allowed either the width of the doors opening to the wards will need to be increased or a window created on each wall facing the wards.

2. The respective wards need to be provided with the following ancillary areas:
   - Doctors' Duty Room
   - Clean utility room
   - Dirty Utility Room
   - Janitor's Closet
   - Procedure Room
   - Trolley Bay
   - Pantry
   - Dirty Utility Room
   - Janitor's Closet
   - Procedure Room
   - Trolley Bay
   - Pantry

3. Based on inputs from the providers' perspective as well as future needs the cardiology department will need to be equipped with a dedicated catheterization laboratory.

4. The sanitary annex provided for each ward is inadequately provided. As the bed strength of the wards is increased the sanitary annexes should also be proportionately provided.

   The required facility in the sanitary annex should be provided as per the scale below:

Table 37

Particulars	**Male**	**Female**
Water Closet	1 for every 8 beds	1 for every 6 beds
Bath	1 bath for every 12 beds	1 bath for every 12 beds
Urinal	1 urinal for every 12 beds	1 urinal for every 12 beds
Wash Basin	1 wash basin for every 12 beds	1 wash basin for every 12 beds. For ICUs, 1 WHB for 4 beds within the ICU near the beds.

Table 38

DEPARTMENT	WATER CLOSET		BATH		URINAL		WASH BASIN	
	Male	Female	Male	Female	Male	Female	Male	Female
Cardiology (Male – 13 Female – 4)	2	1	1	1	1	1	1	1
CTVS (Male – 14 Female – 8)	2	1	1	1	1	1	1	1
Dental (Male – 4 Female – 3)	1	1	1	1	1	1	1	1
ENT (Male – 13 Female – 10)	2	1	1	1	1	1	1	1
ID - Adult (Male – 12 Female – 8)	2	1	1	1	1	1	1	1
ID - Children (10)	1		1		1		1	
Medicine (Male – 118 Female – 48)	15	6	10	6	10	4	10	4

DEPARTMENT	WATER CLOSET		BATH		URINAL		WASH BASIN	
	Male	Female	Male	Female	Male	Female	Male	Female
Nephrology (Male – 13 Female – 2)	2	1	1	1	1	1	1	1
Neurology (Male – 10)	1		1		1		1	
Neurosurgery (male – 10)	1		1		1		1	
Obs& Gynae (Male – 13 Female – 4)		14		14		9		9
Post Partum (Female – 109)		1		1		1		1
Opthalmology (Male – 71 Female – 29)	9	4	6	4	6	2	6	2
Orthopedic (Male – 37 Female – 12)	5	2	3	2	3	1	3	1
Pediatric (Male – 13 Female – 4)	6	1	4	1	4	1	4	1

DEPARTMENT	WATER CLOSET		BATH		URINAL		WASH BASIN	
	Male	Female	Male	Female	Male	Female	Male	Female
Pediatric Surgery (47)	2		1		1		1	
Plastic Surgery (Male – 6 Female – 4)	1	1	1	1	1	1	1	1
Psychiatry (Male – 10 Female – 6)	1	1	1	1	1	1	1	1
Radiotherapy (Male – 10 Female – 10)	1	1	1	1	1	1	1	1
Skin & VD (Male – 15 Female – 5)	2	1	1	1	1	1	1	1
Surgery (Male – 131 Female – 32)	16	4	11	4	11	3	11	3
TB& Chest (Male – 9	1	1	1	1	1		1	

DEPARTMENT	WATER CLOSET		BATH		URINAL		WASH BASIN	
	Male	Female	Male	Female	Male	Female	Male	Female
Female – 5)								
Casualty (10)	1		1		1		1	
Urology (Male – 10 Female – 2)	1	1	1	1	1	1	1	1

The numbers suggested above are the ideal requirements.

Operation Theatre

All the OT areas at MKCG Medical College and Hospital have to be redesigned to include a zoning system that will help in control of traffic and also help in infection control. Zoning in the OT area can be maintained through a differential decreasing positive pressure ventilation gradient from the inner operating area to the outer operational area. The various zones that should be maintained are mentioned below along with areas in each zone:

(a) Protective Zone

1. Reception
2. Waiting with Toilets
3. Trolley exchange bay
4. Anaesthetists' and Surgeons' examination room
5. Doctors change room with toilets
6. Nurses' change room with toilets
7. Other staff change room with toilets
8. Theatre Store
9. Linen store
10. Appliances and medical stores
11. Instruments and disposable store
12. Autoclave room
13. Gas store
14. Theatre work and preparation
15. Closed Circuit TV for operation viewing (optional)

(b) Clean zone

1. Pre-operative room
2. Recovery room
3. Toilet

4. Nursing Station
5. Technicians room with toilet
6. Pump storage (for CTVS OT only)
7. Store for costly and sophisticated equipment
8. Blood storage and Frozen section
9. Seminar room with toilet
10. Doctors lounge with toilet
11. Pantry
12. OT Matron's room
13. Computer room

(c) Sterile zone

1. Anesthesia induction room
2. Operating theatre
3. Scrub room/area
4. Clean utility store

(d) Disposal zone

1. Dirty wash up room
2. Janitors closet

- The Operating room will require a well planned airflow system that will allow flow of clean air over the operating area first and then away from it. A central air conditioning system that maintains a temperature range of 21 to 24^0C with about 16 air changes per hour, a relative humidity of about 50% would be ideal. The OT areas will need to be provided with either central air conditioning or with ductable Packaged Unit of AC.

- Each operating theatre should accommodate only one OT table.

- The scrub station should be located adjacent to operating rooms in the clean zone. One scrub station may be shared between two operating rooms. An uninterrupted power supply to each OT to avoid untoward incidence that can occur in case of a power cut. The generator is available but it requires some time before it can provide backup.

- At MKCG the OTs are aligned such that though they are on different floors they lie on the same wing. This arrangement can be utilized to create an OT complex. Bringing all the OTs to one wing to allow optimum utilization of resources like manpower, equipments and ancillary areas like pre and post operating rooms, clean and dirty utility, stores, change rooms, doctors lounge, nurses room.

- With the Trauma centre coming up, a septic OT need to be planned for the hospital, it can be located in the Trauma centre itself as most septic cases are usually the emergency ones.

- The OT complex should be provided with adequate toilet facilities in the waiting area, change rooms and doctors lounge. Toilets need to be located away from the sterile zone. Civil renovation of the Dialysis room, Nephrology OT and the Reverse Osmosis room is an immediate requirement.

- Each operating room should have only one OT table. **OT rooms requirement at MKCG Medical College Hospital, Brahmapur.**

OT rooms requirement at MKCG Medical College Hospital, Brahmapur

Table 39

Types of surgery	**Existing No of OT's**	**No of operating rooms required if working hours per day is 6 hours**	**No of operating rooms required if working hours per day is 8 hours**
Obstetrics and Gynaecology	2+1	7	6
General Surgery	4	5	4
Neurosurgery OT	1	0.03	0.03
CTVS OT	1	0.13	0.09
Orthopedics OT	1	2	2
ENT OT	1	1	1
Eye OT	2	3	2
Dental OT	1	0.03	0.02

Neurosurgery, CTVS and Dental OT are however specialized OT's and will therefore require dedicated OT rooms for each even though the patient load shows a requirement of less than one.

The Emergency and Casualty unit will also require a dedicated OT room irrespective of the patient load.

Emergency and Casualty Unit

The emergency and casualty unit should ideally be located close to the trauma centre. The unit should be provided with following areas

Table 33

Facility
1. A separate entry provided with an ambulance docking bay
2. Reception cum enquiry
3. Ramp at the entrance
4. Trolley, stretcher & wheelchair bay
5. Triage resuscitation. Acute Treatment and Consultation Area
6. Procedure room
7. Emergency OT with post operative observation ward
8. Plaster room with storage for plaster, bandages, splint and crutch store
9. Stores
10. Clean utility
11. Dirty utility
12. Administrative area
13. Janitors room
14. Diagnostic Area (Imaging / Laboratory)
15. Doctor's room
16. Security room
17. Disaster equipment store
18. PMGV supply
19. Relatives' waiting area with toilet

NICU and ICU

At present the NICU is just two wards with 5 cribs with 4 phototherapy units and another room with 8 baby warmers. The unit will need to be redesigned to accommodate ancillary areas that are necessary for an NICU. The following table shows the various areas required in an NICU.

