सत्यमेव जयते
MINISTRY OF HEALTH & FAMILY WELFARE
GOVERMENT OF INDIA

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन

Operational Guidelines for Obstetric ICUs and HDUs

Designed and printed with support from UNICEF

Operational Guidelines for Obstetric ICUs and HDUs

Manoj Jhalani
Additional Secretary & Mission Director, NHM
Telefax: 2306387, 23063693
E-mail:manoj.jhalani@nic.in

सत्यमेव जयते

Dated the 06th December, 2017

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
निर्माण भवन, नई दिल्ली – 110011

GOVERNMENT OF INDIA
MINISTRY OF HEALTH & FAMILY WALFARE
NIRMAN BHAVAN, NEW DELHI-110011

PREFACE

India has come a long way in improving maternal health as evident from the significant decline of the Maternal Mortality Ratio (MMR) from 301 in 2001-03 to 167 in 2011-13. This has been possible due to various NHM initiatives including Janani Suraksha Yojana, improved emergency obstetric care, ambulance services. Janani Shishu Suraksha Karyakram etc.

However , we still have a long way to go ensure safe motherhood for every pregnant woman in India. One of the major contributors of maternal mortality continues to be inadequacy of critical service provision to pregnant mothers suffering from life threatening complications during delivery and immediate postpartum period.

Government of India is committed to ensuring quality intra partum care in public health care system. LaQshya program which envisions development of standardized model labour rooms and quality service at all First Referral Units in India is a significant step in this direction. Expansion of Obstetric ICU and HDU is complementary to LaQshya program at Medical College Hospitals and District Hospitals respectively.

I firmly believe that present operational guidelines which complement existing national guidelines will provide valuable insights to program managers at state and facility level to operationalise Obstetric HDUs and ICUs across India and ensure that every pregnant woman feels assured of safe and happy childbirth outcome.

(Manoj Jhalani)

वन्दना गुरनानी, भा.प्र.से.
संयुक्त सचिव

VANDANA GURNANI, I.A.S
JOINT SECRETARY
Tel.: 011-23061706
E-mail : vandana.g@ias.nic.in

सत्यमेव जयते

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
निर्माण भवन, नई दिल्ली – 110011

Government of India
Ministry of Health & Family Walfare
Nirman Bhavan, New Delhi-110011

Foreword

India has made significant progress in improving maternal health in recent years and has progressed towards achieving national and global targets of maternal mortality reduction. National Health Mission has provided much needed support for the implementation of key national policies and programs. JSY,JSSK, operationalisation of FRUs, strengthening of Blood Banks/Blood Storage Units, capacity building programs etc. Have contributed significantly towards this objective.

However,a lot more needs to be done in order to achieve the SDG target to reduce MMRto less than 70. With improvement of referral transport services, women with life threatening complicationsare able to access secondary / tertiary level facilities and reach the medical colleges or district hospitals. Many of these woman require lifesaving critical care. However, existing intensive care units do not have the capacity to cater to the increased load of obstetric patients.

Hence, Government of India has introduced the concept of developing dedicated Obstetric ICUs at Medical College Hospitals and Obstetric HDUs at District Hospitals though our previous guidelines in the year 2016. While many States have already established Obstetric ICUs, it was felt that a guideline for operationalizing these units was the need of the hour. Detailed guidelines have thus been developed specifying the human resource, equipment , capacity building and monitoring requirements to assist States/UTs in operationalizing these units.

I congratulate Maternal Health Division for pursuing this initiative and ensuring effective implementation of this program across the country. I am sure this guideline will be usefull to further accelerate implementation of this program and contribute meaningfully towards maternal mortality reduction in india.

(Vandana Gurnani)

Dr. Dinesh Baswal
Deputy Commissioner (Maternal Health)
Telephone : 011-23062930
E-mail : dinesh 126@hotmail.com

सत्यमेव जयते

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
निर्माण भवन, नई दिल्ली – 110011

Government of India
Ministry of Health & Family Welfare
Nirman Bhavan, New Delhi-110011

Program Officer's Message

Ensuring maternal survival and health, is a key priority across global health systems. It was one of the three health related MDGs and continues to be first target of SDG-3. India has done commendable job in improving quality of care to pregnant mothers in recent years and continue to endeavour improve it further.

Critical lifesaving obstetric care continues to be one of the major focus areas for Government of India. National Guideline for establishing Obstetric ICUs/HDUS were developed in 2016 with the aim of improving critical care. It is heartening to Know that many states such as Gujarat, Tamil Nadu, Maharashtra (MGIMS, Wardha) have already progressed considerably in this initiative.

Primary results have shown very promising trends with reference to improvement in maternal survival. As per the data, Maternal Mortality has reduced from 3.3% to 0.9% after establishing Obstetric ICU in Medical College Hospital Surat. Furthermore, significant decline in maternal mortality was observed for indirect causes of maternal mortality such as cardiac diseases, jaundice, sickle cell anemia etc.

Present operational guideline is developed to complement existing national guideline. Major recommendations are made regarding needs assessment and planning for Obstetric ICU or HDU Hybrid model. Similarlystandardized recording reporting formats have been also developed for comparing performance of units across India.

In days to come, government of India will support every state in developing plan for Obstetric ICUs/ HDUs as well as timeline for operationalising these units. Similar, IT enabled monitoring system will also be developed to capture real time information from these units and comprehensive registry of critically ill pregnant mothers.

I want to thank all members of the expert group for their voluble contribution and enthusiasm to support (operationlisation) of Obstetrics ICUs. I thank my team from Maternal Health Division, MOHFW; UNICEF and FOGSI for all support provided to materialize these operational guideline. I am sure that this guideline will be very helpful to state level policy makers and Obstetricians at tertiary care institution to envision and (operationalize) Obstetric ICUs/ HDUs. I reiterate our commitment to support state in developing time bound plans for (operationalizing) these Units and thereby contributing to the reduction of institutional maternal mortality in India.

(Dr. Dinesh Baswal)

Contents

Abbreviations

b HCG	:	Beta Human Chorionic Gonadotropin
BEmOC	:	Basic Emergency Obstetric Care
CEmOC	:	Comprehensive Emergency Obstetric Care
CHC	:	Community Health Centre
CPR	:	Cardio Pulmonary Resuscitation
DH	:	District Hospital
HDU	:	High Dependency Unit
HR	:	Human Resource
ICT	:	Indirect Coomb's Test
ICU	:	Intensive Care Unit
JSSK	:	Janani Shishu Suraksha Karyakram
JSY	:	Janani Suraksha Yojana
LDH	:	Lactate Dehydrogenase
LFT	:	Liver Function Test
M&E	:	Monitoring & Evaluation
MCH	:	Medical College Hospital
MMR	:	Maternal Mortality Ratio
MO	:	Medical Officer
NHM	:	National Health Mission
Obs-Gyn	:	Obstetrics &Gynecology
PHC	:	Primary Health Centre
PIP	:	Program Implementation Plan
PS for MP	:	Peripheral Smear for Malarial Parasites
RBC	:	Red blood Cell
RFT	:	Renal Functional Test
SBA	:	Skilled Birth Attendant
SC	:	Sub Centre
SDH	:	Sub District Hospital
SRS	:	Sample Registration System
TSH	:	Thyroid Stimulating Hormone

List of Contributors

1. Mr. Manoj Jhalani, Additional Secretary & Mission Director, NHM, MoHFW
2. Mrs. Vandana Gurnani, Joint Secretary, RCH, MoHFW
3. Dr. Dinesh Baswal, Deputy Commissioner In-charge, Maternal Health, MoHFW
4. Dr. Sumita Ghosh, Deputy Commissioner, Maternal Health, MoHFW
5. Dr. Himanshu Bhushan, Advisor, Public Health Administration, NHSRC
6. Dr. Asheber Gaym, Maternal Health Specialist, UNICEF India
7. Dr. Pratima Mittal, HOD OBGY, Safdarjung Hospital, New Delhi
8. Dr. Abha Singh Director professor& HOD OBGY, LHMC, New Delhi
9. Dr. Poonam Shivkumar, HOD OBGY, MGIMS, Wardha
10. Dr. Surekha Tayade, Professor OBGY, MGIMS, Wardha
11. Dr. Bipin Nayak, Medical Superintendent, GMC, Gandhinagar, Gujarat
12. Dr. Ragini Verma, HOD OBGY, Government Medical College, Surat
13. Dr. Saral Bhatia, Associate Professor, GMC, Surat
14. Dr. Neelima Singh, NHM Telangana
15. Dr. Jyotsana Suri, Professor OBGY, Safdarjang Hospital, New Delhi
16. Dr. Alpesh Gandhi, FOGSI, Ahmedabad, Gujarat
17. Dr. Nuzhat Aziz, Fernandez Hospital, Hyderabad
18. Dr. Amita Suneja, HOD OBGY, GTB Hospital, New Delhi
19. Dr. Deepti Singh, Program Officer, JHPIEGO, New Delhi
20. Dr. Amrita Kansal, Public Health Specialist-Maternal and Reproductive Health WHO Country Office for India
21. Dr. Apurva Ratnu, Maternal Health Consultant, UNICEF India
22. Dr. Tarun Singh Sodha, Technical officer, NRU, IPE Global
23. Dr. Hariprakash Hadial, Lead Consultant, Maternal Health, MoHFW, New Delhi
24. Dr. Aishwarya Sodhi, Maternal Health Consultant, MoHFW, New Delhi
25. Mr. Naresh JHPIEGO, New Delhi

Background:

India has come long way in improving Maternal survival reducing maternal mortality from 301 Maternal Deaths in year 2001-03 to 167 in year 2011-13, an impressive decline of 45% in a decade (SRS). This has been possible through various interventions including JSSK, JSY, improved referral services and improved quality of care at public health care facilities.

