“Minimum Standards for ICUs (Intensive Care Units) to be adopted throughout the country”:

1.0 Location:

1.1 ICU must be a structurally and functionally separate unit in the healthcare organization; it must have easy access to connectivity with emergency department/ casualty, operation theater complex, radio imaging, pathology biochemistry and microbiology laboratories and blood bank.

1.2 Ideally ICU should have single entry and exit point

2.0 Staffing Pattern

2.1 Director / Incharge:

2.1.1 Ideally an ICU must have a full time director or in charge, with full time appointment or at least dedicates 30%-50% of professional time in ICU.

2.1.2 He/ She must be having overall administrative responsibility of the unit

2.1.3 Senior accredited specialist in intensive care medicine with Postgraduate degree (PG) or equivalent degree in anesthesiology or internal medicine or surgery or critical care medicine. He should have formal education/ training and experience in intensive care medicine with preferably 5 - 7 years (full time) work experience in intensive/ critical care medicine. Available upon request on notice in the hospital during “off duty hours”.

2.2. Doctors:

2.2.1 Consultants:

2.2.1.1 Should possess MCI (Medical Council of India) recognized postgraduate degree in (PG) or equivalent degree in Anesthesia, Medicine or Surgery or Physicians qualified in intensive care medicine.

2.2.1.2 Should have minimum 3 years experience after post graduation of which 3-6 months experience in intensive/ critical care medicine (One with teaching experience in critical care medicine is preferred).

2.2.1.3 One consultant must be on duty in general working day and must be available on call on weekends and general holidays.

2.2.3 Resident doctors (Academic or non-academic or fellows):

2.2.3.1 A minimum of two resident doctors must be on duty in an ICU and they must be on duty for 24 hours x 7days.

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2.2.3.2 One of the resident doctor must be a postgraduate in anesthesia or medicine or surgery with minimum of 3 months (preferable: 6 months) full time working experience in ICU. The other resident doctor can be a trainee (Academic or fellow trainees after 1 years of training in their primary specialty and within the frame of their specialty, work in an ICU under clearly defined supervision).

2.2.3.3 One resident doctor to take care of not more than five patients.

2.2.4 Other specialty doctors

2.2.4.1 Other allied specialties/ super-specialty (medical or surgical including super-specialty division) consultants should be available on call for ICU services on 24h/Day basis

2.2.4.2 Efficient process of communication has to be organized between the medical staff of the ICU and other specialty consultants.

2.3 Nursing staff:

2.3.1 Head nurse:

2.3.1.1 One Head Nurse with full time appointment in ICU

2.3.1.2 She/ He will be overall nursing administrator and nursing care incharge of the unit and responsible for the functioning and quality of the nursing care.

2.3.1.3 Preferably shall not be holding any other top level responsibilities in any other departments or facilities of the hospital.

2.3.1.4 Should hold M.Sc. in critical or intensive care medicine with minimum of 5 years of work experience in the ICU preferred or M.Sc. Nursing (other specialty/super specialty) with minimum of 7 years of work experience in the ICU or B.Sc. nursing with minimum of 10 years of work experience in intensive care is desired.

2.3.1.5 Head nurse should be assisted by one senior nurse, who is among the senior nursing staff of ICU & also experienced.

2.3.1.6 A head nurse is in charge of continued nursing education, inservice nursing training and evaluation of the nurse patient care activities and competencies of the nurses.

2.3.2 Incharge Nurse:

2.3.2.1 Prior degree preferably M.Sc. in critical or intensive care medicine with minimum 3 years work experience in ICU or B.Sc. nursing with minimum 5 years work experience in ICU or diploma in nursing with Minimum 7 years work experience in ICU is desired.