Table 40

Facility
Inborn baby area (NICU beds/cribs for babies born in the hospital)
Outborn baby area (NICU beds/cribs for babies born outside the hospital)
Feeding room
Formula room
Baby wash area
Waiting room /Relatives rest room with attached toilet
Trolley bay
Shoe change room
MO's duty room
Sister's duty room
Clean utility /Treatment dressing
Ward store
Equipment Room
Pantry
Clinical test room.

Dirty utility & soiled linen
Nursing Station
Toilets
Janitors closet

To render functional viability while serving the critical cases, the unit should be planned in the following manner

1. Each area of the NICU will need to be created such that there is a proper zoning of the areas into protective zone and clean zone.

2. Adequate circulation space will need to be provided especially between two cribs. The ideal norm followed internationally is 150sqft per crib, which allows enough space for the crib/incubator/phototherapy unit as well as all other equipments.

3. Each crib area should be provided with head panels having service outlets for the supply of centralized medical gas and a centralized suction system and electrical outlets.

4. The NICU will need expansion at the present location to accommodate all the necessary ancillary facilities. The ward adjacent to the NICU which shares a common nursing station with it could be utilized.

Maternity and Delivery Unit

1. The present location of this complex is ideal as it is close to the Gynaecology and Obstetrics OT and also is not far from the main entrance to the IPD block. However, there needs to be a clear zoning between the OBG OT complex and the labour & delivery complex, this can be achieved by ensuring that the traffic flow from the OT complex to the labour delivery area is controlled by keeping the door closed at all times except when shifting a patient from the labour delivery area to the OT

2. The labour and delivery complex requires redesigning to accommodate the following areas:

Table 41

Area	Purpose
Reception & waiting	To receive patients & accommodate relatives & attendants
Admission & examination cum triage area	For admission of patients and also triaging them.
Normal labour monitoring room	To monitor patients expected to undergo a normal delivery
High risk labour monitoring room	To monitor high risk patients
Normal delivery room	For normal deliveries
High risk delivery room (This room may need to include a separate room within it for eclampsia patients)	For high risk patients (eclampsia, toxaemia of pregnancy etc)
Post partum observation room for normal deliveries	To observe patients for a few hours who have had a normal delivery
High risk post partum observation room	To observe patients who have had a high risk pregnancy and delivery (eclampsia, post partum haemorrhage etc) till they are considered free of danger (This will not be used for post LSCS patients)
Baby resuscitation area within or next to	For resuscitating and cleaning the

Area	Purpose
the delivery rooms	newborn
Nursery	This will be used mainly to accommodate the babies of mothers in the high risk observation room
Nursing station in each section	
Doctors Duty room with lockers and attached toilet	For doctors and nurses separately
Toilets for patients	Next to the labour observation rooms and the postpartum observation rooms
Clean utility, dirty utility, store (materials & equipments like CTG & USG machines) , janitors closet	To support the smooth functioning of the labour and delivery area

3. The entrance to the labour and delivery unit should be restricted. Relatives should only be allowed to enter till the reception and waiting area so as to avoid unwanted congestion and also control infection.

Out Patient Department

- On an average the OPD caters to about 700 patients, the waiting areas available are only a few seats outside the consultation rooms. There is a need for a centralized waiting area. With this kind of patient load, a centralized waiting area of about 2800 sqft would be required considering that at one point of time about one fourth of the load would be available in the OPD. The OPD area has a courtyard in the centre which is already cemented; this could be utilized as the centralized waiting area by covering it with roofing that allows sunlight to come in but at the same time protects the area from the scorching heat and from rain. The area can then be provided with seating facilities like chairs or similar slabs like the ones outside the consultation

rooms. The OPD area is in need of more no of consultation rooms as at present many of the rooms are being used by two to three doctors for consultation and examination at the same time. This can be solved only if the Emergency & Casualty department can be shifted to the upcoming Trauma Block. The OPD block can be reorganized to accommodate all super specialty OPDs on the first floor and all general specialty OPDs on the ground floor.

- Vacating the Emergency and casualty area will also allow the accommodation of minor procedure rooms for the surgical OPDs, nurses room (usually for measuring BP, weight, temperature), more number of registration counters, drinking water facilities and toilets.

- The mortuary in the OPD should be shifted out of the OPD premises.

5.1.3.2 Clinical Support Service

Imaging Department

1. The entire imaging and diagnostic services should be provided from one centre to avoid duplication of infrastructure, allow maximum utilization of resources and also be more convenient to the patients. This can be accomplished through a vertical expansion of the RDC block to accommodate the imaging department presently existing in the IPD block. Public amenities like drinking water facility, sitting arrangement should be adequately provisioned.

2. A centralized waiting area will need to be created for patients and attendants

3. The other areas which should be incorporated facility wise are:

X-ray Rooms

- A separate registration and reception counter
- Attached dressing cubicle with toilet
- A separate film developing and dark room area
- Office, Record and computer room
- Radiographic work room

- Stores separately for storing films, chemical and equipments
- Injection and Barium meal preparation room
- Trolley Bay/room for patients on stretcher
- Observation room
- Sub waiting area

The following are certain designing norms laid down for radio diagnostic departments:

- The optimum size of an X-ray room should be 18m^2
- The wall on which the primary beams fall should not be less than 35cm thick brick
- Thickness of walls should be more than 35cm
- Shielding of doors and windows should be done with 1.7mm lead
- Not more than one X-ray unit of any type should be in one room
- All openings for light & ventilation should be located above 2m from the finished floor level

Ultrasonography

- USG rooms (No of rooms to be decided based on patient load) As per MCI guidelines for medical colleges with 150 admissions annually the total number of USG machines should not be less than 2+1(dedicated to obstetrics and gynaecology
- Each USG room should be provided with an attached toilet
- Sub waiting room
- Change room
- Film Library
- Seminar room

CT Scan

- Trolley Bay
- Patient Change Cubicle
- Toilets
- Store room
- Sub waiting area

The following are certain designing norms laid down for radio diagnostic departments:

- The size of the room should not be less than 38 to 42m^2
- The CT computer room houses the computer and generator modules associated with the CT scan equipment, it should therefore be close to the CT scan room and console

The following facilities can be common in the radiology and imaging department

- Reception and registration counter
- Centralized waiting area with an area for patients on trolleys and stretchers.
- Report distribution counter with an office and record storage room, preferably, close to it
- Doctors room for the Head of department and other doctors
- Doctors duty room specially for doctors on night duty
- Reporting room with computer systems demarcated for X-ray, USG and CT scans
- Equipment stores

Hospital Laboratory

- Space should be allocated to come up with fully functioning histopathology, microbiology, biochemistry, hematology sections in the hospital laboratory itself.
- Adequate waiting area with toilet facility in the laboratory should be provisioned.
- The following table shows the various areas that are required in each of the four main sections of a laboratory:

Table 42

Particulars	Laboratory
General	Reception cum report distribution counter
	Waiting room with Toilet
	Pathologists' Office
	Stores
	Sample collection room
Histopathology Section	Histopathologist's room
	Histopathology lab
	Microphotography
	Areas for grossing and processing; section cutting and staining & Specimen storing.
	FNAC room

Hematology Section	Hematology lab.
	Hematologist's room
Biochemistry Section	Biochemist's room
	Lab area
Microbiology Section	Microbiologist's room
	Bacteriology lab, Mycology lab & Media storage and plate pouring room
	Media room, Media Kitchen & Cold storage
	Sterilizing Room & Incubator room

5.1.3.3 Support and Utility Services

Central Sterile and Supply Department (CSSD)

The layout of the newly renovated CSSD department has included almost all the areas required the following are the only two additional areas that need to be incorporated:

- Storage area for clean stocks (not sterile)
- Dispatch area for the sterile packs

Pharmacy

- There should be specific space dedicated for the pharmacy department for storage facility.
- Separate storage facility should be there for technical and non-technical items.

Fire Protection Facility

- Designated emergency fire exit in all the concerned blocks need to be planned.
- The hospital should have smoke detectors, sprinkler system, fire alarm, and fire doors.
- An under ground fire water reservoirs will be required for which space planning is required.
- Over head fire water reservoir, Fire hydrant, wet risers, down comer, water pumps should be provided in consultation with local fire authorities.

Dietary Department

- Food service manager's office is required
- Secretarial, clerical office with space for file cabinets & other equipment, seating for visitors, vendors etc.
- Storage & refrigeration area with walk-in refrigerators, coolers & dry storage.
- Pre-production preparation area.