However, nearly 44,000 mothers still lose their lives during pregnancy every year. A substantial proportion of these maternal deaths are registered at Medical College Hospital level and at District Hospital level. Most of the maternal deaths at these institutions are referred cases from periphery. Institutional delivery has markedly increased with nearly 80% of mothers now delivering at health facilities leading to sudden influx of mothers to health institutions at times beyond their capacities. The proportion of mothers with life threatening complications reaching to tertiary care institutions have increased due to early and improved referrals from periphery. This is evident from maternal death review data, where nearly 1/3 of all maternal deaths were registered at the district level or higher facilities.

However, present model of Maternal Health care does not have separate care standards for tertiary care institutions. Present model describes 3 level of care for maternal health namely Skilled Birth Attendant (SBA), Basic Emergency Obstetric Care (BEmOC) and Comprehensive Emergency Obstetric Care (CEmOC).

In present scenario, critical care to the pregnant mother is provided through existing medical or surgical ICUs. Pregnant mother developing life threatening complications are admitted to these ICUs for further critical care.

Situation analysis of existing ICUs in hospitals:

Most of the tertiary care institutions have dedicated medical/surgical intensive care units run by anaesthesia department catering to the need of patients with critical illnesses. However, it has been experience over the years that these ICUs are almost full to their capacity and many pregnant women with serious complications had to wait for the critical care due to non-availability of bed in ICU. Furthermore, ICU ensures critical care but does not effectively addresses obstetric care leading to sub optimal results in patients admitted with complications. Very few hospitals have dedicated obstetric ICUs.

Revised health system model for Maternal Health in India:

To address need of critical care units within Obstetric department, Concept of Obstetric Intensive Care Units (ICU) and High Dependency Units (HDU) is rolled out by Government of India in year 2016.With inclusion of ICU/HDU in the maternal health care model, it has become more robust defining appropriate care at every level of health system. Present health system model for maternal health is described in figure 1.

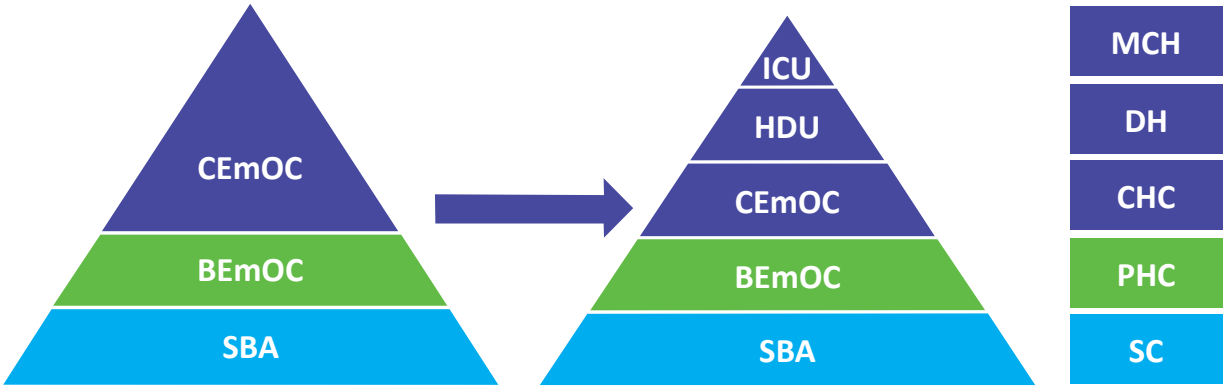


Figure 1: Health system model for Maternal Health in India

Obstetric ICUs – Progress so far:

National Guidelines for Obstetric ICU/HDU were developed and released in March 2016. This guideline provides detailed explanation on organizing obstetric ICUs/HDUs, Human Resource requirements, admission discharge criteria and lay outs for the ICUs & HDUs. Since then, many states have progressed and operationalise Obstetric ICUs/HDUs. Primary Data from Obstetric ICU suggest that these units have very high impact and reduce maternal mortality substantially at the places where fully functional Obstetric ICUs are established. Based on these experiences Government of India plans to further expand this initiative across all public sector medical college hospitals and district hospitals.

Rationale:

In order to increase access to intensive care for mothers suffering from life threatening obstetric complications by the coordinated efforts of obstetricians and intensive care specialists and to continue obstetric care during this period, it is proposed to establish dedicated Obstetric ICUs in all Medical College Hospitals and Obstetric HDUs at district hospitals as indicated in the national guidelines for Obstetric HDU and ICU. These guidelines supplement operationalisation of the national guideline outlining key steps and proceduresin setting up of HDUs/ICUs.

Objectives:

Present guideline is developed to supplement existing national guidelines for Obstetric HDU & ICU. Following are the major objectives of this guideline:

- Detailing recommendations for establishing Obstetric ICUs, HDUs and Hybrid model of Obstetric ICUs.
- Developing standardized recording and reporting formats for implementation across all Obstetric ICUs/HDUs
- Develop Capacity Building Plan for training of Obstetricians, medical officers and staff nurses on obstetric as well as critical care.
- Standardize list of equipment's for ICUs and for HDUs
- Define roles and responsibility of various cadres at facility level

- Develop ideal diagnostic workup and Blood Product requirements for Obstetric ICUs and HDUs.

Detailed information on each of the objectives is described in present guidelines. States will find it useful to further build on existing knowledge on Obstetric ICUs & HDUs and work further to improve Maternal Health.

Recommendations for establishing new Obstetric ICUs/HDUs

National Guidelines on Obstetric ICUs/HDUs (2016) provide recommendations for establishing Obstetric ICUs/HDUs. Following are the recommendations from guidelines.

- All medical colleges should have an Obstetric ICU & Obstetric HDUs
- All district hospitals should have and Obstetric HDUs
- Later, states can plan for Obstetric HDUs in High delivery load CHCs and Block PHCs
- 4 bedded HDU should be established at facilities with monthly deliveries up to 250, 8 bedded units for facilities with monthly deliveries of 251-500 and proportionate increase in beds as per monthly deliveries.

However, there is huge variability in medical college functionality and every medical college may not have sufficient patients for dedicated Obstetric ICU. Hence it becomes important to develop norms for developing Obstetric ICU & HDU.

Following are the recommendations for development of Obstetric ICU and/or HDU at Medical College Hospitals and District Hospitals. The scaling up of HDUs and ICUs can be in a phased manner, where, the scaling up can first start from the high case load facilities followed by the others.

• >1000 deliveries/month	:	4 bed ICU + 8 bed HDU
• 501-1000 deliveries/month	:	8 bed Hybrid ICU (6 HDU+2 ICU) (Detailed below)
• 250-500 deliveries/month	:	8 bed HDU

Hybrid model of Obstetric ICU:

Institutional deliveries and referral from periphery greatly differ between medical college hospitals. Hence, same setup is neither ideal nor practical to implement. Hence, concept of hybrid model of Obstetric ICU is developed where 8 bed unit is proposed to be developed at medical college hospitals who do not have adequate load for separate ICU.

8 bed unit will have 6 bed HDU and 2 bed ICU in the same unit. This is the more appropriate way of using resources optimally. Detailed Human Resource requirement and equipment requirement is detailed in later parts of these guidelines.

Operationalisation Plan for ICU/HDU

In order to smoothly operationalise Obstetric ICU/HDU at medical college hospitals and district hospitals, facility operationalisation plan becomes important. This plan helps in identification of facilities as well as prioritization of activities at facility level.

State level Operationalisation plan

Every state should develop comprehensive understanding of Health System model for Maternal Health. The old model of three-layer care is now replaced with two additional layers added at district hospital and medical college hospital. Present model ensures appropriate care at every level. This model shall be kept in mind while planning for developing Obstetric ICUs & HDUs.

Every state should plan operationalisation of ICUs/HDUs in three steps. These steps are indicative only and states may consider different strategy based on local needs and situations.

Stage 1: Identify apex institutes like (AIIMS) in the state. These institutes are most likely to have very high burden of delivery as well as maternal deaths. These institutes are at the utmost priority to start ICU/HDU. Furthermore, as per the criteria defined above, if facility has patient load then dedicated 8 bedded HDU and 4 bedded ICU can be planned as proposed in NHM PIP at the earliest.

Stage 2: Second stage consists of operationalising all medical colleges in the states with Hybrid ICU. Majority of medical colleges will have moderate delivery load and will be having high mortality. Hence a Hybrid Model will be most suitable in these colleges which cater to HDU needs as well as 2 dedicated beds for ICU care for few patients who require intensive care. These Medical College Hospitals should be incorporated in second phase.

Stage 3: High delivery load district hospitals across the state should be planned for developing High Dependency Unit (HDU). These institutions will not have adequate capacity to run ICU and hence are better off with dedicated HDU.

States should try to plan in a manner that by 2019 all these three stages are completed and supplement existing SBA – BEmOC – CEmOC care model.

Facility level Operationalisation Plan:

Following important points to be considered while developing facility operationalisation plan at every medical college hospital or district hospital.

- Internal assessment of delivery and maternal death patterns over last five years to assess need of HDU, Hybrid ICU or HDU & ICU.
- Nomination of Head of Department, Obs-Gyn as nodal person for the Obstetric ICU.
- Identification of appropriate place within Obstetrics department, ideally in close proximity to labour room, and estimation of infrastructure upgradation costs at local level.
- Consensual decision from Medical Superintendent, Department of Obs-Gyn and others regarding facility to be developed and responsibility shared by each department.
- Submission of proposal to NHM state office for incorporation in to either Annual PIP or supplementary PIP, subject to state priorities for NHM funding.
- Once approved, simultaneous activities to be undertaken with reference to Infrastructure upgradation, Equipment procurement and Human Resource recruitment.
- HR recruitment should be done at a later phase once infrastructure and equipment upgradation has reached satisfactory level.
- Operationalisation of Obstetric ICU/HDU as per plan and regular report submission to the national level through defined mechanisms of reporting.

Human Resource requirement for the Obstetric ICUs/HDUs

Present set of recommendations are based on the existing national guidelines norms. These norms are in compliance of international standards for intensive care and would be very useful for the institutions to improve quality of care. Following is the brief summary of present Human Resource Norms.