2.3.2.2 One such Incharge Nurse must be on duty per shift in an ICU with 06 -12 beds

2.3.2.3 Also assisting the Head Nurse as and when required

2.3.2.4 One particularly dealing with infection control and prevention

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2.3.3 Other Nurse staff:

2.3.3.1 A 1:1 nurse: patient ratio: For each patient on assisted ventilator support or patient on mechanical support for organ function, example patient undergoing continuous renal replacement therapy

2.3.3.2 A 1:2 nurse: patient ratio is acceptable for taking care of patient who are not on ventilator support.

2.3.3.3 Prior degree B.Sc. or diploma in Nursing with registration from NCI (Nursing Council of India) must

2.3.3.4 One with training or work experience in intensive or critical care medicine or emergency medicine is preferred.

2.3.3.5 Nurse staff recruited to work in the ICU must undergo for a minimum of 6 months familiarization/ formal training in critical care medicine (including induction, observed and supervised duties) before beginning independent duties.

2.3.3.6 A specific in-service program should be available to assure a minimum of competencies amongst the nursing staff.

2.4 Other Health personnel:

2.4.1 Physiotherapist:

- One physiotherapist in each shift with dedicated training and expertise in critically ill patients should be available per five beds on 24 hour x 7 days basis

2.4.2 Technicians/ ICU technicians:

2.4.2.1 One technician per five beds in each shift, and an additional technician in charge who must be available in general shift and will look after related administrative duties.

2.4.2.2 Responsible for operation, maintenance, calibration, and repair of technical equipment in the ICU.

2.4.3 Radiographer;

2.4.4 Dietician;

2.4.5 Psychologist / Counselor;

2.4.6 Pharmacist:

2.4.7 Computer operator:

- Two data entry operator/ medical secretary for 06 - 12 bedded ICU

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2.4.8 Biomedical engineer:

- Available 24hrs x 7 days basis from hospital engineering section. Incharge of equipment repair & maintenance.

2.4.9 Hospital attendant:

2.4.10 Sanitary attendant:

- Two each in 1st & 2nd shift, one each in 3rd shift per day per 10-12 bedded ICU.
- Shall have orientation of ICU and be aware of its functioning.
- Trained to work in the ICU environment including BMW management, standard/ universal precautions, infection control practices and handling/ hazards of medical equipments.

2.4.11 Security guard: 24hrs x 7 days basis availability of security personnel must be ensured.

3.0 Space

3.1 Number of beds:

3.1.1 Six to twelve (06-12) beds per ICU Preferably: 10-12 beds are considered optimum
3.1.2 Seven to ten percent (7%-10%) of total hospital beds in a district level hospitals
3.1.3 Up to 20% beds in a tertiary care hospital
3.1.4 One such bed must be used for Continuous renal replacement therapy

3.2 Bed area:

3.2.1 Hundred twenty to hundred and fifty sq. ft. per bed (120-150sq. ft. per bed) (exclusively for one bed)
3.2.2 Distance of 3 ft from wall at head end: Adequate access to the head of the bed should also be provided for endotracheal intubation, resuscitation, and central venous catheterization.
3.2.3 Distance of 3 ft from the corridor or wall at foot end
3.2.4 Bed length: 7 ft
3.2.5 Bed width: 3.5 - 4 ft
3.2.6 Wall or ceiling mounted pendants used will reduce the space requirements and will also provide hindrance free and smooth accessibility at the head end of the bed
3.2.7 Space between the centers of the two adjacent beds: 4 – 4.5 ft

3.3 Other area / equipment / Nurse Station / storage of drugs:

3.3.1 Hundred to one hundred fifty percent (100 to 150%) extra space to accommodate nursing station, storage, patient movement area, equipment area, doctors and nurses rooms and toilet.
3.3.2 Equipment room: 240 sq. ft
3.3.3 Anteroom of at least 3 m² at the entrance of ICU.

