Patient Examination Table

- Patient examination table Overall approx. size: 1890 mm L x 560mm W x 840mmH with 3inch two-piece rexine mattress
- Fixed upholstered top 64mm thick in two sections.
- Body frame work made from 18G. CRCA sheet and 20 mm x 40mm x 18 G MS.
- Rectangular Tubes frame
- fitted with stainless steel Legs.
- Headrest adjustable on gas spring.
- Should be provided sliding Drawer and a cabinet as shown in picture.
- B.P. apparatus tray made of 18 G MS sheet of approx. size 350 mm L x 120 mm W X 20 mm H provided on a swinging rod rotating through a bush welded on the body of the couch.
- Should have Step Stool.
- All mild steel components should be thoroughly pre-treated chemically to remove rust and foreign matter like Grease, Oil etc. by dip tank processpre-treatment system.
- The treated Metal Surface should have coating of Epoxy Polyester Powder and oven baked at 180 degree to 200 degree Centigrade to avoid contamination of the clean metal surface from dust particles.
- Certificates: ISO: 13485

Anesthesia Machine

Technical specifications:

- Anesthesia system should be high end three gas system with three gas Oxygen, Nitrous Oxide and Medical Air

- double scale flowmeter with high and low flow and minimal flow provisions.
- Should have an independent Oxygen flow meter for Oxygen delivery and an integrated variable flow suction unit.
- System should have at least three drawers and an additional writing surface that can be easily accessed.
- Drawers shall have the ability to lock, and shall be easily removed for the purposes of cleaning and sterilization.
- Pipeline, cylinder and Airway pressures should all be displayed on colour coded gauges and be visible at all times during operation. Should have provision to attach 2 cylinders 1 each for O2 and N2O.
- Should have facility of delivering basal flow of oxygen on switching on the machine.
- System should have a second user accessible port for extraction of Anesthetic gas when using a nonrebreathing patient circuit.
- System should also provide the option of returning sample gas to the scavenging system with a dedicated port.
- A single pneumatic/electric on/off switch should activate the gas flow and vaporization.
- The unit should have a battery backup facility for the ventilator in the event of power failure and should operate for a minimum of one hour.
- In the event of complete power loss and battery failure it shall still be possible to manually ventilate and deliver anesthetic agent.
- System should have easily accessible common gas outlet in the event of an emergency and for use of alternate breathing circuits.
- Should have unlockable Oxygen flush to deliver oxygen flow of approximately 40l/min.
- Should have built in safety features like O2 failure alarm, N2O cutoff, Low O2 pressure etc., Should have motion sensitive back lighting for vaporizer dial adjustment.
- Should also have mandatory illumination of the writing table. The frame should have integrated power outlets to supply a minimum of four external devices.
- Should have locking of the front castors by a single central brake mechanism. Gas Flow The unit shall have a mechanical hypoxic guard system to control the ratio of Oxygen and Nitrous oxide to ensure a minimum of 25% of oxygen delivery at all times to avoid delivery of hypoxic mixture.
- It shall be possible to deliver Air with only basal flow oxygen independent of the above-mentioned hypoxic control.
- Gas flow shall be controlled mechanically to avoid errors during power failure and electronic malfunction.