Sr	Cadre	Obstetric HDU	Obstetric ICU
1	Anaesthetist/Intensivist	Not required	1 per unit (new or existing)
2	Medical Officer	1 per shift per unit	1 per shift per unit
3	Staff Nurses	1 per two bed per shift	1 perbed per shift
4	M&E Assistant	Existing LR DEO/ 1 common for LR & ICU	Existing LR DEO/ 1 common for LR & ICU
5	Cleaning Staff	As per requirement	As per requirement
6	Guard	As per requirement	As per requirement

Based on the recommendations above, following is the calculation of Human Resource requirement for establishing Obstetric HDU, Hybrid ICU and Obstetric ICU.

Sr	Cadre	8 bedded Obstetric HDU	Hybrid ICU (6 bed HDU+2 bed ICU)	4 bedded Obstetric ICU
1	Anaesthetist/Intensivist	0	1	1
2	Medical Officer	4	4	4
3	Staff Nurses	16	20	16
4	M&E Assistant	1	1	1
5	Cleaning Staff & Guard	As per requirement		

These recommendations shall be used for developing proposal for the Obstetric ICU and HDU proposals. It is important to note that there will be no additional categories of human resources that will be supported in present situation and hence all proposals shall use these criteria only. Apex institutes will require both HDU and ICU and shall propose both Human Resources separately. If requirement is more than suggested number of beds then additional Human resources shall be calculated based on the present HR norms for Obs ICU/HDU.

Roles and Responsibility:

Pregnant women with life threatening complication approaches hospital for seeking appropriate care. Departmental procedures and work distribution are developed for administrative ease at hospital level. However, patient admitted to the institution is beyond this distribution and shall receive best possible care through inter departmental co-ordination.

Inter departmental co-ordination is very important in critical patients as it requires multi-disciplinary approach. Obstetric ICUs are practically extension of existing ICUs developed and hence Department of Anaesthesia and Medicine has to play a critical role in addition to Department of Obstetrics for appropriate functioning of Obstetric ICU. Other major specialities involved in the functioning of Obstetric ICUs include and is not limited to Nephrology, Cardiology, Gastroenterology, Endocrinology and other specialities as well. Major roles and responsibility of each of these departments is as follows:

Medical Superintendent:

Medical Superintendent is head of the institution and primary responsible for co-ordinating between departments to ensure that patient receives best care possible using existing resources. Major responsibility of medical superintendent will be as follows.

- Provide overall leadership to establishment of Obstetric ICU within Obstetrics dept.
- Provide administrative support in timely mobilizing funds, recruitment of HR (Wherever applicable) and infrastructure upgradation.
- Organize inter departmental joint meeting to identify areas of action for every department including and not limited to Obstetrics, Anaesthesia, Medicine, Nephrology, Cardiology, Gastroenterology, Endocrinology etc.
- Chair monthly Maternal Death Surveillance and Response/Maternal Near Miss Review meeting to understand areas of improvement within hospital to further reduce maternal deaths at facility.

Head of Department: Department of Obstetrics:

Department of Obstetrics will be in-charge of Obstetrics ICU. Head of Department will be nodal person for obstetric ICU in their hospitals. They will be the focal point for communication with state department, Medical Superintendent and other departments. S/He will be overall responsible for smooth functioning of Obstetric ICU and will look after infrastructure status, Equipment maintenance, Human Resource management, Obstetric management and decision to call other specialists/ Super specialists.

Head of Department can nominate senior faculty from the department as nodal person wherever felt necessary. This nodal officer will than discharge duties in Obstetric ICU in coordination with Head of Department.

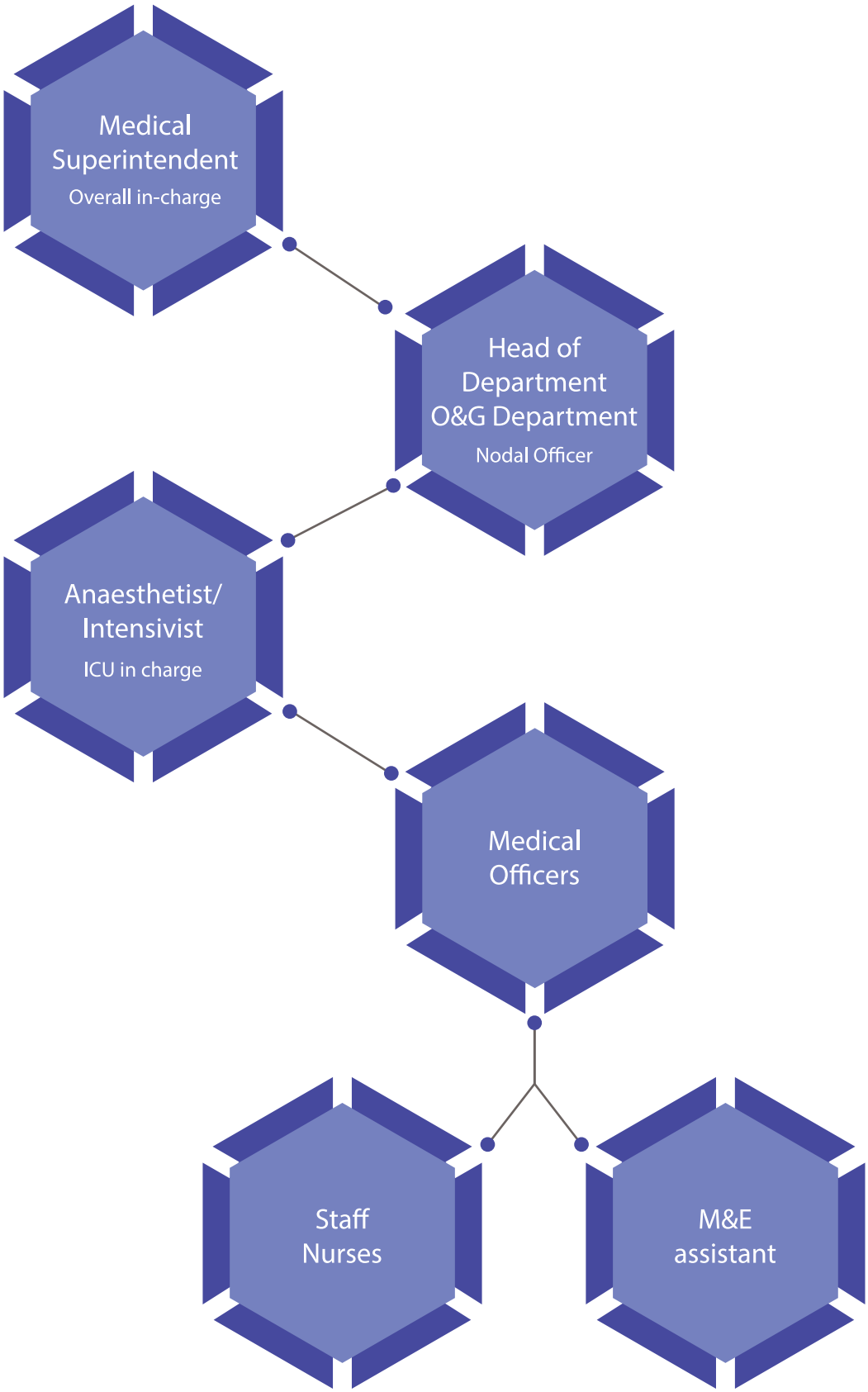
Department of Anaesthesia & Medicine:

Pregnant mother admitted in Obstetric ICU will require intensive care support and hence Department of Medicine and Anaesthesia will be important stakeholders in Obstetric ICU. Daily round of senior faculty to the Obstetric ICU may be scheduled by both the department and emergency focal point may also be appointed.

It is to be stressed at this point that pregnant mother should receive best possible care through meticulous inter departmental co-ordination. Department of Anaesthesia and Medicine shall extend all possible support in daily operations of Obstetric ICUs.

Furthermore, Department of Anaesthesia will be focal point for conducting in house intensive care training for Obstetrics department and hence utilize this opportunity and transfer all possible skills related to intensive care.

Organogram of Obstetric ICUs/HDUs



Diagnostic Workup

Laboratory investigations form critical part of present day diagnostics and it becomes more important in critical cases. Following is the list of the laboratory investigations that every ICU/HDU shall have available within the facility. Furthermore, turnaround time for such investigations shall also be defined as per the table below.

Services	HDU	ICU	Turnaround time
Hematological	• Haemogram • Smear for MP	• Haemogram • Smear for MP • Parasite V & F • Sickling index	1 hour
Biochemical, Serology	• RFT • LFT • LDH • HIV • VDRL • Coagulation profile (PT, aPTT, Fibrinogen, FDP, d dimer) • Blood Group / Rh, ICT • b HCG • TSH • Urine spot protein Creatinine ratio • Blood sugars • S ammonia • Troponin T • HbA1C • Urine albumin • Viral markers • S Lactate • Urine for hemoglobin	• RFT • LFT • LDH • HIV • VDRL • Coagulation profile (PT, aPTT, Fibrinogen, FDP, d dimer) • Blood Group / Rh, ICT • b HCG • TSH • Urine spot protein Creatinine ratio • Blood sugars • S ammonia • Troponin T • HbA1C • Urine albumin • Viral markers • S Lactate • Urine for hemoglobin	4-6 hours

Optional	• Lipase • Amylase	• Lipase • Amylase • SLE collagen profile • APLA profile • Procalcitonin • Lipid profile • Pro BNP	4-6 hours
Histopathology	• Cytology • Histopathology	• Cytology • Histopathology	3-5 days
Microbiology	• Culture sensitivity	• Culture sensitivity	48 hours

Blood products requirement in Obstetric ICU

Obstetric ICU/HDU receive variety of patients requiring various blood components during the treatment. Whole blood is usually not preferred due to obvious disadvantages over blood components. Hence, it is important to have blood components available at the facility treating ICU/HDU patients.

However, it is also to be kept in mind that component separation units are not low cost interventions. It requires heavy investment on infrastructure and equipment's. At the same time Human Resource requirement is also very high for running component separation unit.

