

Version 1



Department of Health & Family Welfare
Government of West Bengal



Critical Care Unit Operational Guide

July
2013



Table of Content

Foreword	5
Introduction	7
Purpose	7
Structure of the operational guide	7
Overview	7
Background	7
Goal	8
Objectives	8
Strategies	8
Service package standards for CCU	8
Operational steps for planning & rolling out CCUs	8
Elements of Critical Pathways- activities	8
Design Team	9
Location	9
Human Resource Standards	9
Training of Staff for CCU	11
Standard Operating Procedures	11
Supervision & Monitoring	11
Financing & Accounting	12
Layout & Design	12
Procurement, Supply & Maintenance of Equipment	15
Annexure	19
Training plan of MO on CCU	19
Training plan of Nursing Staff on CCU	20
Acknowledgement	22



Government of West Bengal
Department of Health and Family Welfare
PHP Branch
Swasthya Bhawan, GN-29, Sector V,
Salt Lake City, Kolkata-700091

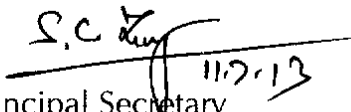
No. HF/SPSRC/50/2012/147

Dated.11th July, 2013

Memorandum

In consonance with recommendation of Multi-Disciplinary Expert Group, it has been decided that Critical Care Unit (CCU) would be established in all Government Hospital of the state in phased manner. In this regard a State level Advisory Committee (SLAC-CCU) comprising of internal and external experts in the relevant areas has been constituted under chairmanship of Dr Subrata Maitra, Chairman MDEG to advise the department on the prioritization of establishment of CCUs in different government hospitals and management of critical care services in the CCUs so set up. A Technical Assistance and Support Team (TAST-CCU) has also been constituted comprising of internal and external experts to render technical support to the SLAC-CCU.

These committees have formulated Critical Care Unit Operational Guide with encouragement from the Director of Medical Education and Director of Health Services, which is enclosed herewith for taking necessary action.


Principal Secretary
Government of West Bengal

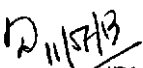
No. HF/SPSRC/50/2012/147/1(85)

Dated.11th July, 2013

Copy forwarded for information and necessary action please to :-

1. Dr Subrata Maitra, Chairperson, SLAC-CCU,
2. The State Mission Director, NRHM,
3. The DME & E.O. Secretary,
4. The DHS & E.O. Secretary,
5. The Special Secretary, MERT Branch,

- 6-7. The Joint Secretary, MS/ MA Branch,
8. The Joint Director, SPSRC,
9-10. The Joint DHS, P&D/ PH&CD & State Nodal Officer,
11-12. The Dy DHS, Malaria/ Hospital Administration,
13. The ADHS, NCD,
14. Prof. Ashotosh Ghosh, IPGMER,
15. Prof. Rajendranath Pandey, IPGMER,
16. Dr P Malhotra, SPO, NPCDCS,
1-15) The Principal/ Director of IPGMER/ Kolkata MCH/ NRS MCH/ RG Kar MCH/ CNMCH/ Sagar Dutta MCH/ JNM MCH/ Burdwan MCH/ Bankura SMCH/ Medenipur MCH/ Murshidabad MCH/ Malda MCH/ NBMCH/ IDBG Hospital/ STM
16-30) The MSVP of IPGMER/ Kolkata MCH/ NRS MCH/ RG Kar MCH/ CNMCH/ Sagar Dutta MCH/ JNM MCH/ Burdwan MCH/ Bankura SMCH/ Medenipur MCH/ Murshidabad MCH/ Malda MCH/ NBMCH/ IDBG Hospital/ STM
31-55) The CMOH of Howrah/ Hooghly/ North 24 Pgs/ South 24 Pgs/ Nadia/ Murshidabad/ Malda/ U Dinajpur/ D Dinajpur/ Darjeeling/ Jalpaiguri/ Coochbehar/ Birbhum/ Burdwan/ Bankura/ Paschim Medenipur/ Purba Medenipur/ Purulia/ Nandigram/ Jhargram/ Assansole/ Bishnupur/ Rampurhat/ Diamond Harbour/ Basirhat Health Districts
56. Dr. Samir Sarkar, DADHS & Liaison Officer
57-81. The Dy CMOH-II and District Nodal officer, CCU of Howrah/ Hooghly/ North 24 Pgs/ South 24 Pgs/ Nadia/ Murshidabad/ Malda/ U Dinajpur/ D Dinajpur/ Darjeeling/ Jalpaiguri/ Coochbehar/ Birbhum/ Burdwan/ Bankura/ Paschim Medenipur/ Purba Medenipur/ Purulia/ Nandigram/ Jhargram/ Assansole/ Bishnupur/ Rampurhat/ Diamond Harbour/ Basirhat Health Districts
82. PS to MIC,
83. PS to MOS,
84. Sr. PA to the Principal Secretary,
85. In-Charge of IT cell with a request to post a copy of this letter in the departmental website


Joint Secretary (PHP)
Government of West Bengal

Introduction

Purpose

This operational guide has been developed to facilitate planning, establishment, operationalisation and monitoring of critical care units at various levels of Public Health facilities. The guide given here will assist program managers and service providers at state and district level in planning and delivering critical care. The guide have been put together based on recommendations of a State Level Advisory Committee and a Technical Asst. Support Team set up by the GoWB and included experts from public and private sectors.