- Visual display of the gas flow shall be by physical means independent of electrical power.
- Cascade or dual flow tubes should be available for all gases to allow suitable resolution and accurate control at low total fresh gas flows.
- Flow meters should have backlight and antiglare illumination.
- The unit should have an independent measurement and display of fresh gas flow offering safety for low and minimal flow anaesthesia. A bag arm with height and positional adjustment shall be available as an option.
- Vaporizers The unit should accommodate two vaporizers for anesthetic agent delivery to allow easy selection of agent to be used.
- A third vaporiser storage area shall be available as an option.
- Vaporiser should be selective type, tool free installation and vaporiser of user choice can be mounted at will with interlocking facility to allow operation of only one vaporiser at one time.
- Vaporizers supplied with the unit shall be routine maintenance free for the life of the product.
- Should provide Isoflurane and Sevoflurane key filled vaporizers. Breathing System All parts of the breathing system that are in contact with patient gas should be latex free and autoclavable.
- Should not require tools when dismantled for cleaning and sterilization. Should accept large and small volume absorber canisters.
- The ventilator bellows shall be clearly visible and should ascend on expiration to provide a quick visual indicator for system leaks.
- Breathing system should have the option of C02 Absorber bypass control that will allow the absorber canisters to be removed without introducing system leaks.
- Should have bag / vent selecting valve integrated onto the absorber and should automatically turn on the ventilator when positioned to vent mode.
- Ventilator Ventilator should be pneumatically driven, electronically controlled and should be ascending bellows type.
- Ventilator should automatically change drive gas should there be a gas depletion. Ventilator shall have a color display with touch screen user interface.
- Ventilator should have the following ventilation abilities, volume control, decelerating flow pressure control, SIMV with pressure support and pressure support.
- Ventilator should be capable of ventilating diverse range of patient groups from neonates to adult patients with restrictive airways with tidal volume range between 20 ml to 1500 ml with single bellows system.
- Assisted modes of breathing should be flow triggered. Ventilator should have an active proportional exhalation valve to prevent the potential of over delivery during pressure modes of ventilation.

- Ventilator should have a leak and compliance test that can be done independently of the full system check.
- On switching on, the ventilator system should be able to and shall give the user a choice of doing a unit test or bypassing in the case of an emergency.
- Ventilator shall compensate for fresh gas flow and compliance of the entire circuit dynamically.
- Measurement at the patient end of the circuit (sensor at the patient end) should be provided to compensate for small leakages and compressible volume variability that occur during ventilation.
- User should also have the option of setting a preset compliance correction where similar circuits are used constantly.
- Should provide constant fresh gas flow into the breathing circuit during the inspiratory phase as mandatory.
- Ventilator should have the ability to set and store a hospital default as well as individual user preferences for easy selection of ventilation parameters and include screen layout, alarm preferences and ventilation settings.
- User should be able to set their own password. Apnea alarms must be user adjustable to allow for all operating conditions and phases during Anesthesia.
- Ventilator should have the ability to display and store Patient Spirometer loops including Flow-Volume and Pressure Volume curves.
- Ventilator should also display waveforms for flow and airway pressure.
- Ventilator should display measured fresh gas independent of the flow meters.
- Ventilator should display a dynamic compliance measurement. Integrated Monitoring system: Anesthesia Monitoring system should be of modular type and capable of monitoring adult, pediatric and neonatal patients.
- Should be from the same manufacturer as of the anesthesia system.
- Monitor should have minimum 19” independent flat panel display with multi-color touch screen user interface to ensure all parameters are visible simultaneously.
- Module rack / housing should be independent and should be able to be placed near to the patient. Should be capable of 8 traces display.
- Should have facility to monitor: ECG, NIBP, SpO2, Respiration, Invasive pressures (3), temperatures (2), Capnography and Bispectral index.
- Should have Cardiac output port enabled.
- Should have automatic identification and measurement of anesthetic agents, EtCo2, O2 and N2O and MAC value.
- Should have depth of anesthesia monitoring using Bispectral index. Cardiac output monitoring facility with all accessories.
- ECG should have capability for 3, 5 and / or 10 lead monitoring and should have built in arrhythmia monitoring on all 12 leads Inbuilt ST segment analysis and arrhythmia detection for all the leads should be available.