Hence, present guidelines recommend use of components at all facilities where it is available. Other facilities who do not have component separation units shall thrive to develop such unit as it will be useful to other patients as well apart from pregnant mothers. At least Medical colleges which are planning to start either dedicated ICU or Hybrid ICU shall plan to start such units in their colleges.

Following are the current recommendations for using blood products in Obstetric HDUs/ICUs. Wherever Hybrid ICUs are established, recommendations shall be equivalent to the ICU as at least 2 beds are allocated to the intensive care and quality of care is equivalent to the dedicated ICUs.

Products	HDU	ICU
Packed RBCs	Yes	Yes
Fresh frozen plasma	No	Yes
Random donor platelets	No	Yes
Single donor platelets	To be procured when required	
Cryoprecipitate	No	Yes
Whole blood	Not Recommended	
O negative PRBC	Yes	Yes

Capacity Building Plan for Critical Care in Obstetrics

Obstetric HDU/ICU is a relatively new concept and an emerging practice area of maternity care in India. Proper functioning of these units require adequate training of medical and para-medical staff on obstetric as well as intensive care. Intensive care training is a specialised training. Therefore, Medical and Paramedical Staff appointed or assigned at Obstetric ICU requires to be adequately trained on basic knowledge and skills required for management of patients in Obstetric HDU/ICU. Present section describes detailed capacity building plan for training of medical and para-medical workers posted at Obs ICU/HDU.

Objectives of the training plan:

- Define Components of Obstetric training for Critical Care in Obstetrics
- Define components of Critical Care in Obstetrics
- Develop curriculum including topics and timelines separately for medical and para-medical workers.

Major components ofObstetric Training

- To learn the Obstetric terminology
- To understand the basics of Physiology and Pathology of pregnancy
- To learn about Obstetric care set up and drugs
- To learn about Obstetric emergencies
- To know about operative obstetrics and wound care
- To understand importance of breast feeding.
- To learn about basic essential newborn care

Major components of Critical Care in Obstetrics training

- To know about Obstetric HDU/ICU establishment/set up
- To learn about how to prepare crash carts
- To know about how to operate different machines and equipment's in HDU/ICU
- To learn about interpretation of vital data and other findings on the monitors
- To learn about Oxygen Therapy
- To learn about blood transfusion practice
- To learn to assist intubation and other different ICU procedures
- To learn nutritional care & pain management of a patient in Obstetric HDU/ICU
- To learn about Basic life support /CPR
- To learn about Infection prevention and control policy in HDU/ICU

The flow of the training:

Theory for understanding of intensive care, emergency obstetrics →Training at skill stations/ practice → Observation in Obstetric, Neonatology departments and ICU → Assisting in different procedures →Hands on whenever is required → interactive session →Emergency drills →Evaluation →Certification →Refresher courses

Staff cadres working in Obstetric HDU/ICU:

- Obstetricians
- MOs (EmOC trained or not trained in Obstetrics)
- Nurses (Seniors-Experienced in Obstetrics or Untrained in Obstetrics)
- Data operators

Resident doctors are students and cannot be requested to undergo additional training outside existing curriculum. Hence, there will be no separate training planned for resident doctors.

Trainers for the training:

- Curriculum for both the training is jointly developed through inputs from Obstetric as well as Anaesthesia department.
- Obstetric training will be conducted under the supervision of HOD (Obs-Gyn)
- Intensive care training is to be conducted by HOD (Anaesthesia) or Head of the ICU.

Place for the training:

- Obstetric trainings will be conducted in house within existing Obs-Gyn departments while intensive care training will be conducted at Anaesthesia department or at ICU.
- Medical Superintendent shall ensure adequate co-ordination between various departments like Obstetric, Anaesthesia and Intensive care units.
- Orientation workshops will be organized for HODs of Intensive care units, anaesthesia and/or medicine to sensitize them about obstetric ICU and to support for capacity building of medical and paramedical staff for Obstetric HDU/ICU.
- Training for Trainers will be arranged for the trainers
- There will be few national nodal centres which will be used for demonstration of appropriate practices related to ICU/HDU.

Skills Station: Every medical college should endeavour to develop Skills Stations which can be used for training purposes. All states should start by establishing at least one such station at apex medical institution in beginning. Medical Officers and Nurses can be trained initially at these skill stations followed by training in obstetric department and ICU. These stations will also help staff in regular training and improve their

skills. These skill stations can be utilized from advanced skills lab wherever available. Rest of facilities can consider strengthening skill stations for CEmOC training in.

Proposed skill stations:

Following skill stations are suggested for the staff training for Obstetric HDU/ICU.

- Blood loss estimation in delivery
- Eclampsia drill
- Use of Infusion Pump and Syringe Pump
- Oxygen therapy
- Intubation and Airway management
- ABG - method and analysis
- Ventilation
- CPR in Obstetric
- Neonatal Resuscitation

Mannequins required at Skills Station:

- Child Birth Simulator
- Adult Advance Life Support trainer
- Adult Airway management trainer
- Newborn Resuscitation trainer (NALS compatible)

Training Plan:

As discussed earlier, there are two areas of training (obstetric & critical care) and three cadres (obstetrician, medical officer, staff nurses) which requires different level of combination of training for smooth functioning of Obstetric ICU. Data Entry Operator in every HDU/ICU will require dedicated non clinical data management training.

Draft training plan is proposed for Obstetric as well as critical care in obstetric training. Details of the training program are provided at the end of table.

Sr	Cadre	Obstetric training	Critical care training	Total Duration
1	Obstetrician	Nil	Critical Care in Obstetrics (CCOB – 10 days)	10 days
2	Medical Officer	BEmOC - Basic Emergency Obstetric Care (10 days)	Critical Care in Obstetrics (CCOB – 10 days)	20 days
3	Staff Nurse	SBA - Skilled Birth Attendant training (21 days)	Critical Care in Obstetrics (CCOB – 10 days)	31 days
4	M&E Assistant	Data management training (after launch of Obs ICU Software)		1 day

- Curriculum for BEmOC and SBA are standardized and regular batches are organized at MCH. ICU staff to be trained on job without any additional TA/DA.
- Curriculum for Critical Care in Obstetrics (CCOB) is developed in consensus with expert and will be implemented jointly by Obstetrics and Anaesthesia department.
- If any staff is trained in BEmOC or SBA and produces valid training certificate, Obstetric training can be waived off.
- Similarly, Critical care training can be waived for Obstetrician, Medical Officer and Staff nurse with ICU experience certificate for more than 3 months.

Training Plan: Critical Care in Obstetrics (10 days)
3 T's: Train, Teach, Transfer

Day	Morning (0900-1300)	Afternoon (1400-1700)
1	***Opening*** Welcome and Introductions Overview of the course (Goals and Objectives Identify Participants expectations Precourse Knowledge Questionnaire Review the clinical experience of participants ***Presentation and discussion*** Concept of HDU/ICU - The need - Scope of HDU Working Towards Improving Maternal Survival **Guided Tour of MCH Wing**	**Presentation, Discussion, Demonstration and Role play** Different Levels of care Admission Criteria Step Up and Step Down Triaging - Policy and Practice **Role play on Triaging** Discussion on Role play **Review of the days' activities**
2	**Agenda and Opening Activity** **Presentation and Discussion** How to set up Obstetric HDU /ICU - Location, Space - Infrastructure - Facilities - Instruments and Equipment's' - Consumables - Staffing and rotation Monitoring and Management at HDU - Maternal - Fetal **Group work** – Stakeholders analysis of setting up HDU in respective work places and solutions	**Presentation and Discussion** Airway management - Non Invasive - Invasive - Laryngeal masks **Skill Demonstration** Intubation and Use of Laryngeal Masks and other airways – Videos and Demonstration on mannequins **Skill Practice** - Intubation and Use of Laryngeal Masks and other airways – Practice in pairs **Review of the days' activities**
3	**Agenda and Opening Activity** **Presentation and Discussion** Rapid Initial Assessment Recognizing and managing shock Basic Life support Advanced Life support	**Presentation and Discussion** IV line and Medication Fluid management and Inotropic support Monitors in HDU/ICU - How to set up and interpretation

	Skill Demonstration BLS and ACLS – Adult resuscitation on mannequins Videos **Skill Practice** BLS and ACLS – Adult resuscitation Practice in pairs **Role play** – Managing Post- Partum Collapse **Tour of Medicine ICU**	**Case studies and practice** - Reading and interpretation of ECG and its abnormalities - ABG Analysis, interpretation and management **Review of the days' activities**
4	**Agenda and Opening Activity** **Presentation and Discussion** Obstetric Emergencies Vaginal Bleeding in First Trimester Vaginal Bleeding in Second Trimester Vaginal Bleeding after Childbirth **Skill Demonstration on Mannequins** Bimanual Compression Aortic Compression Manual Removal of placenta Balloon Tamponade **Skill Practice in Pairs** Bimanual Compression Aortic Compression Manual Removal of placenta Balloon Tamponade **Emergency Drill on PPH Management**	**Presentation, Discussion, Demonstration** Anemia complicating pregnancy -Moderate to Severe anemia – Intrapartum and postpartum Hypertensive disorders in Pregnancy - Severe Preeclampsia - Eclampsia - HELLP Syndrome **Case Study** – Headache, Blurred Vision, Loss of Consciousness, Convulsions, Elevated Blood Pressure **Emergency Drill** – Eclampsia and its management **Review of the days' activities**
5	**Agenda and Opening Activity** **Presentation and Discussion** Special laboratory Investigations in obstetric sick patients and interpretations Blood and component therapy in Obstetrics - When and How - Rational Use - Complications and Care Emergency Trolley/Crash Cart	**Presentation and Discussion** **ICU Procedures** **Skill Demonstration** Cut Down on mannequin Skill Practice in pairs **Presentation and Discussion** Nursing Care in Obstetric sick patient Case study and role play **Review of the days' activities**