Structure of the operational guide

The operational guide includes information on various aspects that need to be addressed for ensuring quality critical care services and is organised into different sections.

Overview

Background

1. Reduction of the mortality of the wage-earner of the family is very important. In some cases such patients died due to lack of Critical care support. In our state there are very few Critical care unit (CCU) in govt. health system as well as private health care system. Over and above, the cost of such service at private health system is not affordable for ordinary citizen. So there is an urgent need to increase the availability and accessibility of the patient related to CCU service.
2. On the other hand as per the norms of Medical Council of India, each Medical college Hospital should have 1 CCU.
3. Reduction of the maternal mortality is also a priority issue of the National as well as state programme. Some maternal deaths can be avoided with the CCU service.
4. Reduction of the mortality related to vector borne diseases particularly Malaria and Japanese encephalitis is also a priority issue of the National as well as state programme. Some deaths due to Malaria and Japanese encephalitis can be avoided with the CCU service.
5. In view of above, the state health system should have minimum CCU service across the state. In order to do so, proper planning will be done so that there is 1 Critical care unit (CCU) within 50 km of the residence of any patient. For this location identification will be done by using GIS mapping.
6. Ordinarily the CCU will be located at Each Medical college Hospital and District hospital but in exceptional cases like JANGALMAHAL and Hilly areas, it can be located at Sub-divisional/State general Hospital also. The Dialysis unit will preferably located at the same building.
7. Each CCU should have 1 four bedded ITU and 1 eight bedded HDU to begin with. Provision for future expansion should be planned accordingly. All running ITU across the state should have 1 HDU on a priority basis which will increase the bed-turn-over of the ITU.

Goal

Set up Critical Care Units for treatment of critically ill adult / pediatric patients in government sector by 2015-16

Objectives

1. Districts have own capacity to handle critically ill patient in identified secondary hospital
2. Medical college have the capacity to handle own critically ill patient without referring them to private sector
3. Reduce or zero out of the pocket expenditure for treatment of critically ill patient

Strategies

1. Teaching hospitals:

1.1. One CCU (Older term ITU) is multispecialty unit caring all critically ill adult patients. In Teaching Hospitals, it will serve in addition to Specialty Intensive Care Units (ICUs) e.g. Cardiac ICU, Respiratory ICU, Neuro ICU etc. In teaching hospitals pediatric patients are to be cared in PICU under Dept. of Pediatric

1.2. Augmentation of existing unit (Mostly in Medical Colleges)

2. Non-teaching hospitals:

2.1. In all District Hospitals and others, it will serve as sole unit for critical care. The PICU and SNCU are separate units meant for pediatric patients and neonates respectively. In nonteaching hospitals, once CCU is fully developed and adequate trained manpower is available, these units may be extended to care pediatric patients also.

2.2. Set up of new units (mostly in district hospitals)

Service package standards for CCU

1. Each CCU should have a minimum of 12 beds comprising of one ICU having 4 beds and one High Dependency Unit (HDU) having 8 beds which includes recovery beds. HDU is less resource consuming and serves relatively less sick patients stepping down from ICU or admitted straight from outside CCU. One HDU bed is to be constructed as Isolation bed which has a flexibility to be used for full support as in ICU. All currently existing ITUs or CCUs should have one HDU on priority basis.

2. In HDU the care level is intermediate between ICU and wards, usually located near / within the ICU complex. The staff is similar to ICU culture, number is less. Following type patients may be kept here (a) Cases recovered from Critical Sickness; (b) cases who are less sick, single organ failure not requiring monitoring or invasive MV; (c) Cases requiring close observation who may worsen. Size should be at least 50 % of the main ICU. 1/3 of these Beds may be used as palliative unit

Operational steps for planning & rolling out CCUs

Elements of Critical Pathways- activities

1. Identification of location, no of units and category of development (new/augmentation)

2. Policy decision and issue of GO
3. Timeline
4. Funding: (a) Non-recurrent; & (b) Recurrent
5. Unit Structure
6. Human Resources
7. Equipments and drugs
8. Operation and maintenance
9. HMIS including networking

Design Team

1. At State Level – State Level Advisory Committee (SLAC-CCU) and Technical Assistance and Support Team (TAST-CCU),
2. At Facility Level – a. Medical Superintendent, b. Physician, c. Anesthetist, d. Engineers (Civil & Electrical) e. Architect, 6. Nursing Superintendent,

Location

1. It has been decided that Critical care Units will be established at tertiary and secondary care hospitals of the state in a phased manner tentatively as per table given below so that there will be a CCU within 50 Km from the residence of any patient.

