Final Report

On

Major Operations

AT

ANGUL, GAJAPATI & PURI

For

P&C DEPARTMENT, GOVT. OF ODISHA
ODISHA SECRETARIAT

by

NATIONAL PRODUCTIVITY COUNCIL
A/7, Surya Nagar, Bhubaneswar-751003
# Table of Contents

1.0 **INTRODUCTION**: .................................................................................................................. 1  
2.0 **FUNCTIONS OF OPERATION THEATRE (OT)**: ................................................................. 1  
3.0 **SCOPE OF THE STUDY**: ....................................................................................................... 2  
5.0 **PRESENT MAJOR OPERATION PRACTICES**: ......................................................................... 2  
   5.1 Major Operation at CHC Gumma: ........................................................................................... 2  
   5.2 Major Operations at CHC Nimapara: ...................................................................................... 3  
   5.3 Major Operation at CHC Chhendipada: .................................................................................. 3  
5.0 **GAPS IN MAJOR OPERATION**: ............................................................................................. 5  
   5.1 Professional Staff/Skilled Manpower: .................................................................................... 5  
      5.1.1 Non availability of surgeon (General, Specialist), anesthesia specialist: ...................... 5  
      5.1.2 Non availability of OT nurse and OT assistant: ........................................................... 7  
   5.2 Infrastructure: ...................................................................................................................... 7  
      5.2.1 Non availability of Post-operative room: ....................................................................... 8  
      5.2.2 Non availability of hydraulic OT table and light: .......................................................... 8  
      5.2.3 Non availability of uninterrupted power supply at OT: ............................................... 8  
   5.2.4 Non availability of air conditioners: .................................................................................. 9  
   5.3 Equipment/ Materials: ......................................................................................................... 9  
   5.4 Training: ............................................................................................................................. 10  
   5.5 MIS: .................................................................................................................................. 11  
6.0 **BENEFICIARY RESPONSE**: ................................................................................................. 12  
   6.1 Expenses towards treatment of critical health issues: ......................................................... 12  
   6.2 Expenditure during critical illness: ....................................................................................... 14  
   6.3 Preference of Individuals at the Time of Critical Illness: .................................................... 15  
7.0 **RECOMMENDATIONS FOR MAJOR OPERATIONS**: ......................................................... 16  
   7.1 Zoning of OTs ...................................................................................................................... 16  
   7.2 ADVANTAGES OF THE GROUPING OF OTs ..................................................................... 16  
8.0 **RESOURCE REQUIREMENT**: .............................................................................................. 17  
   8.1 Electricity: ........................................................................................................................... 17  
   8.2 Operating Light: .................................................................................................................. 17  
   8.3 Air Conditioning: .................................................................................................................. 18  
   8.4 Ventilation: .......................................................................................................................... 18  
   8.5 Plumbing: ........................................................................................................................... 18  
   8.6 Water Supply: ...................................................................................................................... 18
8.7 Autoclave Room: ........................................................................................................ 18
8.8 Manpower: .................................................................................................................. 19

9.0 Recommendation & Policy Option: ........................................................................... 19

List of Tables

Table 1: Requirements for Operation Theatre ...................................................................... 10

List of Figures

Figure 1: Workflow of OT .................................................................................................... 4
Figure 2: Sterilization Status Block wise (2012-14) ............................................................ 5
Figure 3: Personal expenditure in case of critical health issues (in %) .......................... 12
Figure 4: Expenditure incurred at the time of critical illness ......................................... 14
Figure 5: Preference of Beneficiary for availing service .............................................. 15
Figure 6: Grouping of OTs ................................................................................................. 17
1.0 INTRODUCTION:

Major Operation/ Surgery is any invasive operative procedure in which a more extensive resection is performed, e.g. a body cavity is entered, organs are removed, or normal anatomy is altered. In general, if a mesenchymal barrier is opened (pleural cavity, peritoneum, meninges), the surgery is considered major. All surgical departments' need a well equipped Operation Theater (OT) to work with whereas Minor surgery is any invasive operative procedure in which only skin or mucus membranes and connective tissue is rejected e.g. vascular cut down for catheter placement, implanting pumps in subcutaneous tissue.