	Defibrillators and its use **Skill Demonstration** - Use of defibrillator on mannequin **Skill Practice in Pairs** Use of defibrillator	
6	**Agenda and Opening Activity** **Presentation and Discussion** Ventilator Graphics Ventilator settings Noninvasive ventilation Care of patient on ventilator **Skill Demonstration** of Invasive and noninvasive ventilation on ventilator **Skill Practice in Pairs** Invasive and noninvasive ventilation **Discussion and reinforcement Emergency drill on putting a patient on mechanical ventilator**	**Presentation and Discussion** SOFA score: Sequential Organ Failure Assessment Hands on practice on filling SOFA score **Review of the day's activities**
7	**Agenda and Opening Activity** **Presentation and Discussion and case studies** Pulmonary Complications in Pregnancy - Pulmonary Oedema - ARDS Renal Complications in pregnancy - Oliguria - Acute Kidney Injury Coagulation Failure - DIC Thromboprophylaxis in Obstetric sick patient	**Presentation, Discussion,** Infection Prevention -Hand washing -Decontamination -Sterilization -Sharps Handling -Waste disposal -Instrument processing **Demonstration and Role play** How to prepare 0.5 percent hypochlorite **Group work on waste disposal** **Review of the days' activities**
8	**Agenda and Opening Activity** **Group 1 - Hands on Training of Procedures** Posting in Anesthesia **Group 2** - Hands On Training of procedures Posting in Medicine ICU **Review of learning, reinforcement**	**Group 1** – Posting in Labour Room and Obstetric HDU/ICU **Group 2** – Posting in Medicine ICU **Review of learning, reinforcement** **Review of the days' activities**

9	**Agenda and Opening Activity** **Group 2** - Hands on Training of Procedures Posting in Anesthesia **Group 1** - Hands On Training of procedures Posting in Medicine ICU **Review of learning, Reinforcement**	**Group 2** – Posting in Labour Room and Obstetric HDU/ICU **Group 1** – Posting in Medicine ICU **Review of learning, reinforcement** **Review of the days' activities**
10	**Agenda and Opening Activity** Post Test Knowledge Questionnaire OSCE Practical exam	**Presentation and Discussion** Communication Skills Breaking Bad News Documentation Referral Handling Mob Violence **Action Plan** **Certification and Closing Remarks**

Care of New Born during mother's stay at ICU/HDU:

Nearly half of the admissions in Obstetric ICUs/HDUs are post-natal women with child. Furthermore, most of the Ante Natal Mothers admitted in ICUs deliver during her stay. Overall nearly 90% of all mothers are discharged with a new born or infant.

Hence, it becomes very important to develop guidance for care of new born during the period of mother's admission in to ICU/HDU. Following points are to be considered for new born care of children whose mother is admitted to either Obstetric ICU/HDU.

- Decision to keep new born with mother will be based on the maternal condition
- If mother is critically ill (e.g. multi organ failure or ventilator support), newborn should be cared by the relatives or by the paediatric units of the respective hospitals.
- Majority of mothers admitted to ICU/HDU will require additional support to care for new born.
- Whenever mother is conscious and able to breastfeed child, the same should be encouraged.
- New born can also be roomed in with mother wherever possible.
- All new born shall receive check up by a paediatrician to screen for any new born defect or complications.
- Paediatricians will play an important part in overall care of new born during mother's stay at ICU.

Standardized Recording Reporting formats for Obstetric ICUs

Standardized case records for Obstetric ICU are developed to ensure similar quality standards of clinical care in all Obstetric ICUs. Following are the forms that have been developed and needs to be used in all ICUs.

- **Admission Register**
- **Admission form**
- **SOFA score calculation sheet**
- **Progress Note**
- **Laboratory Investigation Sheet**
- **Monitoring Sheet**
- **Discharge card**
- **Facility Follow up card**

Apart from these standard formats developed, every facility will be required to fill Facility Based Maternal Death Surveillance and Response (FBMDSR) form as per the Maternal Death Surveillance and Response guidelines (2017) and Maternal Near Miss form as per the National Maternal Near Miss Review Operational Guidelines (2014).

Obstetric Intensive Care Unit

Name of Institute: .....

Admission Register

Sister In charge: .....

Start Date..... End Date.....

Developed by UNICEF

Ministry of Health and Family Welfare, Government of India

Contact Details of Obs ICU Staff

SN	Name	Designation	Mobile
1			
2			
3			
4			
5			
6			
8			
9			
10			
11			
12			

State level Contact Details

Name	Designation	Mobile	Email

:Reporting to state:

Please send monthly reports to Project Officer – Obs ICU by 5th of Every Month on,

abc@gmail.com

						Serial number	**To be filled on Admission**	Month: ..... Year: .....
						Registration number		
						MCTS/RCH portal Registration number		
						AADHAR number		
						Admission Date		
						Admission Time		
						Patient's Name		
						Age		
						Husband/ father's name		
						Religion		
						Caste		
						BPL holder (Y/N)		
						Complete Address		
						Contact No.		
						Referred (Y/N, if yes then name of facility)		
						Place of Delivery		
						Provisional Diagnosis		
						Name and Signature of SN		

Month: ..... Year: .....

Details of child						To be filled on Discharge/Death/ Referred/ DAMA					
Date and Time of Birth	Live birth (L)/ Still Birth (S)	Sex (M/F)	Birth weight (gram)	Condition on Discharge (Alive, Dead, Admitted)		Date	Time	Final Diagnosis	Outcome (Discharge/ Death/ Referred/DAMA)	Doctor in Charge	

Obstetric Intensive Care Unit / HDU

Name of Institute: _____

Admission Form

Obs ICU Reg. No		
MCTS/RCH portal Reg. No		
AADHAR Number		
Patient Name		**Age** (in completed years):.....
Husband/Father Name		
Complete Address		
Contact Number		
Date of Admission:	...../...../.....	**Time:** .....
Date of Delivery (if Applicable)	...../...../.....	**Time:** .....
Referred from		
Cast: General/ OBC/ SC/ ST	**Religion:**	**BPL Status:** Yes/No

Obstetric Details at Admission

Gravida: _____ **Para:** _____ **Living:** _____ **Abortion:** _____

LMP: _____ **EDD:** _____ **No. of ANC:**_____ **Gestation:**_____ week

Labour: Spontaneous / Induced labour / Prelabour CS

Presentation: Vertex / Breech / Transverse / Other .....

Uterine tenderness: Yes / No **FHR:** Present / Absent, if yes_____/ min

Amniotic fluid: Clear / Blood Stained / Meconium stained

Course of Labour: Uneventful / Prolonged 1st Stage / Prolonged 2nd Stage / Obstructed

Mode of Delivery: SVD / Assisted vaginal delivery / Caesarean / Miscarriage

PPH: Yes / No **P/V foul smelling Discharge:** Yes / No

Indication for Caesarean section: _____

Delivery attended by: Obstetrician / Medical Officer / AYUSH / Staff Nurse / ANM/ Dai / Relative / Other

Antenatal steroids: Yes / No **If Yes:** Beta / Dexamethasone **No of Doses:** _____

Magnesium Sulphate: Yes / No **If yes, dose:** _____ **Time of last dose:** _____

Other drugs: _____

Indication for Admission

[Please tick the most relevant single indication;
if multiple indication also mention all relevant numbers in the end as per priority]

HDU Admission	ICU Admission
☐ **Hemorrhage**	
☐ PPH ☐ Placenta Previa ☐ Abruption ☐ Others	☐ Obstetric hemorrhage with any organ involvement
☐ **Hypertensive disorders**	
☐ Preeclampsia, severe features ☐ Eclampsia ☐ HELLP syndrome	☐ Eclampsia with neurological signs ☐ Status eclampticus
☐ **Sepsis**	
Pregnancy with Febrile Conditions ☐ Dengue ☐ Malaria ☐ Swine Flu ☐ Others	☐ Septic shock
☐ **Renal dysfunction**	
☐ S Creatinine > 1.2 mg/dL, ☐ Decreased urine output	☐ Urine output <400 ml in 24 hrs, or <160 ml in 8 hrs and client unresponsive to simple routine measures
☐ **Jaundice in pregnancy**	**Multi-organ dysfunction**
☐ AFLP ☐ Infective ☐ Others	☐ Two or more organ involvement ☐ Combined SOFA score > 4 ☐ SOFA score > 2 for individual organ
☐ **Coagulation System**	
☐ Thrombocytopenia	☐ Disseminated intravascular Thrombocytopenia
☐ **Abnormal Vitals**	
☐ Any deviation from normal requiring surveillance and observation	☐ GCS <8 (non traumatic coma) ☐ RR <8 and >35 breaths/minute ☐ Heart rate <50 and >140 beats/min ☐ Systolic B.P. <80 mm Hg, or 30 mm Hg ☐ Systolic B.P below patient's usual B.P. ☐ SaO2 <90% on supplemental oxygen
☐ **ABG abnormalities**	
☐ Any deviation from normal	☐ pH outside the range 7.3 to 7.7 ☐ PaO2 < 6.6 kPa (< 50 mmHG) ☐ PaCO2 >8.0 kPa (>50 mmHg)
☐ **Electrolyte disturbances**	
☐ Any deviation from normal	☐ S. Sodium outside the range of 110 to 160 mmol/L ☐ S. potassium outside the range 2.5 to 5.5mmol/L
☐ **Medical disorders**	
☐ Neurological ☐ Cardiac Diseases ☐ Respiratory ☐ Thromboembolism ☐ Trauma ☐ Poisoning	☐ Any individual organ SOFA score > 2
☐ **Others**	

Past medical history:

☐ Hypertension ☐ Diabetes ☐ Hypothyroid ☐ Asthma

☐ Epilepsy ☐ Anaemia ☐ Tuberculosis

Past surgical History:

Family history:

☐ Hypertension ☐ Diabetes ☐ Anaemia ☐ Tuberculosis

☐ Others _____

Baby's Information at birth

Outcome of birth: Live birth / Stillbirth / Neonatal death **Birth weight:** _____gm

Multiple births: Yes/ No **Sex of baby:** M/F **Resuscitation required:** Yes / No

Weeks of gestation: Preterm (< 37 wks.) / Term (37 to 42 wks.) / Post term (> 42 wks.)