Commencing in			
2012-13 (6)	2013-14(13)	2014-15(12)	2015-16(5)
NBMCH	Rajganj DH	Rampurhat DH	Kolkata MCH
Burdwan MCH	Kochbehar DH	Assansol DH	NRS MCH
Malda MCH	Bishnupur DH	Tamluk DH	CNMC
Darjeeling DH	Jhargram DH	Krishnanagar DH	RGKMCH
Balurghat DH	Suri DH	Basirhat DH	SSKM
Jalpaiguri DH	Howrah DH	Diamond Harbour DH	
	Chinsura DH	Siliguri DH	
	Barasat DH	Bankura MCH	
	M R Bangur DH	Midnapur MCH	
	Baharempore MCH	Sagar Dutta MCH	
	ID&BG Hospital	Kalyani MCH	
	Deben Mahato DH	Nandigram DH	
	Srirampore SDH		

Human Resource Standards

1. Patient admitted in Critical care unit (CCU) will be treated following a multi-disciplinary approach but a particular patient will be admitted under a particular Specialist Doctor/Faculty (Consultant) of concerned discipline who will be the bed in-charge (BIC).
2. Each ITU will be manned by a dedicated earmarked core team of personnel consisting of; (i) trained Medical officer (CCU); (ii) trained nursing staff (CCU); (iii) Medical Technologist (MT-CCU); and (iv) GDA / sweeper. The core team will be supported by the Anaesthetists.

3. One of the Medical Officers (CCU) will be ITU in-charge and will assist the Medical Supdt-cum-vice-principal (MSVP)/Supdt in administrative matters.

Table 1: Checklist for Manpower standards for 12 bedded CCU

Serial No.	Category	Qualification	Required Number
1.	Medical Officer	MBBS.	08
2.	Nursing In Charge	Diploma / BSc. – Nursing.	01
3.	Nurse	Diploma in Nursing	15
4.	MT (Critical Care)	Diploma in Critical Care Technology	05
5.	General Duty Attendant		6 (M = 3, F = 3)
6.	Sweeper		8 (M = 4, F = 4)

4. Points to be noted:

- 4.1. This norm is applicable for secondary care hospitals.
- 4.2. In case of selection, any candidate with any kind of training/experience in CCU will be given preference.
- 4.3. In case of selection, any candidate with age upto 40 yrs will be given preference.
- 4.4. Provision of male nurse also is recommended.

Table 2: Checklist for Job responsibilities of manpower

Serial No.	Category	Brief Job description
1.	Medical Officer	Supportive care and baseline management on 8hr shifting duty. One of the 8 MOs will act as In Charge and will discharge additional administrative duties
2.	Nursing In Charge	Supervisory
3.	Nurse	Patient care on 8 hr shifting duty
4.	MT (Critical Care)	Assisting patient care on 8 hr shifting duty
5.	General Duty Attendant	General duty, loading/unload, stretcher bearer, messenger
6.	Sweeper	Cleaning & sweeping

5. Points to be noted:

- 5.1. In future recognized critical care specialist will take over charges of individual units.
- 5.2. One specialist each from the Dept. of Medicine and Anesthesiology will overall supervise implementation of patient care & administrative issues.
- 5.3. Medical Superintendent will allot the duty of the specialists and keep liaison with the entire unit.
- 5.4. Specialists of different disciplines will take care of patients admitted in CCU under them as Visiting and on referral during day –on-call, as they do usually in other wards.

5.5. In case of Tertiary care hospitals Staff pattern is same except specialists will be replaced by faculty and Gradually MOs will be replaced by Postgraduates of Medicine / Chest / Anesthesiology / Surgery to serve the duty of residents on rotation.

6. Govt. Posts for (i) Medical officer (CCU); (ii) Nursing staff (CCU); (iii) Medical Technologist (MT-CCU); and (iv) GDA / sweeper will be created. Contractual posts for (i) Medical officer (CCU); (ii) Nursing staff (CCU); (iii) Medical Technologist (MT-CCU); and (iv) GDA / sweeper will be created/recruited under the NPCDCS/NVBDCP as per programme norm.

7. In case of selection for recruitment/Training of Medical Officer (CCU), MBBS having experience / training in ITU / Critical care will be given preference which will decrease the training load. Govt. posts of MO(CCU) can be manned by GDMO of WBHS having experience / training in ITU / Critical care. For this purpose a database will be created by inviting biodata from the CMOH/MSVP. A notice of such will be published in the departmental website.

Training of Staff for CCU

1. Medical Officer will be imparted a short training of 8 weeks, covering major fundamentals [Plan with curriculum in Annexure - I]. The deptt may start a Postgraduate certification course of 1year under process in WBUHS.

2. Nursing Staff will be imparted a Short training of 6 weeks: 3wks. at Training centre + 3Wks. on site. [Curriculum in Annexure-II]

3. Paramedic: Diploma in Critical Care Technology: 2 Years – going on since 2004, governed by State Medical Faculty, Govt. of W. Bengal.

Standard Operating Procedures

1. Clinical Protocols on i) Admission/ Discharge/ Shifting of patient, ii) Management of patient & iii) Infection Control will be formulated and circulated shortly.