- Should have hemodynamic, oxygenation and drug dose calculations. EtCO2 should have both mainstream and side stream in one module.
- Respiration should be available with Cardio Vascular Artifact filter.
- OCRG(oxy cardio respiro gram) should be available for monitoring neonates.
- Alarm parameter should flash red in the presence of high priority alarms (e.g. ventricular fibrillation and asystole) and flash yellow in the presence of medium or low priority alarms (e.g. noisy signal, etc.) 24 hours trend data should be displayed.
- All monitors including central station should have similar user interface for usage among all clinicians. Modules should be compatible with transport monitors.
- Monitor shall provide capability to remote view of real time waveforms via the internet.
- Should be able to upgrade to software for electronic flow sheet and full dislcosure of all waveforms.
- On-screen keyboard for entering this data should have USB ports to connect mouse, key board, bar code scanner.
- Alarm limit status (ON/OFF) must be indicated on-screen for each parameter and actual parameter alarm settings must be displayed on-screen when alarms are on.
- Position of the displayed waveforms and color of the waveform must be user configurable.
- Monitor shall permit the optional ability to receive and display information from other patient devices such as ventilators, infusion pumps and other standalone devices.
- All modules should be compatible with all monitors quoted. Should be supplied with necessary accessories for adult, pediatric and neonatal accessories.
- Should be US FDA Approved Should be compatible with HIS and Should be HL7 compliant Monitor should have capability to accommodate remote viewing of real time waveforms through internet.
- Accessories and spares
- ECG / respiration: 5 lead ECG cable and lead wire set and 10 lead ECG cable and lead wire set per monitor
- NIBP: Adult: 2 sizes and Pediatric 2 sizes and neonatal, 1 size per monitor
- SPo2 Sensor: Adult sensor with cable, pediatric sensor with cable and neonatal sensor with cable per monitor
- IBP: Include 10 no’s of disposable pressure transducer with bracket and interface cable per monitor
- Temperature: Skin and nasopharyngeal probes per monitor
- BIS: 25 no’s of disposable sensors per monitor
- Environmental factors:

- Safe disposal system: AGSS – Anesthetic Gas Scavenging System, should be in place

Fibre optic bronchoscope

Specifications:

Fiberoptic Bronchoscope:

Should have following specifications:

1. Lighter and possess high-definition image quality with camera on the tip.
2. Fully immersible in disinfectant solution.
3. Scope should have image enhancement function.
4. Two or more no. of remote-control switches on control body.
5. Compatible with leakage testing device Manual/Automatic.

Field of view	:	120 degree or more
Direction of view	:	0-degree, forward viewing
Depth of field	:	3 to 50 mm or better
Distal end outer diameter	:	5.9 mm or less
Insertion tube outer diameter	:	5.9 mm or less
Tip Bending rage	:	Up 180 deg & more, Down 130 deg & more
Working length	:	600 mm or more
Channel inner diameter	:	2.8 mm or more

Fiberoptic Bronchoscope Full HD Video Processor Module:

1. Equipped with high resolution HDTV Imaging capacity.
2. Should be compatible with Analog and Digital output with 1920X1080P output.
3. Minimum 2 HDTV image output (HD-SDI/DVI/HDTV) for HD image transfer.
4. Integrated/Separate, light weight and ergonomically designed.
5. Suitable for BLI/FICE/ NBI/ISCAN-OE, Optical enhancement technology to provide high Contrast Images while observing microvascular and micro surface patterns of the mucosal layer.
6. Should have advanced LCI (Linked Color imaging) /RDI & TXI – Advance Image Enhancement Endoscopy facility or equivalent.

7. Should have Special light function for detection of surface patterns and vessels and slight color difference should be visualized with natural tone using Red Component.
8. System should support Close focus up to 1.5 mm to get enhanced image for diagnosis.
9. System should have Edge & Structure enhancement.
10. No white balance compulsion would be added advantage.
11. Recording of both still & moving images
12. Portable Memory & USB Slot for image recording with 4 GB internal memory and external USB (8GB) Automatic IRIS control & automatic white balance.
13. Automatic IRIS control & automatic white balance
14. Should be compatible with Pead bronchoscope (4mm OD or less), Latest EBUS scopes, for future upgradation.
15. Electronic Zoom up to 2X or more.
16. Equipped with memory back up for settings & Lithium battery.

Fiberoptic Bronchoscope Light Source:

1. Long life Multi LED light source (3 or more LED bulb) with minimum lamp life of 6000 hours, & light intensity equivalent to Xenon 300 watt/300-watt xenon with extra 5 xenon bulbs.
2. Backlit front panel indicators.
3. Equipped with automatic light adjustment forced air cooling, regulated air feeding pump and fan with low noise.
4. Compatible for waterproof one touch connector
5. Compact & light weight design weight up to 15 Kg.
6. Integrated/Separate, light weight and ergonomically designed.

Fiberoptic Bronchoscope Medical Grade Monitor

26” or more medical grade monitor compatible with the above quoted system.