SNCU admission: Yes/No **Vitamin K given:** Yes/ No **Breastfed within 1 hour:** Yes/No

General Examination at Admission

General condition: Conscious / SemiConscious / Unconscious

Height (cm): _____ **Weight (kg):** _____ **BMI:** _____

Heart rate: _____ **Blood pressure:** _____ **SpO2:** _____ **Respiratory rate:** _____

Temperature (F): _____ **JVP:** _____ **Pallor:** Yes / No **Icterus:** Yes / No

Cyanosis: Yes / No **Oedema:** None / Grade 1 / Grade 2 / Grade 3 / Anasarca

Others: _____

Systemic Examination at Admission

Respiratory System: Normal / Abnormal _____

Cardio Vascular System: Normal / Abnormal _____

Central Nervous System: Normal / Abnormal _____

Per Abdomen Examination: Normal / Abnormal _____

Obstetric examination: _____

Per Speculum / VAGINAL Examination: Normal / Abnormal _____

Any others: _____

Orders at Admission

Nutrition
Investigations
Medications
Procedures
Monitoring schedule
Multidisciplinary review
Plan for next 24 hours

Doctor's Name and Signature

Sequential Organ Failure Assessment (SOFA) score calculation sheet

Sr.	Indicator	Value	SOFA Score Distribution Sheet				SOFA Score achieved
			1	2	3	4	
1	**Respiration** PaO2/FiO2 mmHg		<400	<300	<200	<100	
2	**Coagulation** Platelets x 103 mm3		<150	<100	<50	<20	
3	**Liver** Bilirubin mg/dl (umol/l)		1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (>204)	
4	**Cardiovascular** Hypotension		MAP< 70mmhg	Dopamine < 5 or Dobutamine (any dose)	Dopamine > 5 or epinephrine <0.1 or norepinephrine <0.1	Dopamine > 15 or epinephrine >0.1 or norepinephrine >0.1	
5	**CNS** Glasgow Coma Scale		13-14	10-12	6-9	<6	
6	**Renal** Creatinine mg/dl (umol/l) or Urine Output		1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440) or <500 ml/day	> 5.0 (>440) or < 200 ml/day	
Overall Sequential Organ Failure Assessment (SOFA) Score							

Progress Note

Patient's Name:

Reg. No: ***DOA:*** ***Doctor In Charge***

Date & Time	Progress Note	Treatment Order

This sheet has to be filled by Doctor in Charge of patient

(P.TAB.O.)

Laboratory Investigation Sheet

Patient's Name:

Reg. No: ***DOA:*** ***Doctor In Charge***

Investigation	Date	Date	Date
Hb			
Total WBC Count			
Differential WBC Count			
Platelet Count			
Peripheral Smear			
BT/CT/CRT			
PT/APTT/INR			
Blood Group/Rh type			
Sickling test (Hb Electrophoresis if +ve)			
Random Blood Glucose			
Blood Urea Nitrogen			
Serum Creatinine			
Serum Calcium			
Serum Sodium			
Serum Potassium			
Total Protein/Serum Albumin			
Serum Bilirubin: Total/Indirect/Direct			
SGPT/SGPT/LDH			
Serum Fibrinogen			
d-Dimer			
Urine R&M			
Stool for Occult Blood			
Blood Gas: Arterial/ Venous	Time: FiO2: pH: pCO2: pO2: HCO3: Satn:	Time: FiO2: pH: pCO2: pO2: HCO3: Satn:	Time: FiO2: pH: pCO2: pO2: HCO3: Satn:
Urine Culture	Date :		
Blood Culture	Date :		
Cervical/Vaginal Swab/Wound Culture	Date :		
Any Other	Date :		

HIV:	**HBsAg:**	**VDRL:**

Patient Monitoring Sheet

Patient's Name:

Reg. No: ***DOA:*** ***Doctor In Charge***

Date									
Time									
Temperature									
Heart Rate									
Respiratory Rate									
Blood Pressure									
Oxygen Saturation									
Blood Glucose									
Consciousness									
Reflexes									
Intake									
• IV									
• Oral									
Output									
• Urine Output									
• R. TAB. Aspirate									
• Stool									
• Vomits									
Abdominal girth									
IV patency (Y/N)									
Airway patency (Y/N)									
Other									
Signature									

This sheet has to be filled by Doctor in charge of patient

Obstetric Intensive Care Unit

Name of Institute: _____

Discharge Card

Obs ICU Reg. No		
MCTS/RCH portal Reg. No		
AADHAR Number		
Patient Name		**Age** (in completed years):.....
Husband/Father Name		
Complete Address		
Contact Number		
Date of Admission:	...../...../.....	**Time:** .....
Date of Delivery (if Applicable)	...../...../.....	**Time:** .....
Referred from		
Cast: General/ OBC/ SC/ ST	**Religion:**	**BPL Status:** Yes/No

Obstetric Details at Admission

Gravida: _____ **Para:** _____ **Living:** _____ **Abortion:** _____

LMP: _____ **EDD:** _____ **Gestation:**_____ week

Labour: Spontaneous / Induced labour / Prelabour CS

Presentation: Vertex / Breech / Transverse / Other .....

Uterine tenderness: Yes / No **FHR:** Present / Absent, if yes_____/ min

Amniotic fluid: Clear / Blood Stained / Meconium stained

Course of Labour: Uneventful / Prolonged 1st Stage / Prolonged 2nd Stage / Obstructed

Mode of Delivery: SVD / Assisted vaginal delivery / Caesarean / Miscarriage

PPH: Yes / No **P/V foul smelling Discharge:** Yes / No

Indication for Caesarean section: _____

Delivery attended by: Obstetrician / Medical Officer / AYUSH / Staff Nurse / ANM/ Dai / Relative / Other

Antenatal steroids: Yes / No **If Yes:** Beta / Dexamethasone **No of Doses:** _____

Magnesium Sulphate: Yes / No **If yes, dose:** _____ **Time of last dose:** _____

Other drugs: _____

Baby's Information: At birth

Outcome of Delivery: Live Birth / Still Birth

If Live birth, Weight: .....grams

Multiple birth: Y/N

Sex: M/F

Weeks of Gestation: Preterm (< 37 weeks) / Term (37 to 42 weeks) / Post term (> 42 weeks)

Resuscitation Required: Y / N

SNCU Admission Required: Yes/No

If Yes: Tactile stimulation / Oxygen only / Bag and Mask (Duration .....min) / intubation / Chest Compression / Adrenaline

Vitamin K given: Yes / No

Breastfed within one hour: Yes / No

Final Diagnosis:

Treatment given:

Condition on Discharge:

Advise on Discharge:

Follow-up Date:

Signature of Doctor

Informed ASHA / ANM: Yes / No

Obstetric Intensive Care Unit

Name of Institute:

Facility Follow-up Card

Patient's Name:

Reg. No: ***DOA:*** ***Doctor In Charge***

Visit	Vitals	Examination Findings	Advice
Scheduled Date ……/……../201 **Date of Visit** ……/……../201	**T:** **P:** **RR:** **BP:**		Seen by ……

Reporting Formats

Patient care records are essential to maintain records of treatment given to the patients and areas for further improvement. Hence, a system of M & E is proposed for Obstetric ICUs.

Every ICU will keep all clinical records of patients for duration of at least 5 years from the date of discharge. A detailed monitoring format is developed at state level to understand pattern of admission, care and outcome at each ICU. Furthermore, it is standardized to bring uniformity of reporting among all ICU and to understand similarities and differences among all Obstetric ICU.

Standard Monitoring Format consist two forms, Form A and B. Form A contains details of Obs ICU with reference to Human Resource and Equipment. Form B contains brief summary of performance of Obstetric ICU in present month and provides comparison over the months.

All forms of Obstetric ICU need to be submitted on 5th of every month through e-mail to state office. Due care needs to be exercised in filling these forms and ensuring accuracy of data in these forms.

Form – A: Human Resource Details

Nodal Officer: _____

Sr. No	Name of Post	Sanctioned	Recruited	Vacant
1	Anaesthetist			
2	Medical Officer			
3	Staff Nurses			
4	Data Entry Operator			
5	Cleaning staff			
6	Security staff			

SN	Equipment	Number sanctioned	In position			
			Total	New	Old	Functional/ Non-Functional
1	ICU Bed					
2	Maternity cot					
3	Infusion pump					
4	Syringe pump					
5	Foetal Doppler					
6	USG Machine with colour Doppler and Echo facility					
7	CTG machine					
8	MultiparaBed Side Monitors (non-invasive)					
9	Multipara Bedside Monitors (invasive)					
10	Central Monitoring System					
11	Baby resuscitation kit/cart					
12	Crash cart fully loaded with BCLS medications					

13	Defibrillator with TCP and AED (Automated external defibrillator)					
14	Portable X-ray machine-200mA					
15	Central oxygen supply and suction					
16	Wall mount suction & Foot operated suction machine					
17	Transport ventilator to shift the patient to ICU					
18	Non-invasive ventilator					
19	High end ventilator					
20	Movable shadow less spot lights with adjustable arms					
21	Refrigerator					
22	Blood warmers					
23	Intermittent compression device for DVT prophylaxis					
24	Air beds					
25	ABG					
26	Negative Ionizer/air purifier					

Form – B: Monthly Reporting Format

Monthly Reporting Format OBSTETRIC ICU, Name of the centre Place:													
Reporting month: ……., 201													
Month		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Admissions	in patients (a)												
	referred in (b)												
	Total (a+b)												
Causes of Admission	1 APH												
	2 PPH												
	3 Sepsis												
	4 Eclampsia/SPE												
	5 Abortion												
	6 Obstructed Labour												
	7 Ruptured Uterus												
	8 Severe Anaemia												
	9 Cardiac Diseases												
	10 Jaundice												
	11 Others												
Admissions	Shifted to the ward												
	Referred out												
	LAMA												
	Death												
	Re admission												
	Carried over in next month												
Bed Occupancy Rate*													
Average Length of Stay**													