- Cooking or food production areas, separate for vegetarian & non- vegetarian foods.
- Special diet kitchen.
- Serving or tray assembly area.
- Trolley, cart & hand washing facilities in various places.
- Garbage disposal facilities.
- Storage with racks & cabinets for clean trays, dishes, cutlery etc.
- Storage with racks for clean pot, pans, vessels etc.
- Employee facilities like lockers.
- Janitor's closet.

Linen and Laundry

Mentioned below is the key areas which needs to be added:

- Reception/collection and sorting
- Change room
- Sluicing and autoclaving
- Mending
- Washing machine, driers, hydro extractors, calendaring and pressing
- Mattress sterilizing
- Boiler House
- Stores
- Janitor closet
- Sanitary
- Manager's office

- Staff change room

Physiotherapy

The physiotherapy unit will need to be upgraded to include the following areas :

- Electrotherapy cubicles
- Wax bath treatment room
- Ultrasonic therapy room room
- Stores
- Sanitary (Separately for male and female)
- The waiting space should be adequately planned for the physiotherapy unit with sufficient number of sanitary facility.
- The toilets in this department should be adequate to allow entry of a wheelchair
- Clean utility and dirty utility

Parking

- There should be earmarked space for public transport both for two wheelers and four wheelers near the main hospital building as well as the buildings in other areas of the campus like the ophthalmology block, the upcoming trauma centre

- In addition specific areas should be demarcated for staff parking

Mortuary

- A newly built mortuary with body storage area and refrigeration facility is required.

- The mortuary should be located away from the OPD area, it can be shifted close to the trauma centre covered from public view. Public amenities need to be added to the present facility

Signages

Signage and directions in the hospital campus need to be designed in a bilingual format and re-identification of locations internal and external at which they need to be displayed will have to be done..

- **An information board in bilingual language** should be displayed at the OPD entrance sharing information regarding timing/availability of doctors and location of the OPD rooms with display of citizen charter
- Same information board can be used for sharing information regarding any **addition of new services or facilities.**

Piped Medical Gas Supply

- The manifold room needs immediate infrastructure expansion in terms of space since the present space is inadequate.
- Fire fighting measures needs to be installed in the manifold room.
- Separate area needs to be earmarked for storage of gas cylinders.
- There should be an engineers/technician's room and office.

Changes incorporated into the Masterplans following discussions with the Hospital authorities and HODs of various department

Following the completion of the draft masterplans a review meeting was held with the Principal, Medical Superintendant and the Hospital Adminstrator of MKCG Medical College Hospital. The following are the changes incorporated post the discussions:

- As discussed in the review meeting the existing macro layout of the ho easyspital has very clear demarcations of the OPD and the IPD block. This has been retained in the masterplan.
- The trauma centre has been originally planned at a location which does not have a proper connection to the main hospital. As suggested by the Hospital administrator the trauma centre has now been planned next to the IPD block with an entry and exit which is separate from the IPD and OPD entry. This location allows easy accessibility to the imaging department which is the most commonly used diagnostic for trauma cases.
- The casualty department at present is being housed within the OPD building. A new building has been created next to the trauma centre for the casualty as these two departments are closely related.
- As pointed out by the hospital authorities a burn unit is a necessity for the hospital. This has been addressed by creating a burn unit next to the trauma centre, thereby also ensuring a trauma centre that can cater to burn cases.
- The new IPD block will house the orthopaedic wards and medicine wards. The orthopaedic OT will however be located in the centralized OT complex with an HDU attached to it to cater to the orthopaedic post operative cases requiring extra nursing care before they can be shifted to the wards. The paediatric wards have been planned within the old IPD block close to the OBG complex.

- As suggested by the Hospital Adminstrator a connection has been created on the first floor between the old IPD building and the new IPD building housing the orthopaedic and medical wards.
- During the meeting the Principal and hospital Adminstrator shared with us the plans of creating a physical medicine and rehabilitation centre. An approximate location for the same has been earmarked in the masterplans.
- A parking area has been planned just before the entry to the IPD and OPD area.

ANNEXURE

6 ANNEXURE

CONTENT

25 Telemedicine Unit

26 Maternity OPD

27 NICU

28 ICU

INFRASTRUCTURE ASSESSMENT CHECK LIST

NURSING UNITS (WARDS)

Name of the hospital
_____

Name of the department:
_____

Ward Name (or Number)
_____

Name of the respondent
_____

Name of the interviewer
_____

Date
_____
__

Give a General description
_____
_____
_____
_____
_____

Building	
Location (Floor etc)	
Relationship with neighbouring wards	
Access to the department (Corridor width)	

Type of ward design:	
Rig pattern	
Nightingale pattern	
No of beds	
No of private rooms	

No of semiprivate rooms	
Distance between two beds (centre to centre - in multi bed rooms)	
In Nightingale pattern ward, width of central corridor	
Sisters' Duty room with toilet	
Supporting Areas	
Nurses Duty station	
Location	
Treatment and clean utility	
Ward Store	
Linen Store	
Pantry	
Dirty Utility	
Soiled Linen store	
Janitor's closet	
MO's duty room	
Trolley Bay	
Staff/Visitor's Toilet	
For special care units, any other areas if provided	
Sanitary Annexe	Numbers provided
Bath	

Urinal	
Water Closet	
Comment on the following	
State of maintenance	
Civil	
Floor	
Ceiling	
Walls	
Windows	
Doors	
Plumbing	
Wash Hand Basins	
Water Closets	
Water taps	
Electrical	
Electrical outlets	
Wiring	
Other fixtures and fittings	

Tool Kit No 2

INFRASTRUCTURE ASSESSMENT CHCKLIST

OPERATION THEATRE

Name of the hospital
_____

Name of the department:
_____

Ward Name (or Number)
_____

Name of the respondent
_____

Name of the interviewer
_____

Date
_____
__

Give a General description
_____
_____
_____
_____
_____

Hospital Name: _____

OT	

Department (if departmental)	
Building	
Location (Floor)	
Comment on location (should be in quiet environment, freedom from noise and other disturbance, freedom from contamination and other possible cross infection, maximum protection from solar radiation and convenient relationship with acute surgical ward, ICU, Imaging department, laboratory and Blood bank)	
Zoning (with rooms in each zone)	
Protective	
Clean	
Sterile	
Disposal	
Entry/Exit	
Staff	
Patients	
Supplies	
Clean	
Sterile	
Ventilation System	
Central	
Packaged	
Window	
Others	

Air Flow	
Laminar Air Flow	
Turbulent Flow	
Positive Pressure Ventilation	
Type of Air Filters Used	
HEPA	
Others	
No specific air filters	
Return Air System	
Fresh Air 100 % out door air	
(Give Operating Room wise details)	
Operating Room No	
Types of operations done	
Size of the room	
No of OT table placed in one room	
Ancillary rooms	
PROTECTIVE ZONE	
Reception	
Waiting with Toilets	
Anaesthetists' and Surgeons' examination room	
Doctors change room with toilets	
Nurses' change room with toilets	
Other staff change room with toilets	

Theatre Store	
Linen	
Appliances and medical stores	
Instruments and disposable store	
Trolley bay	
Autoclave room	
Gas store	
Theatre work and preparation	
Closed Circuit TV for operation viewing	
CLEAN ZONE	
Pre-operative room	
Recovery room	
Toilet	
Janitors' closet	
Nursing Station	
Technicians room with toilet	
Pump storage for CTVS OT	
Store for costly and sophisticated equipment	
Blood storage and Frozen section	
X-ray unit with dark room	
Seminar room with toilet	
Pantry	
OT Matron's room	

Computer room	
STERILE ZONE	
Anaesthesia induction room	
Clean utility store	
Operating Room	
Scrub up	
Trolley Laying	
DISPOSAL ZONE	
Dirty Wash-up room	
Janitors' closet	
Comment on the following	
Dado height	
Door width	
Shape of the Operating Room	
Availability of PMGV System	
UPS availability	
Standby Power Supply	
State of maintenance	
Civil	
Floor	
Ceiling	
Walls	
Windows	

Doors	
Plumbing	
Wash Hand Basins	
Water Closets	
Water taps	
Electrical	
Electrical outlets	
Wiring	
Other fixtures and fittings	

Tool Kit No 3

Out-Patients' Need Assessment

PART A: BACKGROUND INFORMATION

	Date of Interview	
	Name of the interviewer	

	Name of the Facility		
	Age of the patient (in years)		
	Location of Residence (Currently Living)	Bhubnsewar	
		Cuttack	
		Behrampur	
		Sambalpur	
		Other Districts of Orissa	
		Out Side Orissa	
		If Orissa (Other than Bhubneswar) then the name of the district	
	Sex of the patient	Male	
		Female	
	Main Occupation of the patient	Agriculture	
		Labour	
		Service	