Thus it’s imperative for the hospitals/ medical institutions to have specialized/ qualified professionals/ doctors, designated equipments, established infrastructure to carry out the major operation where the surgery is not only crucial but also the support during the pre and post operation is significant.

As the major operation dissects the mesenchymal barrier, thus the pre and post care and support of the patient is crucial, thus the infrastructure for the patient and the escorts with required facility is important.

2.0 FUNCTIONS OF OPERATION THEATRE (OT):

I. To promote highest standard of Asepsis (is the state of being free from disease-causing contaminants such as bacteria, viruses, fungi, and parasites or, preventing contact with microorganisms.)

II. To ensure maximum safety for patients and staff from installation hazards.

III. Optimum/ effective utilization of OT and staff time.

IV. Smooth and effective functioning of OT.

V. Good working environment for doctors and staff.
3.0 SCOPe OF THE STUDY:

The scope of study includes the details assessment of the Major Operation activities carried out at CHC level and the resource constraints if any:

- Assessment of the human resource requirement for carrying out the major operation at CHC level.
- Detail assessment of the infrastructural gap if any for carrying out the major operation at CHC level.
- Understanding the behavioral aspects and the citizens concern towards the availing of the major operation service.
- Improving the existing service delivery standard.

4.0 OBJECTIVE OF THE STUDY:

- To understand the present level of various major operation practices across the CHC level.
- Study the present resource availability and identify the resource requirement (if any) for effective administration of the major operation activity at the CHC level.

5.0 PRESENT MAJOR OPERATION PRACTICES:

5.1 Major Operation at CHC Gumma:

The Community Health Center (CHC) in Gumma has been doing only sterilization (Mini lap, Vasectomy) since 2012 and is not prepared for any other major operation so far due to various reasons/ issues.

During the study, it has been observed that, although cases critical to surgery are received at CHC, but are compelled to refer to the District Headquarter Hospital (DHH) due to resource constraints. A detailed gap analysis has been carried out to understand the resource requirement for making the major operation service available at CHC Gumma.
5.2 Major Operations at CHC Nimapara:

The community Health center (CHC) in Nimapara has been doing sterilization & surgery since 2013 and is not prepared as for any other major operations so far due to various reasons such as lack of manpower (surgeon) and infrastructure. In Nimapara CHC no specialist surgeon is available since June 2013.

In 2013 there was a fire incident in Nimapara CHC in which the blood bank and the medicine store completely destroyed since then no major operations activities like surgery, organ transplantation could not take place due to absence of blood bank, though blood bank has been reorganized and but not operational.

5.3 Major Operation at CHC Chhendipada:

- The Community Health Center (CHC) in Chhendipada has been doing only Laparoscopic sterilizations and is not prepared for any other major operation so far due to various reasons/ issues which includes lack of manpower and infrastructure resources.
- In Chendipada, there is no surgeon since 2012 before which the OT is operational. There is absence of Blood bank which is also a major issue.
- During the study, it has been observed that, although cases critical to surgery are received at CHC, but are compelled to refer to the District Headquarter Hospital (DHH) due to resource constraints. A detailed gap analysis has been carried out to understand the resource requirement for
making the major operation service available at CHC Chhendipada as currently Operation theatre is not available at CHC, Kosala.

Figure 1: Workflow of OT
5.0 GAPS IN MAJOR OPERATION:

5.1 Professional Staff/Skilled Manpower:

5.1.1 Non availability of surgeon (General, Specialist), anesthesia specialist:

- A typical major operation requires administration of Spinal and/or General Anesthesia to the patient; which can only be done by professional anesthetist.

(A) Gumma CHC:

- Presently due to non availability of the Gynecologist, Gumma CHC refers and/or forwards all major delivery/ critical cases to DHH (District Headquarter Hospital) Paralakhemundi including the Caesarian cases.
- Similarly all major/ critical cases other the pregnancy are also forwarded/ referred to DHH due to non availability of Professional specialist doctors which not only overburdens the DHH but also financially discourages the poor tribal patients to avail the service.
- Similarly other specialized operation and/or major accidents case are also referred to the DHH which also overburdens the DHH.
(B) Nimapara CHC:

- A typical major operation requires administration of Spinal and/or General Anesthesia to the patient; which can only be done by professional anesthetist to support general surgeon.
- Due to availability of Gynecologist, Nimapara CHC diagnosis the major gynecological cases where as the complicated cases are referred to the DHH.
- The other complicated cases concerned to operation/ surgery are referred to the DHH which overburdens the DHH.