Fiberoptic Bronchoscope system should be supplied with below mentioned items -

- Compatible trolley to mount the system
- HD Reporting and Reporting Software
- Computer system with i5 processor, 8GB RAM & 1 TB HDD or higher
- Laser color printer.
- Biopsy Forceps (2 No.)
- Mouth Guard (2No.)

Terms and conditions:

- The system must have standard comprehensive warranty of 5 years and should quote CMC for next 5 years.
- Should be European CE/US FDA certified/BIS/CDSCO/Indian Standards.

- CMC offered for the quoted equipment should not be more than 5% of the quoted model with not more than 5% escalation per year after completion of CMC period.
- CMC offered for the quoted equipment must be on OEM letterhead for further years. CMC offered on distributors / vendor letterhead will not be considered
- Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
- The installation process must be completed by the OEM/ Service provider within 30 days of supply.
- The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
- The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
- Equipment should have brand name / model number embossed/ etched on the equipment.

In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 72 Hour and repair within 10 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the INSTITUTE (Uptime guarantee of 95%).

Mechanical Ventilator

1. Should be 12” or more size touch screen.

2. Ventilator should have standalone compressor-based system from same manufacturer (Turbine/ piston or inbuilt air-source within ventilators will not be accepted).

3. Should have the following modes.

a. Volume and Pressure Controlled modes

b. SIMV (Pressure controlled and volume controlled) with pressure support

c. Spontaneous modes like CPAP / PEEP

d. Inverse Ratio ventilation

e. Advanced mode like Pressure Regulated volume control mode and volume support mode.

f. Airway Pressure Release ventilation

g. Non-invasive ventilation.

4. Should have the facility for following settings:

a. Tidal Volume: Minimum 5ml and maximum of 1500 ml or more in Volume control

b. PEEP upto 30 cmH2O or more

c. Pressure support upto 35 cmH2O

d. Flow Pattern: Square, Decelerating

e. Respiratory Rate upto 80 bpm or more

f. Inspiratory Plateau upto 60% of Inspiratory time

g. SIMV Rate upto 60 cycles/min

h. FIO2: 21% - 100%

i. Inspiratory and Expiratory flow and pressure Trigger Sensitivity

j. Manual Cycle, Inspiratory Pause, Expiratory Pause.

5. Should be able to monitor and measure the following parameters

a. Tidal Volume

b. Plateau

c. Mean Airway Pressure

d. Peak Airway Pressure

e. Intrinsic PEEP

f. RSBI (Rapid Shallow Breathing Index)

g. Resistance and Compliance

6. In-line Nebulizer with capability of producing < 3 micron drug particle.

7. Should have the facility to find (Lower inflection point) and UIP (Upper Inflection Point)

8. Compiled trend analysis at least for 24 hours for all measured parameters.

9. Should have the facility to record multiple loops for comparison

10. Should have facility to measure: a. Pressure / Volume loops b. Flow/ volume loops

11. Should display minimum 2 curves/graphs /loops simultaneously on the screen

a. Should have audio-visual alarms for the following parameters:

b. Peak inspiratory pressure – High & Low

c. FiO2 – high & low

d. Respiratory rate – high & low

e. Tidal volume – high & low

f. Minute volume – high & low

g. Apnea h. Gas supply failure

12. Should have the facility for ETCO2 measurement

13. Should have battery backup at least for 1 hour.

14. Event log: 1000 Alarm History.

15. Demonstration is must

16. Spares should be available for 10 years.

17. Should be supplied with 2 Silicon adult the 1 Pediatrics breathing, 1 imported humidifier and 2 ultrasonic nebulizers chambers

18. Should be US F.D.A. approved

19. Ventilator should have external compressor, from the same manufacturer.

20. Expiratory valve/cassette should be autoclavable and supply 2 nos.

21. Oxygen sensor should be covered under warranty.

22. Should provide ET-tube leak compensation

23. Compressor should be US-FDA approved.

24. Compressor, hinged arm and ventilator trolley should be from the same manufacturer.

The Monitor should have the following

1. A modular configurable patient monitor

2. Should have at least14” TFT colour display with up to 12 waveforms at a time.

3. Should be touch screen

4. Should be able to measure the following parameters:

a) 3/5 lead ECG with electrocautery & defibrillator filter with ST Segment & arrhythmia detection with analysis,

b) Respiration, SpO2, temperature

c) NIBP, 2 IBP, ETCO2

d) Multi –Gas analysis with auto detection of all anesthetic agents

e) Integrated BIS/entropy Monitoring.

f) Upgradable to cardiac output (thermodilution) monitoring.