		Business	
		Unemployed	
		House-wife	
		Others	
	For how long you or your family members are using the services of this hospital? *(for first visit, write "0", for less than 1 year write "1", and so on)*	First visit.	
		Less than one year	
		For 1-2 years	
		More than 2 years	
		If more than 2 years then for how many years?	
	Mode of transport used to reach the hospital	Public Transport	
		Cycle	
		Motor Cycles	
		Hired Four Wheelers	
		Own Four Wheelers	
		Ambulance	
		Others (specify	

SECTION 2: CRITERIA FOR SELECTING THE FACILITY

SN	Question	Options	
	What is the most important reason for selecting this particular hospital?	In-expensive	
		Good infrastructure	
		Skilled doctors	
		Skilled nurses	
		Good behavior of doctors & other Staff	
		Good Diagnostics	
		Availability of drugs	
		Close proximity	
		Cleanliness	
		Prompt services	
		Others (specify	
	For what problem you have visited this facility?		
	Location of the OP Service utilised (In which building of the hospital in the OP / Clinic/ Diagnostic used by the patient located)		

SECTION 3: FEEDBACK ABOUT FACILITIES, AMINITIES & CONVENIENCES

SN	Question	Options	
	Signage's		
	How difficult it was to locate the Doctor's Room / Radiology / Laboratory / Other services?	Easy	
		Somewhat Difficult	
		Difficult	
	In case it is difficult to locate, what are these areas		1. 2. 3.
	How did you locate the various service locations?	Asked the reception / help desk	
		Through signage boards	
		Asked other patients / public	
	Waiting Area / Amenities		
	How will you rate the Facilities (space, seating, water, toilets) provided in the waiting areas adequate?	Not adequate	
		Some what adequatre	
		Adeqaute	
	What are the facilities / amenities you would like the hospital to additionally provide? (Tick the choices that the respondent expressess by himself….No prompting to be	Seating / Chairs / Benches	
		Water Dispnesers / Coolers	
		Canteen / Cofee/ Tea Kiosks	
		Communication Centers / Internet Café /	

SN	Question	Options	
	provided)	Toilets	
		Fans	
		Lighting	
		Others (Speify, List options not covered above)	
	Accessibility Factors		
	Distances between various services (OPD – Labs, OPD – Pharmacy, OPD – X-ray)	Far from each other	
		Away from each other, but accessible	
		Nearby each other	
	Any specific facility / service you would suggest that may be located near to the OPD (List the name of the service)		
	Rate the crowding in the lifts provided? (In case the hospitalshas provision for them)	Not crowded	
		Moderate crowd	
		Very crowdwd	
	Parking facilities (To be asked to only patients / family who has own transport / hired transport)		
	Where did you park your cycle / two wheeler / four wheeler?	Outside hospital campus Hospital Campus (Unmarked area) Designated Parking Area	

SECTION 4: FEEDBACK ABOUT AVAILABILITY & ADEQUACY OF SERVICES

SN	Question	Options	
	Was the type of specialist / specialty you wanted to consult available?	Yes	
		No	
	Incase of No, Name the type of specialist / speciality not available		
	Did you have to rely on any of the outside hospitals / laboratory for any laboratory investigations?	Yes	
		No	
	If yes, Name of the investigation for which you had to go to other places		
	Did you have to rely on any of the outside hospitals / Scan Centers for any Imaging / Radiology investigations?	Yes	
		No	
	If yes, Name of the investigation you had to get done in other places?		

SECTION 5: FEEDBACK ABOUT GENERAL QUALITY PARAMETERS

Provide Ratings for the following parameters

	Infrastructure	Not Good	
		Satisfactory	
		Very Good-	
	Cleanliness	Not Good	
		Satisfactory	
		Very Good	
	Behavior of the Doctors	Not Good	
		Satisfactory	
		Very Good-	
	Behavior of the other staff	Not Good	
		Satisfactory-	
		Very Good	
	Promptness in the services	Not Good	
		Satisfactory	
		Very Good	
	Signage /marking system	Not Good	
		Satisfactory	
		Very Good	
	Availability of Drugs	Not Good	
		Satisfactory	

		Very Good	
	Availability of Diagnostics services	Not Good	
		Satisfactory	
		Very Good	
	Time spent by the doctor	Not Good	
		Satisfactory	
		Good	
	Maintenance of privacy (For female Pts only)	Not Good	
		Satisfactory	
		Very Good	
	Availability of doctors	Not Good	
		Satisfactory	
		Very Good	

Section 6: Patient Friendliness

	How stressed you feel in the OPD	Very stressed	
		Stressed	
		Not stressed	
	How easily you get all the information you need	Get no information	
		Get Some information	
		Get all information easily	
	How friendly the staff are	Not at all friendly	
		Friendly	
		Very friendly	
	How long do you have to weight in the OPD to get your job done	Very long	
		Long	
		Not long	
	Do the staff properly explain to you the reason for delay on their own	Do not explain at all	
		Explain in a hurry when asked	
		Explain properly without asking	
	Before any procedure, does the staff properly explain to you what you should expect?	Never explain	
		Explain when asked	
		Always explain properly without asking	
	If possible, would you avoid coming	Definitely avoid	

	to this OPD in future, if required?	Avoid	
		Never shall I avoid	

IN-PATIENTS' NEED ASSESSMENT

SECTION 1: BACKGROUND INFORMATION

	Date of Interview	
	Name of the interviewer	
	Name of the Facility	

	Age of the patient (in years)		
	Location of Residence (Currently Living)		Put a X (against the response)
	Bhubnsewar		
	Cuttack		
	Behrampur		
	Sambalpur		
	Other Districts of Orissa		
	If in Orissa (Other than Bhubneswar) then the name of the district		
	Out Side Orissa (Name the state)		
	Sex of the patient	Male	
		Female	
	Main Occupation of the patient (Put a X against the appropriate occupation of the patient)	Agriculture	
		Labour	
		Service	
		Business	

		Unemployed	
		House-wife	
		Others	
	For how long you or your family members are using the services of this hospital? *(for first visit, write "0", for less than 1 year write "1", and so on)*	First visit	
		For less than one year	
		For 1-2 years	
		More than 2 years	
		Number of years	
	Mode of transport used to reach the hospital	Public Transport	
		Cycles	
		Motor Cycles	
		Hired Four Wheelers	
		Own Four Wheelers	
		Ambulance-	
		Others (specify	
	For what problem you have visited this facility?		
	How long you have been admitted in the hospital (No of days)		
	What is the most important reason for selecting	In-expensive	

	this particular hospital? (Put a X against the appropriate answer)	Good infrastructure	
		Skilled doctors	
		Skilled nurses…	
		Good behavior of doctor & other Staff	
		Availability of drugs	
		Close proximity	
		Cleanliness	
		Prompt services	
		Good Diagnostics	
		Others (specify	
	Name of the ward where the patient is admitted?		
	Location of the Ward (In which building of the hospital is the ward located)		

SECTION 2: FEEDBACK ABOUT FACILITIES, AMINITIES & CONVINIENCES

	Question	Options	Circle, most appropriate		
	Basic Amenities				
	Are the numbers of toilets adequate?	Not adequate Some what adequate Adeqaute	1	2	3
	To what extent are you satisfied with availability of drinking water	Not satisfied Satisfied Highly satisfied	1	2	3
	Is location of drinking water point suitable to you	Not suitable Suitable Most suitable	1	2	3
	Are availability of wash basins adequate for your need	Not adequate Adequate Most adequate	1	2	3
	Are numbers of toilets and baths adequate	Not adequate Adequate Most adequate	1	2	3
	Are you satisfied with availability of hot water for bathing etc	Not satisfied Satisfied Highly satisfied	1	2	3
SECTION 3:Food / Diet Related Amenities					