![Operation theater at Nimapara CHC](image)

(C) Chendipada CHC:

- Presently due to availability of the Gynecologist, Chhendipada CHC carry out the diagnosis of major cases, however early detection of severity or complicated cases refers to DHH (District Headquarter Hospital) Angul including the Caesarian cases which not only overburdens the DHH but also financially discourages the poor patients to avail the service.
- But the other surgery cases are referred to the DHH which overburdens the DHH.
5.1.2 Non availability of OT nurse and OT assistant.

(A) Gumma Block:
- Trained OT nurse and assistant are in providing assistance and managing major operation. No OT nurse and assistant are available in current occasion at Gumma CHC.

(B) Nimapara Block:
- In Nimapara CHC one OT nurse and one OT assistant are present and there service found satisfactory as per the beneficiary prospective.

(C) Chhendipada Block:
- No OT nurse and OT assistant are available in current occasion at Chhendipada CHC.

5.2 Infrastructure:

A medical autoclave is a device that uses steam to sterilize equipment and other objects. This means that all bacteria, viruses, fungi, and spores are inactivated.

- In Gumma and Chendipada CHC there is no Autoclave room for maintaining the hygienic and safe of medical equipments and other materials.
- In Nimapara CHC there is an autoclave room newly made but not yet operational.
5.2.1 Non availability of Post-operative room:

A post operative room (recovery room) is required for post-operation recovery of the patient who has already undergone major operation, where all other formal care and support could be provided.

- In Gumma CHC and Chendipada CHC, there is no post operative room for the patient who has already undergone major operation.
- In Nimapara CHC, Post-operative room is available which is not in an operating condition for which the same is not used regularly by the patients.

5.2.2 Non availability of hydraulic OT table and light:

- For smooth operation of surgery, hydraulic OT table with proper ceiling trek mounted and pedestrian shadow less lamp for visibility is essential, which is currently unavailable at CHC Gumma.
- In Nimapara and Chendipada CHC hydraulic OT table and pedestrian less lamp is available whereas not available in Gumma CHC.

5.2.3 Non availability of uninterrupted power supply at OT:

- During ongoing and planned major operation to be carried out, it is essential to have provision for emergency lighting and availability of
generator for power supply to ensure the non-disruption in the continuity in the operation during a power failure.

- But in case of Gumma CHC no such facilities are available to support major operation.
- Chendipada and Nimapara CHC have the provision of generator facility for emergency power supply to the CHC.

5.2.4 Non availability of air conditioners:

- In Gumma and Chendipada CHC there is unavailability of air conditioner in OT to maintain the temperature of room to make suitable to operate.
- In Nimapara CHC Air conditioners are available at OT to maintain the temperature of the room.

5.2.5 There is no provision of kitchen for providing suitable and hygienic food to the patient during post-operation stay in Gumma, Nimapara and Chhendipada CHCs.

5.2.6 No suitable waiting or rest room available for people who accompany the patient during pre and post operation in Gumma and Chhendipada CHC but it is available in Nimapara CHC.

5.3 Equipment/ Materials:

The Operation Theatre should have the minimum following Equipments for carrying out the Major Operation activities as per IPHS (Indian Public Health Standards norms). But only Boyle’s apparatus, Gloves & dusting machines and, Oxygen cylinder 660 Ltrs. (10 cylinders) for one Boyle’s apparatus are available to conduct major operation in Gumma CHC.