2. Disaster preparedness related to (a) Emergency Exit(s) (b) Fire safety measures like Extinguishers, mock exercise will be arranged

Supervision & Monitoring

1. It has also been decided that the Joint. DHS (PH&CD) will act as State Nodal Officer and Dy-CMOH-II will act as District Nodal Officer of planning & implementation of Critical care Units at state and district level respectively. The Joint. DHS (PH&CD) will act as the Joint-convenor of State Level Advisory Committee.

2. The State and District Nodal Officers will work in close liaison with the members of State level Advisory Committee of CCU, Technical Committee of CCU, Principals/MSVPs/Dy Supdtt of the different Medical College Hospitals and Supdtt of District/ Sub-divisional Hospitals. Dr. Samir Sarkar, DADHS (P&I) will act as State liaison officer for this programme and will render technical assistance to the State & District Nodal officers.

3. Monitoring quality of care like i) Errors, ii) Adverse drug reaction, iii) performance of individual staff etc. will be formulated and circulated shortly.

Financing & Accounting

1. There is a budget provision under National Programme for Control of Diabetes, Cardio-vascular Diseases & Stroke (NPCDCS) to establish CCU in the form of Cardiac Care Unit'. For the year 2012-2013, three such units at Dakshin Dinajpur DH (Balurghat), Jalpaiguri DH and Darjeeling DH have been selected.
2. There is a budget provision under National Vector borne Disease Control Programme (NVBDCP) to establish 'paediatric ITU' for Japanese Encephalitis. For the year 2012-2013, Burdwan MCH, Malda MCH and North Bengal MCH have been selected.
3. For development, operation & Maintenance of critical care units, particularly to meet-up the recurrent expenditure (i) to meet the budget gap of NPCDCS and NVBDCP and (ii) to set –up new CCU, proposal shall be incorporated in the State NRHM PIP for 2014-15 under NRHM additiantlites.
4. Other sources of fund like BRGF, 13th Finance commission Grant, MP LAD/MLA LAD will also be explored to meet the non-recurrent expenditure like construction, purchase of equipment etc.
5. Rate of user charges for CCU related services will be determined later.

Layout & Design

Every teaching and non teaching hospital should use the checklists given below.

Table 3: Checklist for Civil works standards

Serial No.	Criteria	Item Description	Status
1.	Position & access	More centrally located and close to OT, Emergency and Radiology	
2.	Front Gate	Single entry/exit, 2 barriers before patient care area. One emergency exit – separate as appropriate, No thoroughfare	
3.	Space	(a) Floor space per Patient: 100 – 125 Sq. Ft. / Bed. 20% extra space for cubicle type (b) Additional Space : 100 – 150% of Pt. care area	
4.	Additional Rooms	Rooms/space to accommodate following: (a) Residents Room (b) Nurses Room (c) Room for Nurse In-charge (d) Room for Doctor In Charge / Director (e) Storage (f) Laboratory (g) Reception (h) Waiting Lounge (i) Wash areas – Linen/ Equipment, (j) Pantry (k) Shoe racks (l) Office/Library/Conference room	
5.	Wall	(a) Coving at the junction of wall with floor for better cleaning (b) Wall should be tiles fitting up to the height of 6ft (c) Hole in the walls for cleaning purpose is essential	

		with proper drainage system	
6.	Flooring & ceiling	(a) Flooring with large marble plates (No visible junction in between) (b) False ceiling to conceal central A/C ducts and certain other cables (False ceiling may be avoided only in case where Centralized A/C is not installed).	
7.	Head end	2 Ft. away from the wall	
8.	Fixtures & fittings	(a) Wall mounted Rack @ height of 5 ft from floor for keeping Multichannel Monitors size 1½ft X 1ft (b) Wall fixed rack in lab room 'L' shaped to keep machines (c) Wall fixed rack in Store (d) Rack beside Nursing Station for emergency medicine cum equipment store (e) All the doors should have self closing property (f) Windows 2 piece Sliding with dark colour glasses to avoid entry of sun ray	

Table 4: Checklist for Electrical works standards

Serial No.	Criteria	Item Description	Status
1.	Lighting	(a) Overhead lighting at least 20 ft. Candle (b) Overhead lighting by one twin tube set, box covered with transparent glass (c) In conference room lighting should be concealed type (d) Spot light for procedures	
2.	Electric outlets & wiring	(a) Electric outlets 12 of which 4 may be near the floor, 2 on each side of the patient. (b) Electric outlets/Inlets should be common 5/15 amp pins. Should have pins to accommodate all standard electric pins/sockets. (c) Adapters should be discouraged (d) Laboratory room requires 4 electrical boards in equidistance with 3 plug points in each of whom 1 must be of 15 amps. (e) Wiring should be of concealed type with fire retardant wires	
3.	Power backup	(a) Power backup is must for at least 50% of points (b) UPS Power back-up is essential for the whole system (c) Voltage stabiliser for the entire unit. (d) Total load per bed is 3 k. v.	
4.	Fixtures & fittings	(a) At least one electrical extension board with earthing should be supplied to each room (b) Additional electric board to be established on the wall at the back of nursing station for charging equipment. That board will be of same specification as earlier, number of board is 2 (c) At least one computer board is must in conference room with provision for teleconferencing	