	Question	Options	Circle, most appropriate		
a	Is hospital diet provided to you	Not provided Occassionally provided Always provided	1	2	3
	In case patient diet is not provided, are you satisfied with hospital canteen supply	Not satisfied Satisfied Highly satisfied	1	2	3
	Are you satisfied with the food supply arrangement to your attendants staying with you?	Not satisfied Satisfied Highly satisfied	1	2	3
	Is the location of hospital canteen convenient?	Not convenient Convenient Most convenient	1	2	3
	Are you satisfied with hospital night stay arrangement, if required, for your relatives	Not satisfied Satisfied Highly satisfied	1	2	3
	If your relatives have to make their own night stay arrangements, are these conveniently located	Not convenient Convenient Very convenient	1	2	3
Parking facilities (To be asked to only patients / family who has own transport / hired transport)					
	Is the parking facilities provided for your vehicle satisfactory	Not satisfactory Satisfactory	1	2	3

	Question	Options	Circle, most appropriate		
		Very satisfactory			

SECTION 4: FEEDBACK ABOUT AVAILABILITY & ADEQUACY OF SERVICES

SN	Question	Options			
	Is the doctor you wanted to see always available	Not available Sometimes available Always available	1	2	3
	Could all your tests and investigations be done in the hospital itself	None Could be done Some could be done All could be done	1	2	3
	Could all your x-ray, if needed, be done in the hospital itself	Never Sometimes Always	1	2	3
	Could all Ultrasound examinatiion, if needed, be done in the hospital itself?	Never Sometimes Always	1	2	3
	Could all your CT, if needed, be done in the hospital itself	Never Sometimes Always	1	2	3
	Could all your MRI examination, if needed, be done in the hospital itself	Never Sometimes Always	1	2	3

SECTION 5: FEEDBACK ABOUT GENERAL QUALITY PARAMETERS

Provide Ratings for the following parameters

1	How do you find hospital buildings, roads	Not good Satisfactory Good	1	2	3
	How well Cleanliness is maintained in the hospital	Not good Satisfactory Good	1	2	3
	Do you find doctors are always friendly and approachable	Not at all Sometimes Always	1	2	3
	How do you find nurses' behavior towards you and your relatives	Not good Satisfactory Good	1	2	3
	How do you find other staffs' behavior towards you and your relatives	Not good Satisfactory Good	1	2	3
	How promptly your needs are attended to	Not promptly Promptly Very promptly	1	2	3
	Can you find your way and direction in the hospital easily with the help of displayed signage and markings	Not easily Easily Very easily	1	2	3

	How adequately the drugs prescribed to you were available	Not available at all Partially available Fully available	1	2	3
	Do you feel the doctor has given you enough time to answer all your queries	Not given any time Has given some time Has given full time	1	2	3
	Do you think the doctor and other staff were considerate for your privacy	Not considerate Considerate Very considerate	1	2	3
	Were the doctors available readily when needed	Not available Available with delay Available quickly	1	2	3

Section 06: Data on Patient Friendliness

	How well anyone explained to you about how a procedure on you will be carried out	Not explained at all Very little explained Fully explained	1	2	3
	If you were waiting for a procedure, how much you were told about the reason for delay	Not told at all Told somewhat in the passing Explained fully	1	2	3
	How well you have been explained, how to get redressal of your problem, if any	Not explained Explained a little Fully explained	1	2	3

	How well the visiting hours suit your relatives	Does not suit Somewhat suits Suits well	1	2	3
	Was the admission procedure simple	Not simple Simple Very simple	1	2	3
	If alternatives are available to you, would you come here again, if required	Never Yes, but reluctantly Always	1	2	3
	What you liked best in this hospital				
	What you liked worst in this hospital				

Thank you for sparing some time to respond to this survey. This will help us to serve you better

Tool Kit No 5

INFRASTRUCTURE ASSESSMENT CHECKLIST

HOSPITAL LABORATORY

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

(1)	(2)			
Check Availability of the Following	(Put a √ in the relevant column)			
	Available		Area sufficient, if available?	
General	Yes	No	Yes	No
Reception & registration				
Specimen collection and distribution				
Examination cum sample collection room				
Waiting Room with Toilet				

Pathologists' Office				
Stores				
Chemical				
General items				
Packing materials				
Acid				
Stores-in-charge's room				
Staff changing with toilets				
LPG Bank				
Histopathology Section				
Histopathologist's room				
Grossing and Processing				
Section cutting and staining				
Specimen store				
Microphotography room				
FNAC room				
Hematology Section				
Hematologist's room with his lab				
Hematology Lab				
Biochemistry Section				
Biochemist's room				
Biochemistry Laboratory				
Microbiology Section				
Microbiologist's room				

Bacteriology laboratory				
Mycology laboratory				
Media rooms				
Media Kitchen				
Media storage and plate pouring room				
Sterilizing Room				
Incubator room				
Cold storage				
Immunology Section				
STS laboratory				
Laboratory for other serology work				
Clinical Pathology Section				
Stool Urine Examination				
Specimen cubicle				
Photometry, Chromatography & Electrophoresis Room				
Virology Section				
Virologist with his laboratory				
Virus Serology laboratory				
Egg Inoculation Cubicle				
Animal inoculation cubicle				
Tissue Culture Room				
Animal Room				
Equipment Cleaning Section				
Wash up and preparation room				

HP sterilizer room				
Sterile storage				
Janitor's closet				
Photography & Illustration, Pathology Museum and other facilities				
Photography & Illustration				
Pathology Museum				
Library				
Class room				
Common Room				
Computer and reporting room.				
Comment on the following				
a)State of maintenance				
Civil				
Floor				
Ceiling				
Plastering				
Walls				
Windows				
Doors				
Plumbing				
Wash Hand Basins				
Water taps				
Electrical				
Electrical outlets				

Wiring	
Other fixtures and fittings	
b) Illumination	
c) Ventilation	

Tool Kit No 6

INFRASTRUCTURE ASSESSMENT CHECKLIST

MATERNITY & DELIVERY UNIT

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Put a √ in relevant column			
	Available		Is Area sufficient?	
Reception cum waiting area				
Admission/Examination/Triage				
Nurses Locker/Change/Rest room				
Doctors' Locker/ Change/ Rest area				
First stage labour cubicles with numers				
If yes, how many?				
Delivery Rooms				
How many rooms?				
How many delivery tables				

Baby resuscitation room				
Recovery room				
Septic delivery room?				
Are the following present:				
Instrument Sterilizing room				
Sterile store room				
Scrubbing room				
Dirty utility room				
Operating Delivery Room				
OT recovery room				
Eclampsia room?				
Comment on the following				
a)State of maintenance				
Civil				
Floor				
Ceiling				
Plastering				
Walls				
Windows				
Doors				
Plumbing				
Wash Hand Basins				
(10)Water taps				
Electrical				
Electrical outlets				

Wiring	
Other fixtures and fittings	
Illumination	
Ventilation	
Condition of the building generally	

Tool Kit No: 7

INFRASTRUCTURE ASSESSMENT CHECKLIST

BLOOD BANK

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response	
Condition of the building		
Area of the unit (Minimum 100 M^2 for whole blood and additional 50 M^2 for components)		
Location (mention the departments in close proximity)		
Is the following available:	Place a √ appropriately	
	Yes	No

Room for registration and Medical Examination		
Lab for blood group serology (A/C)		
Lab for blood transmissible diseases (Syphilis, Malaria, HIV-antibodies, Hepatitis-antibodies) (A/C)		
Blood collection room (A/C)		
Blood component Preparation (Shall be A/C) – 50 M^2		
Sterilization cum washing		
Blood storage Area		
Area for quarantine of blood and reagents not suitable for use		
Store cum Records Room		
Staff Room		
Blood Bank In charge room		
Patient waiting area		
Patient refreshment/ rest room		
ICTC Counseling Room		
PPTCT Counseling Room		

Tool Kit No: 8

INFRASTRUCTURE ASSESSMENT CHECKLIST

IMAGING DEPARTMENT

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response				Remarks
Condition of the building					
Approximate area					
Location (mention the departments in close proximity)					
Check the availability of the following	Put a √ appropriately				
	Available		Is space sufficient		
	Yes	No	Yes	No	
Reception and Registration counter?					