5. Should be able to automatically detect and calculate MAC of all anesthetic gases.

6. Should be able to calculate and display FiO2.

7. Intelligent cooling system to keeps the unit running quiet during use.

8. Separate indicator lights for technical and physiological alarms.

9. Maximum BEEP tone should be loud enough to be audible from at least a distance of 12 feet's.

10. Should have graded audio and visual alarms for the following parameters:

a) Blood pressure - High and Low

b) SpO2 - High and Low

c) Heart rate - High and Low

d) Respiration - High and Low

e) FiO2 - High and Low

11. Trends – Upto 24 Hours or more, trend analysis, upto 24 hours full disclosure.

12. Battery Back- up – Li-ion Battery of 1 hour or more.

13. The machine should be internationally reputed company and should be USFDA approved.

14. Bidder must ensure regular supply of Soda lime

15. The machine should be supplied with the following accessories:

a. ECG Cable – 2 nos'

b. Reusable SpO2 Sensors: 2 each for Adult, Pediatric & Neonatal.

c. NIBP Cuff: 2 each for Adult, Pediatric & Neonatal.

d. IBP Transducers: Disposable 10 nos.

e. IBP Cable: 2 no’s f. BIS Electrode: 10 no’s

g. ETCO2 Sample Line: 10 nos’

h. Reusable autoclavable Breathing circuit: 2 no’s each for Adult & pediatric

i. Upgradable to any one of the Advance modes like ASV/ Auto flow/ PAV+/NAVA/

ETCO2 Monitor

1. Monitor should be completely modular with min 19” color capacitive LCD TFT display
and Navigation through touch screen and knob both should be present.

2. Monitor should display ECG, SPO2, NIBP, Resp. 2 Temp, 4 IBP, &
Side stream/Micro stream EtCO2 as standard feature

3. Monitor should have Transport monitor cum module facility for monitor of ECG, SPO2, NIBP, 4 IBP, 2X Temp with each monitor

4. Monitor should be upgradable with Cardiac output, PiCCO, BIS, NMT, AGM, EEGX4,ScVO2, & RM through External plug and play module. The monitor should be able todisplay at least 5 of these parameters simultaneously. Price should be quoted of eachmodule separately

5. Monitor should have capability of simultaneously monitoring of Min 12 channelofwaveform.

6.Monitor should be IT enabled for access to charting system. (HL7 compliant)

7. Parameter description should be as below

A. ECG - ECG: 3/5lead ECG;12-lead ECG data can be measured by standard leadplacement - HR:15-350/min or broader, ±1% or ±1 - pacer detector: sync with the pacingsignal - ST analysis, QT analysis and arrhythmia analysis.

B. Spo2 - Should be supplied with Massimo SET technology with respective

sensors. -Should display digital value and plethysmography

C. NIBP - By sociometric principal of measurement with step wise deflation - Suitable
for adult, pediatric, neonatal patients. - Should display systolic, diastolic, mean pressure
in large easy to read display. - Should have manual/stat mode or automatic mode -

Adjustable time intervals from 2-240 Minutes and adjustable alarm limits.
D. IBPs – simultaneous monitoring of 4 IBP's should be standard – - Range: max to 400mmHg.

E. Temperature – two temperature one core and second skin simultaneous monitoring -Range Max to 50 deg C

F. EtCO2 – should be through Micro stream/Side stream method
8. Monitor should have non-volatile graphic and tabular trending of all monitored parameters as standard for minimum 120 hrs.

9. Monitor should have facility to record of 48 ECG full disclosure
10. Monitor should be ready for interface with select model of equipment like anesthesiamachine, ventilators, Syringe pump of reputed companies displaying ventilationparameters, trend, waveforms & loops

11. Monitor should have battery backup for 120 min

12. System should have facility of Remote viewing of data of each monitor on Mobile /
Laptop/ Desktop without using any special server.