3.4 Isolation:

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3.4.1 At least 10% (one or two) rooms per 10-12 bed ICU
3.4.2 Hundred and sixty to hundred and eighty (160-180 sq. ft.) sq. ft. per bed (exclusively for one room)
3.4.3 Twenty percent (20%) extra space than other rooms

3.5 Storage space

3.6 Laboratory services:

3.6.1 ABG (Arterial Blood Gas Analysis):

3.6.1.1 One in point of testing lab in ICU + 24 hour access to hospital lab facilities.

3.6.1.2 Preference to ICU ABG analysis: in those setting where point of testing facility is not available.

3.6.2 Glucometer/ Ketometer: Two (02) per 06-12 bed ICU + One (01) backup

3.7 Office space for Doctors / Nurse / seminar room / family waiting are/ sluice room/ Janitor room/ bed washing room/

4.0 Equipment:

4.1 Pendant: hanging / wall mounted.

4.2 Central medical gas and vacuum pipe line:

4.2.1 Supply from the main manifold division (with a back-up supply from emergency central cylinder bank)

4.2.2 Oxygen: Minimum 2 outlets with 2 flow meters
4.2.3 Air: Minimum 2 outlets
4.2.4 Vacuum: Minimum 2 outlets

5.0 Electrical points:

5.1 16-20 grounded sockets per bed (or per pendant)
5.2 One data outlet
5.3 All sockets and service outlets should be distributed on both sides of the bed and arranged in a way that there is minimal interference with nursing care.
5.4 The outlets are mounted between 120 and 180 cm from the floor.
5.5 Sockets serving vital equipment should be on no break circuit and 100% UPS and generators backup

6.0 Central nursing station:

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6.1 Preferably be able to visualize and monitor all patients or at least priority patients
6.2 Central monitoring system
6.3 Patient calling alarm
6.4 All other central control penal

7.0 Patient care / ventilators / monitoring (Per bed in ICU)

7.1 Type of Monitors:
7.1.1 Multi channel monitors with at least two invasive pressure monitoring system.
7.1.2 One each for every bed + 25% equipment backup

7.2 Ventilators:
7.2.1 Preferably one per bed + 20-25% reserve ventilators and 40% - 50% of those ventilators shall have inbuilt NIV system
7.2.2 At least one transport ventilator with monitor + 1 backup

7.3 Infusion pumps / syringe pumps: Four to eight (4 to 8) per bed in ICUs or at least 2-4 in ICUs + 25% reserve

7.4 Defibrillator: At least one per bed in 06-12 bed ICU + 1 in reserve

7.5 FOB (Fibro-optic Bronchoscope): Two (02) adult FOBs

7.6 Ultrasound:
7.6.1 One point of care USG equipment in 06-12 bed ICU
7.6.2 Access to hospital USG facility 24 hrs x 7 days.
7.6.3 Radiologist on call for 24 hrs x 7 days.

7.8 CRRT (Continuous Renal Replace Therapy): Facilities to perform CRRT on one bed per 08-12 beds

7.9 X-ray machine: One portable x-ray machine + PACS (Picture archiving and communication system) preferred.

7.10 Sterilization: CDC (Centers for Disease Control and Prevention, USA) guidelines to be followed

7.11 Trays / trolleys: Drug carts and emergency carts.

8.0 Miscellaneous / Other important things

8.1 Air conditioning:
8.1.1 Central HVAC with HIFA filters
8.1.2 Air circulation Zoning: Patient care areas, support areas and dirty areas + toilets must be separate
8.1.3 Twelve to sixteen air changes per hour + 55-60% humidity
8.2 Lighting
8.3 Furniture
8.4 Floor
8.5 Ceiling
8.6 Walls
8.7 Noise control alarms

As per the GOI guidelines or BSI guidelines, where such guidelines are not available, international guidelines may be followed

8.8 Waste disposal: As per the Biomedical waste handling and management Act and Rules as prescribed by Government of India.

8.9 Infection control.

8.9.1 Hand hygiene:

9.9.1.1 Wash Basin: 1:2 ratios, enough width and depth
9.9.1.2 Scrub station preferably in anteroom of ICU
9.9.1.3 Alcohol hand rubs: each bed + nursing station

9.0 Protocols:

9.1 Evidenced based diagnostic and therapeutic protocols to be framed as per the best practice guidelines (International and National) keeping in mind the local needs and resource availability.

9.2 Must develop Admission and discharge policies as per the available national and international guidelines and standards.

9.3 May use national and internationally available manuals/ protocols for clinical practices.