Waiting room with toilet					
Fluoroscopy and radiography rooms					
800/1000 mA machine					
500 mA machine					
200 mA machine					
100 mA machine					
Attached dressing cubicle with toilet					
Film developing and dark room					
Film drying room					
Office, Record and computer room					
Radiographic work room					
Stores					
Film stores					
Chemical Stores					
Special Packing material stores					
Equipment stores					
Radiologists' rooms					
Injection and Barium meal preparation room					
Trolley Bay					
Observation room					
Room for lying patients on stretcher					
Ultrasonography					
Sub waiting room					
USG room (Black & White)					

Colour Doppler room					
Toilet					
Mammography room					
Change room					
Film Library					
Seminar room					
CT scan					
Trolley Bay					
Patient Change Cubicle					
Radiologist's room					
Technician room					
Gantry room (=>25 M^2)					
Console room					
Record room/Computer room/Reporting room					
Dark room					
Toilets					
Store room					
MRI					
Reception & sub-registration					
Sub-waiting					
Changing cubicle					
Control console					
MRI Chamber					
Radiologist's room with toilet					

Technicians' room					
Cooling chamber					
Store					
Computer / reporting room					
Office					
Toilets					
Check conformance to AERB norms for X-ray rooms					
Wall thickness > 35 cm thick brick					
Shielding of doors and windows (equivalent of 1.7 mm lead)					
Room size >=18 M^2					
Not more than one unit of any type should be in one room					
All opening for light and ventilation to be located above 2M from the finished floor level					
Waiting areas to be located outside the x-ray room					
Comment on the following:					
State of maintenance					
Civil					
Floor					
Ceiling					
Plastering					
Walls					
Windows					

Doors			
Plumbing			
Wash Hand Basins			
Water taps			
Electrical			
Electrical outlets			
Wiring			
Other fixtures and fittings			
Illumination			
Ventilation (A/C)			

Tool Kit No: 9

INFRASTRUCTURE ASSESSMENT CHECKLIST

CSSD

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response			
Approximate area				
Location (mention the departments present in close proximity)				
Check availability of	Put a √ appropriately			
	Available		Is space sufficient?	
	Yes	No	Yes	No
Receiving area for soiled articles				
Sorting area				
Cleaning area				
Packing area				

Sterilizing and cooling area				
Storage area for clean stocks (not sterile)				
Storage area for sterile stocks				
Despatch area for the sterile packs				
CSSD supervisor's room				
Staff change room with toilets and lockers				
Is ventilation, humidity, temperature controlled in the storage area of sterile stocks				
State of maintenance of:				
Civil				
Floor				
Ceiling				
Plastering				
Walls				
Windows				
Doors				
Plumbing				
Wash Hand Basins				
Water taps				
Electrical				
Electrical outlets				
Wiring				
Other fixtures and fittings				
Illumination				

Ventilation	

Tool Kit No: 10

INFRASTRUCTURE ASSESSMENT CHECKLIST

IT DEPARTMENT

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response		Remarks
Check availability of the following:	Put a √ appropriately		
	Yes	No	
Room for Senior Systems Analyst cum I/C			
Programmers' room with Computer Lab			
Technicians room			
Computer Workshop			
Store			
Server room			
Toilets			

Tool Kit No: 11

INFRASTRUCTURE ASSESSMENT CHECKLIST

EMERGENCY AND CASUALTY UNIT

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response	Remarks
Location (mention the departments in close proximity)		
Approximate area (50 M^2/1000 yearly attendances)		
Location of the entrance		
Separate entrance for ambulance and ambulatory patients		
Yearly patient attendances for the last three years		
Total number of observation beds present		

Check availability of the following:	Put a √ appropriately				
	Available		Is space sufficient?		
	Yes	No	Yes	No	
Reception					
Triage					
Resuscitation Area (1/15000 yearly attendances)					
Acute Treatment Area (1/1100 yearly attendances) [For non-ambulant patient]					
Consultation Area (For ambulant patient)					
Procedure room					
Plaster room with storage for plaster, bandages, splint and crutch store					
Pharmacy/drug preparation					
Psychiatry room					
Isolation room(s) – for infected, for privacy, and for patients who are a source of visual, olfactory and auditory distress to others					
Decontamination room (contaminated with toxic substances)					
Treatment room					
Administrative area					
Storage					
Clean Utility					
Dirty Utility					

Cleaners' room					
Diagnostic Area (Imaging / Laboratory)					
Doctor's room					
Nursing station					
Security room					
Room for police personnel					
Disaster equipment store					
PMGV supply					
Relatives' waiting area with toilet					
Nurse staff room with toilet facility					
Immediate access to OT					
State of maintenance of:					
Civil					
Floor					
Ceiling					
Plastering					
Walls					
Windows					
Doors					
Plumbing					
Wash Hand Basins (1 for every resuscitation / procedure/ treatment/ consultation room)					
Water taps					
Electrical					

Electrical outlets		
Wiring		
Other fixtures and fittings		
Emergency Power		
Illumination		
Ventilation		

Tool Kit No: 12

INFRASTRUCTURE ASSESSMENT CHECKLIST

PHARMACY

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response				Remarks
Location (mention the departments in close proximity)					
Approximate area					
Check availability of the following:	Put a √ appropriately				
	Available		Is area available sufficient?		
	Yes	No	Yes	No	
Cash counter					
Storage room s					

Textile Store (Gauze, Bandage etc)					
Storage for IV Fluids					
Bulk drug storage					
Retail dispensary					
Cool and cold storage					
Packing Material Store					
Store for rubber goods					
Acid store					
Medical Gas store					
Store for items awaiting Condemnation and disposal (Held till disposal)					
Administrative office					
Proper circulation space					
Patient waiting area					
Sanitary facility					
State of maintenance of:					
Civil					
Floor					
Ceiling					
Plastering					
Walls					
Windows					
Doors					
Plumbing					

Wash Hand Basins					
Water taps					
Electrical					
Electrical outlets					
Wiring					
Other fixtures and fittings					
Emergency Power					
Illumination					
Ventilation					

Tool Kit No: 13

INFRASTRUCTURE ASSESSMENT CHECKLIST

ENGINEERING SERVICES

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response
Electric Engineering	
How many sources of supply?	
Connected Load of each	
Transformer Capacity of each	
Generation room with generator	
How many generators	
Capacity of each	
Lighting of the campus	

HVAC System	
Which areas are under Central A/C	
Capacity of Chillers	
Water Supply	
Sources of supply	
If from bore well, how many?	
Capacity of water tanks	
PMGV System	
Which areas (wards/departments) have piped medical gases and vacuum (O^2, NO_2, Compressed Air, Vacuum)	
Which gases are supplied in these areas	
How many Manifold Rooms	
Location of these manifolds	
Capacity of cylinder banks manifold wise	
How many outlets for each gases manifold wise	
Public Health Engineering	
Any en campus Sewage Treatment Plant	
Is the capacity sufficient at present	
How much more load it can take	
Storm water drainage system	

Tool Kit No: 14

INFRASTRUCTURE ASSESSMENT CHECKLIST

FIRE PROTECTION

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response
Is fire/smoke detectors have been installed?	
Is automatic sprinkler system installed?	
If detectors are installed, are they connected with an alarm system?	
Is it strategically located in a place which is always manned? (please specify the location)	
Is there escape routes during emergency?	
If yes, how far apart these escape routes	

are located	
If yes, what kind of egress method has been provided?(ramp, stair, fire lifts)	
What are the types, numbers, locations of portable fire extinguishers placed in different departments?	
What is the average distance of the extinguishers from one point to another?	
Are the basic instructions regarding the safety measures displayed for the general public?	
Do all employees know the method of using the extinguishers?	
Is there any underground water storage for firefighting?	
If yes, what is the capacity?	
Is there any wet riser and down comer?	
Standby power for water pumps?	
Standby power to any lift designated as fire lift	
Any arrangement for compartmentalization to contain fire	
If any fire door provided, what is their ratings (hour)	
How many emergency exits are there?	
Fire drill practiced regularly?	

Tool Kit No: 15

INFRASTRUCTURE ASSESSMENT CHECKLIST

VERTICAL CIRCULATION – ELEVATORS/RAMPS

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

ELEVATORS				
Particulars				
Location (Building wise)	Type (Bed / Passenger)	Capacity	Standby Power	Present Condition
1.				
2.				
3.				
4.				
Are the available number of lifts sufficient				
Is the lift suitable for use as a means of egress in emergency				

Is it meant to carry both people and goods				
Any dedicated lift available for disposal of waste				
Any lift earmarked for food distribution				
Is safety arrangement provided for catering to mechanical or electrical failures				

RAMPS	
Building No (or Name)	
Is ramp available (Yes/No)	
What is the slope? (8% is preferred)	
Is level landing provided at each door opening in the direction of travel (Yes/No)	
Can a wheel chair bound patient easily move up the ramp (Yes/No)	
Is the ramp covered for giving protection during rainy seasons (Yes/No)	
Is the surface of the ramp nonslip (Yes/No)	

Tool Kit No: 16

INFRASTRUCTURE ASSESSMENT CHECKLIST:

AMBULANCE SERVICES

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

	Response
Covered garages available?	
If yes then:	
For ambulances	
For other vehicles	
Condition of the Garage	
Location of the garage	
How many more covered garages are required?	