13. Monitor should have US FDA or European CE approved. Certificate must be enclosed

14. Six Central Stations:

a. 22-inch touch screen display
b. Minimum 16 beds view to be provided in each station
c. UPS with 15min backup
d. Dual display option (based on number of monitors to be connected)
e. Networking cost to be included
15. Scope of supply:
a. 5 Lead ECG Cable – 2 no with Each Monitor
b. Adult spo2 sensor with intermittent cable – 02 no with each
c. Pead Spo2 sensor with intermittent cable – 01 no with each
d. Adult & Pead NIBP cuff - 05 no with each
e. Skin & Rectal Temp probe – 01 no each
f. EtCO2 Water trap – 10 no with each
g. Sample Line – 10 no with each

h. IBP Intermittent cable – 02 no with each
i. IBP Disposable transducer – 10 no with each
j. Wall Mount – 01 no with each

Fluoroscopy Machine (C ARM)

Technical specifications:

Features - generator

Microprocessor controlled high frequency generator with 2.5kw or more with

integrated beam filters to reduce patient

skin radiation dose.

collimator: iris or multi leaf

x ray mode (KV & mA range):

KV- range: 40 - 110 KV

Fluoroscopy

A) fluoroscopy should not exceed 5 ma .

B) pulsed fluoroscopy with last image hold

Radiography

Radiographic mode for cassette exposures: minimum of 20mA image intensifier:

9” or more triple mode image intensifier with hi – resolution CCD camera image

processing:

A) minimum 12-bit digital fluoroscopy imaging unit with dedicated video pipe-line

processor

B) archival memory cd/DVD mode.

C) detachable cassette holder for film recording.

D) complete hi end and latest computer system with required licensed software for image capture, storage, post

process, retrieval, print, transfer and patient data storage.

Image display

Two 18” TFT/ LCD high resolution, high contrast and flicker free monochrome monitors of at least 1024 x 1024 matrix

soft tissue filters to be provided for better visualization of soft tissues.

system functionality:

Vertical,horizontal and orbital travel should be available C arm rotation +/- 130 degree or more.

The system should be DICOM ready

Accessories:

A) wrap around light weight vinyl lead aprons with 0.5 mm lead equivalence certified by BARC or AERB or ISO: 6 (six no’s)

Crash cart

• The trauma care crash cart should have 18g stainless steel (SS 304) tubular/Rectangular frame work. Two lockable plastic box units with 3 drawers should measure 305mm l x 380mm d x 320mm h.

• The trauma care crash cart should have following facilities: 6 nos. hand out bins to keep important supplies easily accessible of size approx. 110 mm W x 125 mm D x 75mm H. light weight plastic box with three drawers each to hold emergency medicines, Ambu. Bags, IV solutions, catheters.

• The trauma care crash cart should have facility to carry monitors, ECG, suction apparatus on open areas at top Centre and bottom shelves

• The trauma care crash cart should have stainless steel saline rod made of 12 mm dia. 304 grade s.s. approx. 750 mm long and bent at top to have an arm of 400 mm approx. at the end of which of 6 mm dia. s.s. hook shall be welded with tig.

• The trauma care crash cart should have 12.5 cms dia non-rusting swiveling castor wheels. Two having locking arrangement.

• The trauma care crash cart should have pull out cardiac massage board made of plywood. The trauma care crash cart should have oxygen cylinder stand epoxy powder coated, on one side.

Certificates: Should have notified body CE/BIS/USFDA certification.

Air wayCrash cart

• The trauma care crash cart should have 18g stainless steel (SS 304) tubular/Rectangular frame work. Two lockable plastic box units with 3 drawers should measure 305mm l x 380mm d x 320mm h.

• The trauma care crash cart should have following facilities: 6 nos. hand out bins to keep important supplies easily accessible of size approx. 110 mm W x 125 mm D x 75mm H. light weight plastic box with three drawers each to hold emergency medicines, Ambu. Bags, IV solutions, catheters.