		<p>(d) Computer electric board is necessary at nursing station for central monitors depending upon the number of beds (1 central monitor for each 4 beds).</p> <p>(e) Wall Hanging fan is essential on the head end of the patient on the wall at 8 ft height from floor</p> <p>(f) One calling bell in each room with switch outside the complex (outside Buffer zone) should be there</p>	
--	--	---	--

Table 5: Checklist for Heating, Ventilation and Air-conditioning system standard

Serial No.	Criteria	Item Description	Status
1.	Air Conditioning	Fully- Controlling Temperature /Airflow / Humidity A/C should be split type	
2.	air Changes	Minimum of Six(6) total air Changes/room/hr , with Two(2) Changes/ hr. by outside air	
3.	Air circulation	Re-circulated air must pass through appropriate filter : HEPA FILTER	
4.	Temperature	Temperature to be maintained at 16 – 25° Celsius	
	Air pressure	<p>(a) Negative Pressure Isolation room should have Pr. Difference of 2.5 Pa</p> <p>(b) Positive Pressure Isolation room(Optional)</p>	
5.	Outlet (centralized laminar flow available)	<p>(a) Oxygen outlet = 1</p> <p>(b) Vacuum outlet = 1</p> <p>(c) Compressed air outlet = 1</p> <p>(d) With alarm system</p>	
6.	Outlet (centralized laminar flow not available)	<p>(a) Oxygen Preferably through pipeline with manifold room at the same floor</p> <p>(b) One Oxygen point at head end of each bed</p> <p>(c) Oxygen supply key is to be established on the pipeline at least two in number, one just outside CCU and other at manifold room.</p> <p>(d) Additional 2 Jumbo Cylinders with MOX Adapter are to be supplied to each room as back-up for ventilators. Additional medium/ small size cylinders are to be supplied as back up for non ventilated patients.</p> <p>(e) Flow meter with Humidifier is essential for each port</p> <p>(f) Suction Preferably through central suction system & vacuum port</p> <p>(g) Suction can be performed by suction machine in CMS Category too. (½ 4 H.P.)</p> <p>(h) In case of suction machine ration should be 1/bed</p> <p>(i) Lacking compressed air supply – Ventilators to run by inbuilt compressor or turbine,</p>	

Table 6: Checklist for Noise & Sanitation standard

Serial No.	Criteria	Item Description	Status
1.	Noise level	to be under 45 dBA - daytime, 40 dBA - evening and	

		20 dBA - nights	
2.	Wash basin	(a) one each for cubicle, 1 or 2 per hall In Ward type (b) Wash basins at least one in each room (c) Wash basin (1) is required in Lab room	
3.	Wash area	In an area of 5ft X 3 ft should be guarded with ½ft high cement wall with proper drainage system for linen cleaning purpose	
4.	Drinking water supply	through water purifiers	
5.	Toilets	Adequate	
6.	Irradiation	(a) Ultraviolet Germicidal Irradiation (UVGI) (Optional) (b) Low pressure mercury vapor lamp : 253.7, 229 & 230nm (Optional)	
7.	Waste disposal	Four covered pans – colour coded –(Yellow, blue, Red, Black)	

Procurement, Supply & Maintenance of Equipment

1. Items should be procured as per the standard norms given below. All items should have comprehensive annual maintenance contract as per the existing financial guideline of the department.

2. In case of procurement of non-CMS items, assistance will be rendered from the West Bengal Medical Service Corporation Ltd.

Table 7: List of Major Equipment for a 12 bedded CCU (CMS Items)

Serial No.	Item Description	Number required	CMS Cat No.	Cost per piece (Rs.)	Vat per piece (Rs.)	Approx cost with Vat (Rs.) per item
1.	Multi Channel Monitor	12	AN 68(a)	3,48,180	17,409	43,87,068
2.	Nebulizer	08	ME 27	1,250	63	10,504
3.	Syringe Infusion Pump	08	AN 54	34,000	1,700	2,85,600
4.	Biphasic External Defibrillator	01	AN 66	1,10,000	5,500	1,15,500
5.	ECG Machine	01	THS 93	20,000	1,000	21,000
6.	Blood Gas & Electrolyte Analyzer	01	THS 151	3,30,000	16,500	3,46,500
7.	Semi Auto Analyzer	01	CL 120	1,20,000	6,000	1,26,000
8.	USG Machine	01		15,50,000	77,500	16,27,500
9.	Over bed Table	12	SNS 678	6,000	810	81,720
10.	ICU Bed	12	SHF 47	59,400	8,613	8,16,156

- Approx total cost of these 10 items is Rs. 78,17,548

Table 8: List of Major Equipment for a 12 bedded CCU (Non CMS Items)

Serial No.	Item Description	Number required	Cost per piece (Rs.)	Total cost per item (Rs.)
1.	Ripple Mattress	12	8,688	1,04,256
2.	Ventilator- Standard	05	8,01,738	40,08,690