Tool Kit No 17

INFRASTRUCTURE ASSESSMENT CHECKLIST:

MEDICAL RECORD DEPARTMENT

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

	Response
Is there any Medical record Department present in the hospital? Yes/ No	
Location of the department	
Approximate area of MRD?	
Is there any Separate room for MRD In charge?	
Sufficient space provided for all the sections of the MRD?	
Vital Statistics desk	
Admission Check Desk	
Census Desk	
Assembly and Deficiency Check desk	
Incomplete Record Control DeskDischarge	

Analysis and Administrative Statistics desk	
Coding and Indexing Desk	
Complete Record Control Desk	
Is there separate area provided for doctors to fill in the incomplete medical records?	
Is there separate fire fighting arrangement in MRD?	
Is MRD computerized? Yes /No	
Is there sufficient storage capacity in the MRD?	
Does MRD include sufficient no. of Racks and Cabinets?	
Does MRD need expansion?	

Tool Kit No:18

INFRASTRUCTURE ASSESSMENT CHECKLIST:

LINEN & LAUNDRY SERVICES

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

	Response				Remarks
Approximate area of laundry					
Location					
Condition					
Check Availability of the following areas/rooms	Place a √ appropriately				
	Available		Is area sufficient?		
	Yes	No	Yes	No	
Reception/Collection and Sorting					
Change Room					
Sluicing and autoclaving					
Mending					
Washing machine /Driers/ Hydroextractors/ Calendering					

and pressing					
Mattress sterilising					
Boiler House					
Stores					
Fuel					
Soap and detergent					
Janitor Closet					
Sanitary					
Manager's Office					
State of Maintenance					
Civil (Floor, Walls, Ceiling, Doors, Windows)					
Electrical (Wiring, outlets, fixtures)					
Mechanical (Boiler)					
PHE (water supply, drainage, plumbing, fittings)					
Lighting					
Ventilation					

Tool Kit No: 19

INFRASTRUCTURE ASSESSMENT CHECKLIST

DIETARY SERVICES

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

	Response				Remarks
Availability of Kitchen(yes/no)					
Location					
Condition of physical infrastructure					
Check availability	Available		Is it sufficient		
	Yes	No	Yes	No	
Reception of kitchen stores					
Dietician's room					
Kitchen Manager's office					
Staff Change Room					
Staff rest room					
Preparation area					
Cooking Area					

Therapeutic Diet Preparation and Cooking Area					
Pan Wash					
Food Trolley and container wash					
Food trolley bay					
Servery					
Pot / utensil wash area					
Lighting (natural)					
Ventilation (exhaust chimneys)					
Electric supply					
Water supply (how many/duration of supply)					
Storage facilities					
Poultry					
Vegetables					
Dry items (Rice, Atta etc)					
Fuel store (Coal/Wood/Gas)					
Store for dairy items					
Storage for implements, machines, bowls, pans, utensils					
Refrigeration facilities					
Disposal of kitchen waste					
Toilets					
Hand washing facilities					
State of Maintenance					
Civil (Floor, Walls, Ceiling, Doors,					

Windows)					
PHE (water supply, drainage, plumbing, fittings)					
Lighting					
Ventilation					

Tool Kit No: 20

CHECKLIST

BIOMEDICAL WASTE MANAGEMENT

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Items	Yes	No	Remarks
Is a Biomedical Waste Management Committee in place to guide and monitor all aspects of BMW Management			
Has any officer been made responsible for hospital waste management?			
Has license for generation, segregation, transportation, temporary storage and disposal of biomedical waste been obtained from the State Pollution Control Board?			
Any superior authority monitors all the processes pertaining to biomedical waste management on a day to day basis?			

Is required documentation for biomedical waste done regularly?		
Are periodical reports and returns submitted to prescribed authorities?		
What is the quantity of BMW generated in the hospital per bed per day		
Segregation and Collection		
Is segregation of waste done at point of generation?		
Are color coded bins / plastic bags used for waste segregation and collection?		
Has needle destroyer and hub cutter provided and used?		
Has puncture proof container for sharps provided and used		
Has covered wheel burrows/trolleys been provided for intra-hospital transport of waste to the temporary storage facility		
Temporary Storage		
Secure hard standing Temporary Storage facilities for the BMW available		
Is Waste disposed off within the maximum permissible period of 24/48 hours in summer/winter		
Shredder for recyclable plastic material available and used		
Has Sodium Hypochlorite solution been provided for treating liquid		

waste and used?		
Is autoclaving of culture media done before disposal?		
Has protective clothing provided to sanitary workers		
Are the workers trained to handle all types of waste like cytotoxic drugs, date expired drugs, heavy metals, liquid waste etc		
Is disposal done in-house or outsourced?		
What is the mode of disposal (Incineration, autoclaving, burning, burial pits)?		
Is there any in house incinerator?		
If yes, what type of incinerator present? Single chamber Double chamber		
What is the capacity (Kg/hour)?		
Is there any change room available for the staffs?		
Is washing facilities for the wheel burrows available		
How the incinerator ash is disposed?		
Any waste disposal manual prepared?		
Do all workers know how to deal with emergencies/injuries pertaining to waste disposal (like needle stick		

injuries, spillages)		

Tool Kit No: 21

INFRASTRUCTURE ASSESSMENT CHECKLIST

MORTUARY

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Items	Response
Location (should be concealed from public view)	

Check the availability of the following:	Place a √ appropriately				
	Yes	No	Yes	No	
Body Store					
Autopsy Room					
Doctor's Change room with toilet					
Viewing room					
Relatives' waiting room					
Janitors' closet					
State of Maintenance					
Civil (Floor, Walls, Ceiling,					

Doors, Windows)					
Electrical (Wiring, outlets, fixtures)					
Mechanical (Boiler)					
PHE (water supply, drainage, plumbing, fittings)					
Lighting					
Ventilation					

Tool Kit No: 22

INFRASTRUCTURE ASSESSMENT CHECKLIST

PHYSIOTHERAPY

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

	Response			
Is there any physiotherapy unit present in the hospital?				
Location of the department				
Condition of the department				
Approximate area of the department				
Check if following spaces have been provided:	Place a √ appropriately		Is available space sufficient	
	Yes	No	Yes	No
Waiting rooms with toilets				
Reception / Office / Records				
Electrotherapy cubicles				
Infrared cubicle				
Ultraviolet room				

Combined treatment				
Gymnasium				
Changing cubicles				
Any other equipment provided?				
Cubicles available for these?				
If No, how many more cubicles required				
What will be their sizes				
Stores				
Sanitary (Separately for male and female)				
What is the state of maintenance of the department				
Civil (Floor, Walls, Ceiling, Windows, Doors)				
Electrical (Wiring, Outlets, Fixtures)				
Public Health Engineering (Plumbing, Wash Hand Basins, Water closets, Taps)				

Tool Kit No 23

INFRASTRUCTURE ASSESSMENT CHECKLIST

Parking

Name of the hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Item	Response	
Is there any parking space inside the hospital premise present?(yes/ no)		
If yes, location of the parking areas	1 2 3 4	
Is there separate provision for: Staffs' vehicle parking Visitor's vehicle parking		
Is there separate parking for :	Yes (If yes, No of places)	No
Four wheeler vehicle		

Two wheeler (motor bikes, scooters & bicycles)				
As per the Municipal Bye Laws how many parking spaces are to be provided?	Car	Scooter	Cycles	Others
During the peak working hours, is it possible for a patient/visitor to park his 4-wheeler vehicle easily?	Yes		No	
Is the present facility adequate?	Yes		No	
If No, does this facility need expansion?				
If yes, then is space available?				
Is the management of the parking lots outsourced	Yes		No	
Is the security satisfactory				
Observe, if vehicles are parked in places other than parking lots when space is available there				
If yes, then number of such vehicles and types	Car	Scooter	Cycle	Others

Tool Kit No: 24

INFRASTRUCTURE ASSESSMENT CHECKLIST

OUTPATIENT DEPARTMENT

Name of the hospital: _____

Please give a brief description of the OPD: _____

_____
_____
_____
_____

Location: _____

Accessibility: _____

Name of respondents: _____

Name of Surveyor _____

ITEM	RESPONSE
Is the OPD centralized or decentralized? (i.e. for the departments separately)	
If decentralized, how many different OPDs are functioning	
What are the departments which are conducting own OPDs	