• The trauma care crash cart should have facility to carry monitors, ECG, suction apparatus on open areas at top Centre and bottom shelves

• The trauma care crash cart should have stainless steel saline rod made of 12 mm dia. 304 grade s.s. approx. 750 mm long and bent at top to have an arm of 400 mm approx. at the end of which of 6 mm dia. s.s. hook shall be welded with tig.

• The trauma care crash cart should have 12.5 cms dia non-rusting swiveling castor wheels. Two having locking arrangement.

• The trauma care crash cart should have pull out cardiac massage board made of plywood. The trauma care crash cart should have oxygen cylinder stand epoxy powder coated, on one side.

Certificates: Should have notified body CE/BIS/USFDA certification.

Nerve Stimulator

1. The nerve stimulator should have nerve mapping facility.

2. The nerve stimulator should have Remote control for sterile one handed operation.

3. The stimulator should work on 9V alkaline battery.

4. The Power consumption should be 8mA max

5. Stimulation current: 5 mA max

6. Stimulation Voltage: 95V

7. Stimulation frequency: 1Hz/2Hz

8. Allowable load impedance: 0 kohms -12kohms

9. Stimulus duration: 1.0ms to 0.05ms range

10. Current measuring accuracy: +/-0.02 mA

11. Impedance measuring range: 1 KOhms – 90KOhms for target stimulation current >0.5 mA

12. Weight: 250 g maximum

Accessories:

1.Nerve stimulation needles 24G; 25mm

2.Nerve stimulation needles 22G; 50mm

3.Nerve stimulation needles, 21G; 100mm

4.Nerve stimulation needles 20G; 150mm

5.Nerve stimulation needles 18 G, 55mm

length with 40cm length catheter set.

6.Nerve stimulation needles 18 G, 110mm

length with 100cm length catheter set

Pediatric Mannequin

1. The human patient simulator comprise of a life like mannequin. It should employ multiple models of human physiology including cardiovascular system, pulmonary system, neuromuscular system, and central nervous system. The models should allow the patient to exhibit clinical signs (e.g., spontaneous breathing, eyelid blinking) and monitored parameters (e.g., electrocardiogram, blood pressure) and should automatically respond to therapeutic intervention without any/ minimal input from the instructor. No Change

2. The mannequin should be controlled completely wirelessly and should not be connected to any control system/instructor computer through wires/hoses.

3. The mannequin should have a realistic skeletal structure, providing true-to-life articulated motion. No Change

4. The patient simulator should have a cardiovascular system that automatically calculates dependent variables (e.g., blood pressure, heart rate) in response to changing cardiovascular system status (e.g intravenous fluid administration), including the following:

A The manikin should have facility to control blood pressure, heart rate, pulse strength automatically to maintain circulation and perfusion

B. A myocardial oxygen supply (e.g., diastolic blood pressure, arterial oxygen partial pressure) and demand (e.g., cardiac contractility, heart rate) that yields appropriate cardiac response (e.g., cardiac rhythm, cardiac contractility) to myocardial ischemia. Untreated myocardial ischemia should automatically result in cardiovascular decompensation with accompanying cardiac rhythms (e.g., STsegment depression, ventricular tachycardia, ventricular fibrillation, asystole) and ultimately, cardiovascular collapse.

C. Arterial blood gases (e.g., PaO_2, $PaCO_2$, and pH) and mixed venous gases (e.g., PvO_2, $PvCO_2$) that realistically change.

D. Hematocrit can be automatically calculated to reflect oxyhemoglobin saturation and administration of a variety of intravenous fluids, such as whole blood, packed red cells, colloids, and crystalloids by using preset lab reports

E. A complete hemodynamic monitoring package that includes the capability to measure and monitor the following:

5. ABP, Left ventricular blood pressure, CVP, Right atrial pressure, Pulmonary artery pressure, Pulmonary artery occlusion (wedge) pressure, cardiac output.

6. The patient simulator should have a pulmonary system that automatically calculates alveolar and arterial gas partial pressures in response to ventilation, fraction of inspired oxygen, intrapulmonary shunt fraction, and metabolic gas exchange (For example, apnea or hypoventilation should automatically result in hypercarbia, hypoxemia, decreasing oxyhemoglobin saturation and tachycardia)

A. During spontaneous ventilation, the patient mannequin should breathe with a spontaneously controlled respiratory rate and tidal volume to maintain etCo2 and adequate oxygenation

B. Positive pressure ventilation or return of spontaneous ventilation should automatically reverse apnea with the response appropriate to the rate and tidal volume or ventilation.