3.	Non Invasive BI-PAP Ventilator	03	1,59,600	4,78,800
4.	Portable X Ray Machine	01	11,47,650	11,47,650
5.	Automated Cell Counter	01	3,42,149	3,42,149
6.	Microbial Culture Machine	01	7,56,000	7,56,000
7.	Fogger Machine	02	96,600	1,93,200
8.	Trilaminar Flow	01	6,50,000	6,50,000
9.	Rapid Infusion Pump	3	85,000	2,55,000

- Approx total cost of these items is Rs. 79,35,745
- Fiber optic Bronchoscope & Temporary Pacemaker set are planned for installation in future

Table 9: List of Ancillary Equipment

Serial No.	Item Description	Number required	CMS Cat No	Cost per piece (Rs.)	Vat	Total Cost per item (Rs.)
1.	Trolley	5	SNS 431	6,666.00	899.91	37,829.55
2.	AMBU – Bag & Mask	6	AN 41	220.00	11.00	1,386.00
3.	Laryngoscope with Blade	2	AN 22	2,900.00	145.00	6,090.00
4.	Glucometer	4	ME 57	398.00	19.90	1,671.60
5.	Emergency Medicine tray	3	WM 18	182.00	9.10	573.30
6.	Refrigerator	1	MISC 2	13,950.00	697.50	14,647.50
7.	Instrument sterilizer	1	SDB 4 (a)	7,000.00	945.00	7,945.00
8.	Ophthalmoscope	1	Non Cat	10,000.00	500.00	10,500.00
9.	Emergency light	5	SNS 654	1,833.00	247.46	10,402.28
10.	Heater	1	Non Cat	1,000.00	50.00	1,050.00
11.	X- Ray View box	2	SNS 650	1,606.00	216.81	3,645.62
12.	Suction machine	5	NGS 178	6,900.00	345.00	36,225.00
13.	Computer	1	Non Cat	30,000.00	1,500.00	31,500.00
14.	Tablet Crusher	1	Non Cat	500.00	25.00	525.00
15.	Magnifying glass	1	Non Cat	100.00	5.00	105.00
16.	Portable spot light	2	MISC 38	8,300.00	415.00	17,430.00
17.	Torch	2	WM 29	85.00	4.25	178.50
18.	Kidney Tray	20	WM 21	32.00	1.60	672.00
19.	Stethoscope	10	ME 85	75.00	3.75	787.50
20.	Sleepers	50	Non Cat	110.00	5.50	5,775.00
21.	Instrument tray	10	WM 18	182.00	9.10	1,911.00
22.	Scissors	4	GS 149	105.00	5.25	441.00
23.	Water Boiler	1	SDB 12	13,700.00	1,849.50	15,549.50
24.	Hand wash dispenser	30	Non Cat	150.00	7.50	4,725.00
25.	Medicine Box	25	Non Cat	200.00	10.00	5,250.00
26.	Drip Stand	24	SHF-20/2942	702.00	94.77	19,122.48
27.	Hot water Bag	6	ME 9	100.00	5.00	630.00
28.	Steel Bowl	8	SSI (13.5% VAT)	1,200.00	162.00	10,896.00
29.	Needle Destroyer	1	87	720.00	36.00	756.00
30.	Cut Down Set	4		2,574.60		10,298.40
i.	Instrument tray	1	WM 18	182.00	9.10	191.10

ii.	Sponge Holding Forceps	1	GS 75	155.00	7.75	162.75
iii.	Mosquito Artery Forceps	3	GS 44	60.00	3.00	189.00
iv.	Scissors	1	GS 144	90.00	4.50	94.50
v.	Venesection Hook	1	Non Cat	200.00	10.00	210.00
vi.	Allies' Tissue Forceps	2	MID 85(a)	120.00	6.00	252.00
vii.	Needle Holder	1	GS 197	57.00	2.85	59.85
viii.	Scalpel Blade No 15	1	Non Cat	50.00	2.50	52.50
ix.	B. P. Handle	1	GS 96	150.00	7.50	157.50
x.	Silk	1	GS 258	1,148.00	57.40	1,205.40
31.	Tracheotomy Set	3		4,185.30		12,555.90
i.	. Artery Forceps	2	GS 40	90.00	4.50	189.00
ii.	iii. Sponge Holding Forceps	1	GS 75	155.00	7.75	162.75
iii.	iv. Mosquito Artery Forceps	2	GS 44	60.00	3.00	126.00
iv.	v. Scissors	1	GS 144	90.00	4.50	94.50
v.	vi. Tracheotomy Hook (Double)	2	Non Cat	200.00	10.00	420.00
vi.	vii. Tracheotomy Hook (single)	2	Non Cat	200.00	10.00	420.00
vii.	viii. Allies' Tissue Forceps	2	MID 85(a)	120.00	6.00	252.00
viii.	ix. Needle Holder	1	GS 197	57.00	2.85	59.85
ix.	x. Scalpel Blade No 15	1	Non Cat	50.00	2.50	52.50
x.	xi. B. P. Handle	1	GS 96	150.00	7.50	157.50
xii.	xii. Silk	1	GS 258	1,148.00	57.40	1,205.40
xiii.	xiii. Tracheotomy Tube	2	AN 14(a)	225.00	11.25	472.50
32.	L. P. Set	1		668.85		668.85
i.	Instrument tray	1	WM 18	182.00	9.10	191.10
ii.	Sponge Holding Forceps	1	GS 75	155.00	7.75	162.75
iii.	L. P. Needle	2	Non Cat	150.00	7.50	315.00
33.	Oxygen Cylinder Medium	4	Oxy01_A	28.52	1.43	119.78
34.	Oxygen Cylinder Large	6	Oxy01_B	56.24	2.81	354.31