Is the Registration centralized				
If not, at how many places registration is done?				
Give total yearly attendance of OPD				
Give discipline wise breakdown of yearly attendances	New	Old	New	Old
	OPD (i)		OPD (ii)	
	OPD (iii)		OPD (iv)	
	OPD (v)		OPD (vi)	
Give discipline wise no of consultants attending OPD daily				
Discipline	Number			
No of consultation room earmarked for each discipline				
How many consultation rooms are used by more than one consultants of the				

same discipline simultaneously	
Do the Resident doctors attend to OPD patients independently?	
If yes, give the number of such residents discipline wise	
Does the hospital prefer independent consultation rooms for the Resident Doctors as well?	
What is the size of a typical consultation room?	
Are the consultation rooms provided with attached toilets	
If not, what is the sanitary arrangement?	
Are the consultation rooms air conditioned?	
Are the discipline-wise OPDs having sub-waiting areas?	
If yes, how much sitting arrangement has been provided	
What is the approximate size of the OPD? (Length and Breadth)	
Please indicate if the following spaces have been provided? (Zone wise)	
Public Areas:	
Entrance: Is it easily accessible	
Reception and information	
Registration and Records area	
Waiting areas	
If provided, its size (Ideal is: 0.1 M^2 per	

patient)					
Public toilets and washrooms (For each OPD)	Male			Female	
	WHBs	Urinals	WCs	WHBs	WCs
Fans provided?					
Are the numbers sufficient?					
Drinking water?					
Any snacks bar?					
Telephone Booth?					
Clinical Areas					
Discipline					
Sub Waiting Area available?					
Seating arrangement for how many					
Consultation rooms					
All fixtures available? (Table, Chair, WHB, Exam Couch, equipment for exam)					
Special Consultation room for the department which needs special equipment					

Ancillary Facilities	
Injection room	
Treatment and dressing room	
Pharmacy	
Waiting area (No of seats)	
Approx. Size	
Immunization clinic	
Auxiliary Facilities (may be common for both IP and OP)	
Laboratory	
Radiology	
BloodBank	
Health Education facility	
Medical Social Service	
Play area for children (For paediatrics OPD)	
Preventive and Social Health Facilities (for counseling	
Well Baby Clinic	
Well women clinic	
Nutrition clinic	
For each service points give:	
Registration:	
No of counters	
"Q" length every 30 minutes for say 3 hours	

Service time in each counter	
Pharmacy	
No of counters	
"Q" length every 30 minutes for say 3 hours	
Service time in each counter	
Injection room	
No of service points	
"Q" length every 30 minutes for say 3 hours	
Service time in each counter	
Dressing room	
Consultation rooms (At least for 25 % of consultation rooms)	
Consultation room	
"Q" length every 30 minutes for say 3 hours	
Service time in each counter	
a)State of maintenance	
Civil	
Floor	
Ceiling	
Plastering	
Walls	
Windows	
Doors	

Plumbing	
Wash Hand Basins	
Water taps	
Electrical	
Electrical outlets	
Wiring	
Other fixtures and fittings	
b) Illumination	
c) Ventilation	

Tool Kit No: 25

INFRASTRUCTURE ASSESSMENT CHECKLIST

TELEMEDICINE UNIT

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response
Comment on the following:	
Objective of TM Services	
Scope of TM Services	
Mention the location desired by the hospital authority for the set up, in case of a new service	

In case of existing services, is the present site suitable?	
If no, what site is desired?	
Mention what is desired:	
24x7 hours working facility or	
Fixed hours	
Conference room facility	
Connectivity	
One to one or one to many	
Projection facility	
Do you consult with higher centres?	
If yes, is it live?	
If yes then	
Arrangement for examination of patient	
Arrangement for Procedures (like endoscopy)	
Toilet	
Wash Hand Basin	
Waiting room for relatives	
Room for staging of patients	
Do you provide consultation to lower centres	
If yes is it round the clock	
Comment on the following:	
Location desired	
Does it function on the basis of: Real time	
Is it working for	
Is there a seminar room available? If yes, how many people can sit?	
Is Projection facility available? If no, is it required?	
Comment on the following:	

Arrangement for glare prevention	
Acoustic treatment of the TM room	
Whether color rendering of the artificial light has been taken into account (i.e. should be like natural light)	

Tool Kit No: 26

INFRASTRUCTURE ASSESSMENT CHECKLIST

OPD – Maternity

Name of the Hospital:

Please give a brief description of the Maternity OPD:

_____
_____
_____
_____

_____

Location:

Accessibility:

Particulars	Response
Is there any separate entrance for the maternity OPD?	
Mention the OPD attendance for the last three years	
How many registration counters are there?	
What is the average waiting time for the following?	
Registration	

Consultation	
Pharmacy	
Injection	
Laboratory	
How many consultation rooms are earmarked for this discipline?	
Is the size of a typical consultation room adequate (as per the consultant)	
Are the consultation rooms provided with attached toilets	
If not, what is the sanitary arrangement?	
Are the consultation rooms air conditioned?	
Is there rooms allocated for: (specify the approximate areas also) Ante natal check up Education Room for prospective mothers Injection room Ultrasonography A set up to support any emergency case	
Is there provision for the following ancillary facilities: Drinking water Sitting arrangement Toilet facilities(if yes, mention how many) Telephone booth Tea/Snacks Bar	

Signage	
Any children play zone is available?	
Comment on the following:	
State of maintenance	
Civil	
Floor	
Ceiling	
Plastering	
Walls	
Windows	
Doors	
Plumbing	
Wash Hand Basins	
Water taps	
Water Closets	
Electrical	
Electrical outlets	
Wiring	
Other fixtures and fittings	
b) Illumination	
c) Ventilation AC (mention the capacity)	

Non-AC	

Tool Kit No:27

INFRASTRUCTURE ASSESSMENT CHECKLIST

NEONATAL INTENSIVE CARE UNIT

Name of the Hospital:

Location of the facility in the hospital:

Accessibility:

Date:

Respondent:

Interviewer:

Particulars	Response
Is there any separate entrance for the unit?	
No of beds	
Space per bed (Approx.)	
Level of Care of this NICU?	
PROTECTIVE ZONE	
Trolley Bay	
Reception	
Waiting Room with toilet	
Shoe change room	
Change Room	

Male	
Female	
Counselling Room	
CLEAN ZONE	
Doctor' duty room	
Sisters' duty room	
Linen Store	
Clean Utility/treatment/dressing	
Store Room	
Equipment room	
X-ray room	
Pantry	
Clinical Test Room	
Feeding area	
Formula room	
Examination area	
Breast Milk Bank	
STERILE ZONE	
Scrub up room	
Intensive Care Area (No of beds)	
Intermediate Care Area (No of beds)	
Septic Care Area (No of beds)	
Nursing Station	
Wash Hand Basins (No provided)	
DIRTY ZONE	

Dirty utility & Soiled linen room	
Janitor's closet	
Toilets	
PMGV System(yes/No)	
Comment on the following	
State of maintenance	
Civil	
Floor	
Ceiling	
Plastering	
Walls	
Windows	
Doors	
Plumbing	
Wash Hand Basins	
Water taps	
Water Closets	
Electrical	
Electrical outlets	
Wiring	
Other fixtures and fittings	
Illumination	
Ventilation	
AC	
Non-AC	

Heating	

Tool Kit No 28

INFRASTRUCTURE ASSESSMENT CHECK LIST

INTENSIVE CARE UNIT

Hospital Name: _____

Department: _____

ICU Type (Specialty): _____

Location: _____

Name of respondent _____

Name of interviewer: _____

Date: _____

No of beds	
Space per bed (Approx.)	
Ancillary space	
Waiting Room with toilet	
Trolley Bay	
Shoe change room	
Doctor' duty room	
Sister's duty room	
Clean Utility/treatment/dressing	
Store	
Equipment room	
Pantry	
Clinical Test Room	
Dirty utility & Soiled linen room	

Nursing Station	
Toilets	
Janitor's closet	
Ventilation	
AC	
Non AC	
Wash Hand Basins (No provided)	
PMGV System	
Comment on the following:	
State of Maintenance:	
Civil	
Wall	
Ceiling	
Doors	
Windows	
Plumbing	
Taps	
Wash hand basins	
Water Closets	
Electrical	
Outlets (condition and sufficiency)	
Wiring	
UPS	
Standby power	