- Most of the equipments and apparatus are not available to conduct major operations in Chhendipada CHC.
- In Nimapara CHC Boyle’s apparatus, OT care / fumigation apparatus, Shadow less lamp pedestal for minor OT, Shadow less lamp ceiling trek mounted, Oxygen cylinder, Nitrous Oxide Cylinder, Hydraulic Operation Table.
- A detailed gap analysis of the instruments/ equipments availability at the selected CHC is detailed below:
Table 1: Requirements for Operation Theatre

<table>
<thead>
<tr>
<th>Operation Theatre Equipment</th>
<th>Gumma</th>
<th>Chhendipada</th>
<th>Nimapara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boyles apparatus</td>
<td>√</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>EMO Machine</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Cardiac Monitor for OT</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Defibrillator for OT</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Ventilator for OT</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Horizontal High Pressure Sterilizer</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Vertical High Pressure sterilizer 2/3 drum capacity</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Shadow less lamp ceiling trek mounted</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>Shadow less lamp pedestal for minor OT</td>
<td>×</td>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>OT care / fumigation apparatus</td>
<td>×</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Gloves &amp; dusting machines</td>
<td>√</td>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>Oxygen cylinder 660 Liters 10 cylinders for 1 Boyles Apparatus</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Nitrous Oxide Cylinder 1780 Ltr. 8 for one Boyles Apparatus</td>
<td>×</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Hydraulic Operation Table</td>
<td>×</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

5.4 Training:

- In Gumma Block no trainings (sterilization, IUD Insertions, Emergency contraception, Emergency obstetric care) are provided to any Medical officers and/or staffs.
- In Nimapara & Chhendipada Block trainings are provided in regular intervals.
Evaluation of Major Operation Services at CHC Gumma, CHC Chendipada and CHC Nimapara

- However no such MIS is available on the training imparted to doctors and/or staff.

5.5 MIS:
- Detailed MIS is not available on any other major operation, except sterilization which is provided at the CHCs at Nimapara, Chendipada and Gumma.
- There is no record maintained at CHC level for referral cases in major operation which are referred to DHH and/or any other hospital.
6.0 BENEFICIARY RESPONSE:

6.1 Expenses towards treatment of critical health issues:

Figure 3: Personal expenditure in case of critical health issues (in %)
In Nimapara due to unavailability of Infrastructure in OT, most of the beneficiaries either travel to DHH for critical cases or prefer private Clinics and hospitals.

In Gumma the beneficiaries prefer to go the DHH as they are not financially capable as like the beneficiaries of Chendipada and Nimapara.

The figure 3 reveals that more than 60% of the beneficiaries incur own expenditure for critical health issues while visiting either at Govt. hospitals and/or Pvt. Hospitals.
6.2 **Expenditure during critical illness:**

**Figure 4: Expenditure incurred at the time of critical illness**

(Source: Primary data through FGD with the beneficiary)

- From the Figure 4, it can be inferred that, in Chendipada Block, the respondents have incurred relatively higher expenditure as compared to the other 2 district. The beneficiaries of Nimapara and Chendipada had to visit to the District Head Quarter (Private / Govt. hospital) which incurs certain expenditure.

- While in Gumma Block, the expenditure is relatively low as the patients prefer to visit the DHH, and refrain availing the services of Pvt. Medicals, due to the expenditure at Pvt. Hospitals are not affordable by the poor beneficiaries of Gumma, thus they are compelled to forego the facilities if not addressed at DHH level.
6.3 Preference of Individuals at the Time of Critical Illness:

**Figure 5: Preference of Beneficiary for availing service**

(Source: Primary data through FGD with the beneficiary)

- In Nimapara & Chendipada block 35% & 48% of the beneficiaries prefer private institution at the time of critical illness where as beneficiaries of Gumma prefer CHC/PHC for critical cases.
- The poor socio economic profile of the beneficiary and non availability of other health care institutions in nearby places compels the beneficiaries to avail the service from the CHC/ DHH.
7.0 RECOMMENDATIONS FOR MAJOR OPERATIONS

7.1 Zoning of OTs
Based on the bacterial consideration and to provide maximum asepsis the entire OT complex can be divided into various zones.

Clean Zone, Protective Zone, Disposal Zone, Aseptic Zone.