- Approx total cost of these items is Rs. 272,217.07

Table 10: List of Furniture

Serial No.	Item Description	Number required	CMS Cat No	Cost per piece (Rs.)	Vat per piece (Rs.)	Approx cost per item (Rs.)
1.	Steel Rack	6	SRK 2	2,673.00	360.86	18,203.13
2.	Chair with arms	10	FRW-10(B)/374	1,496.00	201.96	16,979.60
3.	High Stool	4	FRW-21(B)	1,255.00	169.43	5,697.70
4.	Stool	4	FRW – 27(B)/383	744.00	100.44	3,377.76

5.	Towel Rack	3	FRW-28(B)	1,188.00	160.38	4,045.14
6.	Long Table for wards	2	FRW – 29(b)/ 385	6,622.00	893.97	15,031.94
7.	Bench without arms	4	FRW – 3(B)/372	2,507.00	338.45	11,381.78
8.	Table small wooden	2	FRW – 32(B)/386	2,735.00	369.23	6,208.45
9.	F. C. Armed chair	4	WCC – 1(B)	2,036.00	274.86	9,243.44
10.	Composite Computer Unit	1	WCU - 2	5,594.00	755.19	6,349.19
11.	Steel Almirah without Locker	2	SAL-4	4,323.00	583.61	9,813.21
12.	Ward Locker	12	GHF-17-405	1,500.00	202.50	20,430.00
13.	Rack open all sides	4	WRK – 1	3,452.00	466.02	15,672.08
14.	Ward Screen	4	GHF – 17 / 406	1,718.00	231.93	7,799.72
15.	Steel Locker Cabinet 8 Chamber	4	SLC - 1	8,417.00	1,136.30	38,213.18
16.	Instrument Cabinet	2	SHF -12 / 2934	5,328.00	719.28	12,094.56
17.	Stretcher Trolley	2	SHF - 31a/2952(b)	4,913.00	663.26	11,152.51

- Approx total cost of these items is Rs. 2,11,693.39

Training plan of MO on CCU

1. Training Centres: Department of Critical Care Medicine, IPGMER and SSKMH, Kolkata & RG Kar Medical College Hospital. Rotational exposure for 2 days each at CCU, MR Bangur Hospital - as a prototype CCU of district hospital. PICU, Dept. of Pediatrics, IPGMER and SSKMH
2. Duration: Six weeks
3. Number of trainees: 30 per batch
4. Learning objectives: After completion the trainee will achieve (a) Proficiency in recognition and initial management of problems commonly encountered in an ICU; (b) Efficiency in resuscitation of critically ill patient; (c) Appropriate monitoring of different parameters & interpretation; and (d) Capacity to identify troubles- both patient and device related and perform basic troubleshooting
5. Training methodologies: Lectures, Demonstrations, practical (Hands-on Training). Trainee will have to perform shifting duty at each training centre.
6. Curriculum:
 - 6.1. Specific credentials (Training method: Hands-on): (a) CPR – BLS (Basic Life Support) – Adult; (b) CPR – ALS (Advanced Life Support) : Intubation/ Mechanical Ventilation / Defibrillation / Temporary pacing / Application of cardiovascular drugs- Antiarrhythmics / Vasopressors /Inotropes.
 - 6.2. Procedural skills (Training method: Hands-on): (a) Maintenance of open airway in a nonintubated patient; (b) AMBU Mask ventilation; (c) Tracheal intubation : Transoral, Transnasal; (d) ICTD (Chest Drain); (e) Cardioversion; (f) Transcutaneous temporary pacing; (g) Insertion of CV cath.(Central Venous Catheter); (h) Tracheotomy (i) Changing Tracheotomy Tube.

During training, each of these will be hands on, preceded by a lecture and followed by a test.
 - 6.3. Cognitive skills (Training method: Lecture/Demonstration of 25 sessions):
 - (a) Recognition and management of: (i) Respiratory Failure – Acute and Chronic; (ii) Fluid and Electrolyte Disorders; (iii) Sepsis; (iv) Shock / Hypotension; (v) AMI – Complicated and Uncomplicated; (vi) Hypertensive Emergencies; (vii) Arrhythmias in general ICU; (viii) Ethical & Legal issues
 - (b) Application of: (i) Oxygen Therapy; (ii) Mechanical ventilation – Invasive; (iii) Mechanical Ventilation – Non Invasive; (iv) Blood Gas Analysis; (v) Renal Replacement Therapy; (vi) Blood Glucose monitoring; (vii) Infection Control Protocol; (viii) Antibiotic Policies; (ix) Specific salient aspects of pediatric critical care.
7. Logbook : Each trainee will have to maintain a log book recording performance of duty, specific credentials, lectures & demonstrations attended, procedures performed and rotational training as performed. It is to be signed by the Unit / Dept. Head.
8. Post training evaluation & Certification: Only oral and practical tests. On completion of successful training, duly signed by the Head of the Instt. and DME.