*** Bed Occupancy Rate (for 6 bedded unit)** = (Sum of daily Remaining patients)/ 180

**** Average Length of stay** = (sum of total number of patient days)/ Total patients

Annexure 1: Standardized list of equipment

Sr.	Equipment	Recommended number of units	Tentative cost per unit (Rs)	Units required			Cost of equipment		
				8 bedded HDU	6+2 Hybrid HDU/ ICU	4 bedded ICU	8 bedded HDU	6+2 Hybrid HDU/ ICU	4 bedded ICU
1	ICU Bed	1 per bed	100000	8	8	4	800000	800000	400000
2	Maternity cot	1 per unit	150000	1	1	1	150000	150000	150000
3	Infusion pump	1 per bed	35000	8	8	4	280000	280000	140000
4	Syringe pump	1 per bed	35000	8	8	4	280000	280000	140000
5	Foetal Doppler	1 per 2 beds	4000	4	4	2	16000	16000	8000
6	USG Machine with colour Doppler and Echo facility	1 per HDU or ICU	1,000,000	1	1	1	1000000	1000000	1000000
7	CTG machine	1 per 4 beds	150000	2	2	1	300000	300000	150000
8	Multipara Bedside Monitors (non-invasive)	1 per bed	100000	8	6	0	800000	600000	0
9	Multipara Bedside Monitors (invasive)	1 per bed	200000	0	2	4	0	400000	800000
10	Central Monitoring System	1 per ICU/HDU	100000	1	1	1	100000	100000	100000
11	Baby resuscitation kit/cart	1 per ICU/HDU	5000	1	1	1	5000	5000	5000
12	Crash cart fully loaded with BCLS medications	1 per ICU/HDU	50000	1	1	1	50000	50000	50000

13	Defibrillator with TCP and AED (Automated external defibrillator)	1 per ICU/HDU	200000	1	1	1	200000	200000	200000
14	Portable X-ray machine-200mA	facility should be available							
15	Central oxygen supply and wall mount suction	1 per ICU/HDU							
16	Foot operated suction machine	1 per ICU/HDU	6000	1	1	1	6000	6000	6000
17	Transport ventilator to shift the patient to ICU	1 per ICU/HDU	475000	1	1	1	475000	475000	475000
18	Non-invasive ventilator	1 per HDU	900000	1	1	0	900000	900000	0
19	High end ventilator	1 for 2 beds	1000000	0	1	2	0	1000000	2000000
20	Movable shadow less spot lights with adjustable arms	2 per ICU/HDU	180000	2	2	1	360000	360000	180000
21	Refrigerator	2 per ICU/HDU	20000	2	2	2	40000	40000	40000
22	Blood warmers	2 per ICU/HDU	115000	2	2	2	230000	230000	230000
23	Intermittent compression device for DVT prophylaxis	1 for 8 beds	35000	1	1	1	35000	35000	35000
24	Air beds	2 for 8 beds	3000	2	2	1	6000	6000	3000
25	ABG	1 per ICU	350000	0	1	1	0	350000	350000
26	Negative Ionizer/air purifier	1 per ICU/HDU	15000	1	1	1	15000	15000	15000
Total Cost							**6048000**	**7598000**	**6477000**

Annexure 2: List of Essential Medications

Medicines form very important part of intensive care and hence require timely availability for ensuring quality care. List of major medications and consumables is developed for the reference. Every ICU shall try to ensure availability of these drugs in ICU at all time. However, this list is not the ultimate and any medicine deemed appropriate by HoD Obs-Gyn or Anaesthesia shall be made available at local level. Expenditure for these drugs and consumables can be booked under Janani Shishu Suraksha Karyakram (JSSK).

IV Fluids

- Inj. Ringer Lactate, 500 ml
- Inj. Ringer Lactate, 1000 ml
- Inj. Dextrose Normal Saline, 500 ml
- Inj. Dextrose Normal Saline, 1000 ml
- Inj. Dextrose 25%, 100 ml
- Inj. Normal Saline, 0.9%, 500 ml
- Inj. Normal Saline, 0.9%, 1000 ml
- Inj. Normal Saline, 0.9%, 100 ml
- Inj. Mannitol
- Inj. IsolateM
- Inj. Haemaccel (3.5% colloidal intravenous infusion solution)
- Inj. 6% hydroxyethyl starch 130/0.4 in 0.9% sodium chloride

IV Antibiotics

- Inj. Ceftriaxone, 1 Gm.
- Inj. Metronidazole (100ml)
- Inj. Cefoperazone + Salbectam Sodium, 1.5 Gm
- Inj. Gentamycin (80 mg/2 ml)
- Inj. Amikacin, 500 mg
- Inj. Piperacillin -Tazobactam (2.25, 4.50g)
- Inj. Amoxicillin plus clavulanic acid
- Inj. Levofloxacin (100mg)
- Inj Clindamycin 300 mg / 600 mg

- Inj. Meropenem, 500 mg, 1 Gm
- Inj. Ceftazidime
- Inj. Linezolid
- Inj. Ampicillin
- Inj. Vancomycin

Anti-hypertensive

- Inj. Labetolol 20 mg
- Inj. Nitroglycerine
- Inj. Hydralazine
- Tab. Labetolol (100 mg)
- Tab. Nifedipine (10,20,20 retard mg)
- Cap. Nifedipine (5 mg, 10 mg)
- Tab. Hydralazine (25 mg)
- Tab. Atenolol (50)
- TAB. Losartan (50mg)

PPH Prevention drugs

- Inj. Oxytocin, 5 I.U.
- Inj. Methergin (0.2mg)
- Inj. Carbetocin 100 mcg/ml
- Inj. Dinoprostone
- GelDinoprostone (0.5 mg)
- TAB. Misoprostol, 200 mcg
- Inj. Tranexamicacid (500mg)
- Inj. Hemocoagulase
- Hemocoagulase Solution
- Feracrylumhemostatic Solution
- Gelatinhemostatic sponge surgical foam

Crash cart- emergency Drugs

- Inj. Atropine
- Inj. Glycopyrrolate
- Inj. Adrenaline
- Inj. Mephentermine
- Inj. Dexamethasone
- Inj. Hydrocortisone
- Inj. Dopamine
- Inj. Nitro glycerine
- Inj. Lidocaine hydrochloride 2%
- Inj. Aminophylline
- Inj. Sodabicarb
- Inj. Calcium Gluconate
- Inj. Pheniramine maleate
- Inj. Furosemide
- Inj. Deriphylline
- Inj. Botropase
- Inj. Diazepam
- Inj. Midazolam
- Inj. Phenytocin
- Inj. Levetiracetam
- Inj. Diltiazem
- Inj. Dopamine
- Inj. Dobutamine
- Inj. Noradrenaline
- Inj. Amiodarone
- Inj. Magnesium sulphate

- Tab. Sorbitrate
- NTG Patch
- Spirit
- Xylocaine jelly
- Micro pore, 3 Cm, 5 Cm
- Povidone iodine solution, 5 %
- Savlon Solution (Cetrimide 3.0% w/v Chlorhexidine Gluconate 0.3% w/v)

Other Drug categories

- Analgesics
- Anaesthesia drugs
- Muscle Relaxants
- Antacids and Antiemetic
- Anticoagulants
- Steroids

*** Any other medicine found necessary and prescribed by HoD Obs-Gyn or Anaesthesia shall be made available apart from the above mentioned list**

Annexure 3: Specifications of mannequins

Child Birth Simulator along with attachment for cervicalDilatation (closed OS, 4cm, 6cm, 8cm, fully dilated cervix)

Version no. :		1.0
Date:		7/4/2014
Done by : (name/institution)		HCT/ NHSRC
		Name and Coding
GMDN name		Simulators and associated devices
GMDN code		CT2372
GMDN definition		Lower female torso with anatomical features of pregnancy capable of demonstrating child birth
		General
1.	Use	
1.1	Clinical Purpose	To demonstrate and practice neonatal resuscitation
1.2	Used by Clinical Department/ Ward	Skill Labs
		Technical
2.	Technical characteristics	
2.1	Technical characteristics (specific to this type of device)	1. The material of mannequin should be of polyvinyl or silicone rubber, free from any hazardous material. 2. The texture of the mannequin should be close to the feel of the baby/adult skin. 3. The Internal parts of the mannequin must be realistically sculpted, anatomically accurate and feel must be smooth/resilient/bony as relevant and suitable for simulation. 4. Should have pelvis structure of adult female with anatomical landmarks like pelvic cavity, spine etc. Should have manual birthing system to enable the user to control the rotation and speed of fetus delivery etc. 5. Should have foetal baby with movable joints. 6. Should be versatile to change the position of the fetus during the process of birth including descent, flexion, extension, internal and external rotation, restitution.

		7. Should have features for training normal and breech deliveries. 8. Should have features to demonstrate cord prolapse. 9. Shall allow demonstration and practice of placenta Previa. 10. Should have cervical dilatation attachment for closed os, 4cm, 6cm, 8cm and fully dilated cervix.
2.2	Settings	NA
2.3	User's interface	NA
2.4	Software and/or standard of communication (where ever required)	NA
3.	Physical Characteristics	
3.1	Dimensions (metric)	Standard female pelvic structure
3.2	Weight (lbs, kg)	NA
3.3	Configuration	NA
3.4	Noise (in dBA)	NA
3.5	Heat dissipation	NA
3.6	Mobility, portability	Yes, Portable
4.	Energy source (electricity, UPS, solar, gas, water, CO 2 ....)	
4.1	Power Requirements	NA
4.2	Battery operated	NA
4.3	Tolerance (to variations, shutdowns)	NA
4.4	Protection	NA
4.5	Power consumption	NA
4.6	Other energy supplies	NA
5.	Accessories, spare parts, consumables	
5.1	Accessories & spare parts	1. Fatal baby with moving joints. 2. 2 detachable abdominal pads.