<table>
<thead>
<tr>
<th>PROTECTIVE ZONE</th>
<th>CLEAN ZONE</th>
<th>ASEPTIC ZONE</th>
<th>DISPOSAL ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception, Patient identification and Case sheet check</td>
<td>Patient preparation Room</td>
<td>Main Operating Suits</td>
<td>Dirty Wash up Room</td>
</tr>
<tr>
<td>Waiting area for relatives</td>
<td>Recovery Room</td>
<td>Scrub Station</td>
<td>Room</td>
</tr>
<tr>
<td>Changing room for OT staff and surgeons</td>
<td>Plaster Room, Blood</td>
<td>Anesthesia Station</td>
<td>Disposal Corridor;</td>
</tr>
<tr>
<td>Pre- anesthesia room</td>
<td>Storage, Frozen Section</td>
<td>Instrument</td>
<td>connected to clean zone.</td>
</tr>
<tr>
<td>Store room</td>
<td>Work Room for doctors, sisters</td>
<td>Sterilization</td>
<td></td>
</tr>
<tr>
<td>Autoclaves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record and controller room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OT in charge</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.2 ADVANTAGES OF THE GROUPING OF OTs
1. Flexibility in use
2. Easy expansion in future
3. Better training & staff utilization
4. Better utilization of equipments& instruments
5. Better maintenance
6. Minimize infection
7. Better cleaning & asepsis
8. Flexibility in OT allocation
Figure 6: Grouping of OTs

8.0 RESOURCE REQUIREMENT:

8.1 Electricity:

1. Ensure round the clock electric supply
2. Stand by generator system
3. UPS for all equipments and gazettes
4. Central illumination.
5. Structured cabling system, Isolation Circuit for appliances
6. Separate copper earthling, avoid extension cords

8.2 Operating Light:

- Shadow less, mobile, hanging pendent easily maintainable OT light.
8.3 **Air Conditioning:**

1. Control asepsis, controlled air flow, positive pressure.
3. Humidity 55%.
4. 100% fresh air.
5. Filter of 1 to 3 micron size to be used.
6. Central air-conditioning system.
7. False ceiling 1 meter below the roof.

8.4 **Ventilation:**

1. There should be (+ve) pressure ventilation with lowering pressure gradient from sterile to protective zone.
2. All anesthetic gases to be vented out to exhaust.

8.5 **Plumbing:**

1. Sewerage shaft should not pass through operating room.
2. Impervious lining to seal contamination.
3. Toilets to be provided in change room area.
4. All fire safety measures to be taken.
5. Gas pipe line system to be ensured.

8.6 **Water Supply:**

1. Adequate and running fresh water supply to be ensured.
2. Taps should be easily handled or foot operated.
3. Ensure self water flow after desalination.

8.7 **Autoclave Room:**

1. Provision of steam supply.
2. Proper maintenance of autoclaves.
3. Sterilization unit.
4. Equipments to be kept in cup boards
8.8 **Manpower:**

- Chief Surgeon
- O.T Assistant
- Anesthetist
- Circulating Nurse
- O.T Nurse for assisting
- Attendants
- Safaiwala
- OT technicians

9.0 **Recommendation & Policy Option:**

- Surgeon and anesthesia specialist should be made available at least once a week and/or as per the demand at CHC level for carrying out all scheduled major operation cases. Gynecologist should be appointed at CHC level to carry out all delivery cases. *(Refer 5.0)*
- Infrastructures of the Operation Theatres (OTs) may be developed in full fledge with providing all equipment and other resources for full function of the OTs. *(5.2, 5.3, 8.0).*
- Post operative room should be opened at CHC level for the Post surgery stay of the patients. *(Refer 5.2.1)*
- Trained support staffs i.e. OT nurse and OT Assistant should be deployed at CHC level dedicated for carrying out the OT function *(8.8).*
- **Statutory regulations** like the design and planning of an OT complex will need compliance with mandatory regulations related to local administration such as Municipal Corporation, Government, Pollution Control Board, Fire Safety Department, Water supply and Drainage department, etc.
Evaluation of Major Operation Services at CHC Gumma, CHC Chendipada and CHC Nimapara

- Within the limitations of finance and space, the best results can be obtained and anaesthesiologist with multiple roles inside the operation theatre complex should be consulted in the process.
- Suitable kitchen facility should be provided at CHC level for supplying the hygienic food to the in patients.
- Necessary capacity building to be made for the staffs of Gumma CHC and MIS should be maintained on the training imparted. **(Refer 5.4)**
- MIS/ record keeping system may be strengthened at the CHC level for keeping track and for effective monitoring of the Major operations handled at CHC and referred to DHH. **(Refer 5.5)**