Training plan of Nursing Staff on CCU

1. Training Centres: Department of Critical Care Medicine, at RG Kar Medical College Hospital and MRBH. Rotational exposure for 2 days each at pediatric ICU where available
2. Duration: Three weeks at the Training Centre and three weeks post-placement consolidation under guidance of trained MOs.
3. Number of trainees: 30 per batch
4. Learning objectives: After completion, in addition to routine usual nursing care the trainee will be able to perform (a) Appropriate monitoring of critically ill patients (Including ECG interpretation and ventilator parameters monitoring), detect troubles, report it to on duty MOs and troubleshoot themselves to certain extent. They will maintain all charts at bedside; (b) Feeding patients(Enteral / Parenteral) properly avoiding aspiration lung injury in case of enteral feed; (c) Preventing pressure sore; (d) Capacity to assist / perform chest physiotherapy including airway toileting & aerosol therapy; (e) Continuous infusion of different lifesaving medicines; (f) Implement infection prevention protocols including sterilization of instruments & devices; and (g) Assist or cooperate patient care activities with that of Medical Technologist(MT) (Critical Care) and MOs.
5. Training methodologies: Lectures, Demonstrations, practical (Hands-on Training). Trainee will have to perform shifting duty at each training centre. Grand round with consultant, MOs and medical technologists
6. Curriculum:
 - 6.1. Specific credentials (Training method: Hands-on): Basic Life Support (BLS)
 - 6.2. Procedural skills (Training method: Hands-on): (a) Insertion of peripheral venous catheter; (b) Endotracheal suction & collecting sample for microbiological study
 - 6.3. Cognitive skills:
 - (a) Recognition of (12 sessions of Lecture/Demonstration): (i) Respiratory Failure; (ii) Oxygen therapy; (iii) Mechanical Ventilation – Invasive; (iv) Mechanical ventilation – Noninvasive; (v) **Fluid and Electrolyte Disorders**; (vi) Sepsis; (vii) Shock / Hypotension; (viii) Normal ECG interpretation & pattern identification of common ECG abnormality in intensive care; (ix) Cardiovascular medicines – Vasopressors, inotropes, common antiarrhythmics, antihypertensives, antiischaemic drugs, antiplatelets, anticoagulants; (x) Aspiration Lung Injury, ARDS, Cardiogenic pulmonary edema; (xi) Communication skill : with CCU staff ,patient, relatives of patients and administrators
 - (b) Application of (10 sessions of Lecture/Demonstration): (i) Bedside assessment – Clinical/ on multichannel monitor / ventilatory parameters/ glucometry / common lab reports and maintaining charts; (ii) Troubleshooting & reporting to MOs and MT. Detection of problems include clinical, blood gas related (SPO₂,ETCO₂), mechanicalventilatory, electrocardiographic, hemodynamic – CVP / NIBP) and identification of true & false alarms; (iii) Chest physiotherapy including airway toileting & nebulisation; (iv) Application of infusion pump – both syringe and rapid; (v) Nutrition : Different diets, enteral and parenteral feeding , methods of feeding, prevention of aspiration; (vi) Prevention of

infection in CCU : Application of protocols – universal,room sterilization, disposal of wastes, sterilization of instruments and device related policies; (vii) Prevention of bed sore or pressure sore; (viii) Appraisal of errors.

7. Logbook : Each trainee will have to maintain a log book recording performance of duty, specific credentials, lectures & demonstrations attended, procedures performed and rotational training as performed. It is to be signed by the Unit / Dept. Head.

8. Post training evaluation & Certification: Only oral and practical tests. On completion of successful training, duly signed by the Head of the Instt. and DME.

Acknowledgement

Dr. Subrata Maitra, Chairman MDEG
Prof. Ashutosh Ghosh, IPGMER
Prof Rajendranath Pandey, IPGMER
Dr. Asit Kumar Mandal, Swasthya Bhawan
Dr. Sachchidananda Sarkar, Swasthya Bhawan
Dr. Sankar Saha, Swasthya Bhawan
Dr. Srikanta Roy, Swasthya Bhawan
Dr. Pradip Malhotra, Swasthya Bhawan
Dr Asit Biswas, Suri DH
Dr Samudra Sengupta, Swasthya Bhawan
Dr. Samir Sarkar, Swasthya Bhawan
Dr. Supriya Chaudhuri, RGKarMCH
Sri Jolly Chowdhury, PO NRHM.
Dr. Tapas Ghosh, PO, WBMSCL
Dr. Subhabrata Pal, MRBH