		3. 2 nos placentas. 4. 6 nos umbilical cords. 5. 2 sets cervical dilatation attachment for closed Os, 4cm, 6cm, 8cm andfully dilated cervix.
5.2	Consumables/reagents (open, closed system)	NA
6.	Environmental and Departmental Considerations	
6.1	Atmosphere/Ambiance (air conditioning, humidity, dust ...)	Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%. Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to 90%.
6.2	User's care, Cleaning, Disinfection & Sterility issues	Complete unit to be easily washable with mild soap and water
7.	Standards and safety	
7.1	Certifications	BS EN ISO/IEC 17050-1:2010 Conformity assessment. Supplier's declarationof conformity. EMC Directive:2004/108/EC.
8.	Training and Installation	
8.1	Pre-installation requirements: nature, values, quality, tolerance	NA
8.2	Requirements for sign-off	Demonstration to the user while delivering the product
8.3	Training of staff (medical, paramedical, technicians) OPTIONAL (Depending upon scope of work order)	Training of users in handling and basic maintenance shall be provided.
9.	Warranty and Maintenance	
9.1	Warranty	3 years against functionality excluding aesthetics.
9.2	Maintenance tasks	Maintenance manual detailing complete maintaining schedule.
9.3	Service contract clauses, including prices	Local clinical staff/authorized officer on behalf of purchaser to affirm completion of installation.

10.	Documentation	
10.1	Operating manuals, service manuals, other manuals	Advanced maintenance tasks required shall be documented User, technical and maintenance manuals to be supplied in English/Hindi language along with visit log sheet.
		List to be provided of equipment and procedures required for local calibration and routine maintenance Once a year visit to site within warranty period including training of users on maintenance.
10.2	Other accompanying	List to be provided of important spares and accessories, with their part numbers and cost. Certificate of calibration and inspection to be provided.
11.	Notes	
11.1	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	NA
11.2	Recommendations or warnings	Any recommendations for best use and supplementary warning for safety should be declared

Adult CPR Mannequin

Version no. :		1.0
Date: 5/8/2013		
Done by : (name/institution)		HCT/ NHSRC
		Name and Coding
GMDN name		Simulators (Resuscitation training model)
GMDN code		CT1817, CT254
GMDN definition		A specially-constructed doll with simulated respiratory and cardiovascular functions designed to demonstrate and teach resuscitation techniques that include chest compressions [cardiopulmonary resuscitation (CPR)].
		General
1.	Use	
1.1	Clinical Purpose	It is used to demonstrate nose pinch required for ventilation techniques. Head tilt/chin lift and jaw thrust allowing students to currently practice all manoeuvers necessary when resuscitating a real victim.
1.2	Used by Clinical Department/ Ward	Skill Labs
		Technical
2.	Technical characteristics	
2.1	Technical characteristics (specific to this type of device)	1. The material of mannequin should be of polyvinyl or silicone rubber, free from any hazardous materials. 2. The texture of the mannequin should be as close to the feel of the baby/adult skin as relevant. 3. The Internal parts of the mannequin must be realistically sculpted, anatomically accurate and feel must be smooth/resilient/bony as relevant and suitable for simulation. 4. It should have features to demonstrate opening of airway, head tilt/chin tilt and jaw thrust techniques. 5. Adult CPR Mannequin should have disposable airways.

		6. Adult CPR Mannequins should have removable, reusable faces. 7. Adult CPR mannequin should have an indicator which confirms correct chest compression technique. 8. It should have compression spring for consistent resistance.
2.2	Settings	NA
2.3	User's interface	NA
2.4	Software and/or standard of communication (where ever required)	NA
3.	Physical Characteristics	
3.1	Dimensions (metric)	Adult torso
3.2	Weight (lbs, kg)	NA
3.3	Configuration	NA
3.4	Noise (in dB)	NA
3.5	Heat dissipation	NA
3.6	Mobility, portability	Yes, Portable
4.	Energy source (electricity, UPS, solar, gas, water, CO 2 ....)	
4.1	Power Requirements	NA
4.2	Battery operated	NA
4.3	Tolerance (to variations, shutdowns)	NA
4.4	Protection	NA
4.5	Power consumption	NA
4.6	Other energy supplies	NA
5.	Accessories, spare parts, consumables	
5.1	Accessories & spare parts	10 nos.reusable mannequin faces. 10 nos. reusable airways. 50 nos. mannequin wipes.

5.2	Consumables/reagents (open, closed system)	NA
6.	Environmental and Departmental Considerations	
6.1	Atmosphere/Ambiance (air conditioning, humidity, dust ...)	Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%. Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to 90%.
6.2	User's care, Cleaning, Disinfection & Sterility issues	Complete unit to be easily washable with mild soap and water without bringing deterioration in the mannequin.
7.	Standards and safety	
7.1	Certifications	BS EN ISO/IEC 17050-1:2010 Conformity assessment. Supplier's declarationof conformity. EMC Directive:2004/108/EC.
8.	Training and Installation	
8.1	Pre-installation requirements: nature, values, quality, tolerance	NA
8.2	Requirements for sign-off	Demonstration to the user while delivering the product
8.3	Training of staff (medical, paramedical, technicians) OPTIONAL (Depending upon scope of work order)	Training of users in handling and basic maintenance shall be provided.
9.	Warranty and Maintenance	
9.1	Warranty	3 years against functionality excluding aesthetics.
9.2	Maintenance tasks	Maintenance manual detailing complete maintaining schedule.
9.3	Service contract clauses, including prices	Local clinical staff/authorized officer on behalf of purchaser to affirm completion of installation.
10.	Documentation	
10.1	Operating manuals, service manuals, other manuals	Advanced maintenance tasks required shall be documented User, technical and maintenance manuals to be supplied in English/Hindi language along with visit log sheet.

		List to be provided of equipment and procedures required for local calibration and routine maintenance Once a year visit to site within warranty period including training of users on maintenance.
10.2	Other accompanying documents	List to be provided of important spares and accessories, with their part numbers and cost. Certificate of calibration and inspection to be provided.
11.	Notes	
11.1	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	NA
11.2	Recommendations or warnings	Any recommendations for best use and supplementary warning for safety should be declared

Essential New Born Care and Resuscitation Mannequin

Version no. :		1.0
Date: 7/4/2014		
Done by : (name/institution)		HCT/ NHSRC
		Name and Coding
GMDN name		Simulators and associated devices
GMDN code		CT2372
GMDN definition		Human neonate model for the demonstration of ENBC and practice of cleaning of airway and ventilation as part of neonatal resuscitation
		General
1.	Use	
1.1	Clinical Purpose	To demonstrate and practice neonatal resuscitation
		Technical
2.	Technical characteristics	
2.1	Technical characteristics (specific to this type of device)	1. The material of mannequin should be of polyvinyl and silicone rubber, free from any hazardous material. 2. The texture of the mannequin should be close to the feel of the baby/adult skin as relevant. 3. The Internal parts of the mannequin must be realistically sculpted, anatomically accurate and feel must be smooth/resilient/bony as relevant and suitable for simulation. 4. Newborn mannequin should have features for training essential Newborn care (ENBC) and Newbornresuscitation. 5. Newborn Mannequin should facilitate effective bag and mask ventilation; chest must rise only with correct technique. 6. The Newborn mannequin should include the following: Squeeze bulbs for simulation of cord pulsation, spontaneous breathing, auscultation of heart sound and cry.

		7. The new born mannequin should demonstrate clearing of airways,
2.2	Settings	NA
2.3	User's interface	NA
2.4	Software and/or standard of communication (where ever required)	NA
3.	Physical Characteristics	
3.1	Dimensions (metric)	NA
3.2	Weight (lbs, kg)	NA
3.3	Configuration	NA
3.4	Noise (in dBA)	NA
3.5	Heat dissipation	NA
3.6	Mobility, portability	Yes, Portable
4.	Energy source (electricity, UPS, solar, gas, water, CO 2 ....)	
4.1	Power Requirements	NA
4.2	Battery operated	NA
4.3	Tolerance (to variations, shutdowns)	NA
4.4	Protection	NA
4.5	Power consumption	NA
4.6	Other energy supplies	NA
5.	Accessories, spare parts, consumables	
5.1	Accessories & spare parts	1. 10 units-device for suction of nose and mouth. 2. 4 external umbilical cords and 6 umbilical ties. 3. 2 neonatal mucus sucker (easy to open, clean, autoclave and reusable). 4. 2 training stethoscopes.
5.2	Consumables/reagents (open, closed system)	NA

6.	Environmental and Departmental Considerations	
6.1	Atmosphere/Ambiance (air conditioning, humidity, dust ...)	Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%. Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to 90%.
6.2	User's care, Cleaning, Disinfection & Sterility issues	Complete unit to be easily washable with mild soap and water without bringing deterioration in the mannequin.
7.	Standards and safety	
7.1	Certifications	BS EN ISO/IEC 17050-1:2010 Conformity assessment. Supplier's declarationof conformity. EMC Directive:2004/108/EC.
8.	Training and Installation	
8.1	Pre-installation requirements: nature, values, quality, tolerance	NA
8.2	Requirements for sign-off	Demonstration to the user while delivering the product
8.3	Training of staff (medical, paramedical, technicians) OPTIONAL (Depending upon scope of work order)	Training of users in handling and basic maintenance shall be provided.
9.	Warranty and Maintenance	
9.1	Warranty	3 years against functionality excluding aesthetics.
9.2	Maintenance tasks	Maintenance manual detailing complete maintaining schedule.
9.3	Service contract clauses, including prices	Local clinical staff/authorized officer on behalf of purchaser to affirm completion of installation.
10.	Documentation	
10.1	Operating manuals, service manuals, other manuals	Advanced maintenance tasks required shall be documented User, technical and maintenance manuals to be supplied in English/Hindi language along with visit log sheet.
		List to be provided of equipment and procedures required for local calibration and routine maintenance Once a year visit to site within warranty period including training of users on maintenance.

10.2	Other accompanying documents	List to be provided of important spares and accessories, with their part numbers and cost. Certificate of calibration and inspection to be provided.
11.	Notes	
11.1	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	NA
11.2	Recommendations or warnings	Any recommendations for best use and supplementary warning for safety should be declared