C. The Patient Simulator should automatically responds to the simulated fraction of inspired oxygen present, such as with smoke inhalation or supplemental oxygen. (simulated cases)

7. The patient simulator should have a pharmacology system model with drug response calculation of pharmacodynamics for all commonly used intravenous and inhaled medications, yielding appropriate changes in patient clinical signs and monitored parameters. All patient responses to drug administration should be automatic, dose dependent, and follow an appropriate time course.

8. Patient outcome should be solely based on patient physiology and the treatment administered (e.g., ventilation, oxygen therapy, drug therapy) and should not be influenced by subjective assessment of the operator,Thus providing objective evaluation of clinical performance and reducing risk of negative training transfer.

9. The mannequin should have a realistic airway (mouth, oropharynx, larynx, esophagus, trachea, carina) resembling to that of an actual human patient.

A. Depending on head positioning, choice of clinical tools, and other maneuvers, it should be possible to achieve anywhere from a Cormack Class I (e.g., easy intubation) to a Cormack Class IV (e.g., difficult intubation) airway.

B. The mannequin airway should allow use of airway adjuncts (e.g., combitube, laryngeal mask airway) as they are used in real patients, without any special adjustments by the instructor (e.g., activation of posterior swelling to seat the LMA).
C. The success or failure of airway management should be automatically reflected in the resulting ventilation, oxyhemoglobin saturation, and overall cardiopulmonary stability.
10. The patient simulator should have trauma simulation capabilities, such as:
A. Airway opening acquired by head tilt, chin lift and jaw thrust , LMA, ET tube , Fiber optic , gastric tube,
B Articulated mandible
C Neck articulation
D Bleeding moulage modules (makeup kit) , enlarged liver, fontanelle bulge ,limp head
E. Limp, tone , motion , head seizure ,tounge edema, foreign body obstruction , laryngospasm.
F. Pneumothorax - Bilateral and unilateral chest rise and fall , Normal and abnormal breath sounds bi-lateral at clinically correct location ,
G. Simulated Chest tube insertion unilateral at clinically correct location
11. Each trauma capability should require minimal instructor input and physiological consequences (e.g., improvement in blood pressure, ventilation, and oxyhemoglobin saturation) should be automatic.
12. The patient simulator should have fully independent left and right lungs.
A. A one-sided pneumothorax should result in chest distention on one side, with the other side rising and falling with spontaneous breathing.
B. The simulator should have independent breath sounds linked to ventilation of each lung for both spontaneous and mechanical ventilation.
C. One-lung ventilation should automatically result in appropriate breath sounds, chest excursion, and pulmonary gas exchange..
D. Independent trauma feature (Unilateral needle thoracentesis mid-clavicular) No Change
13. The patient simulator should have independent blinking eyes and reactive pupils. Eye blinking should be automatic and dependent on the underlying patient physiology

(i.e., level-of- consciousness, level of neuromuscular blockade). It should be possible to easily set the pupils manually to different settings (i.e., pinpoint, reactive, non reactive, blown).

14. The patient simulator should be capable of physically shaking, giving a visible cue of convulsions, tremors, or other similar conditions.

15. The patient simulator should have touch activated, palpable pulses Brachial, and Femoral

16. The patient simulator should have an advanced cardiac life support system in which:

A. Effective chest compressions automatically yield artificial circulation, cardiac output, central and peripheral blood pressures, palpable pulses, and exhaled CO2.

B. Ineffective chest compressions yield inadequate cardiac output and circulation and an absence of exhaled CO2.

C. Defibrillation energy is automatically identified, quantified, and logged physiological response

D. Pacing current is automatically identified, quantified, and logged, with appropriate physiological response.

17. The patient simulator should include independent simulations of patients (Eg Pediatric male, female with coronary disease) and injury / disease scenarios (Eg anaphylactic shock, trauma)

A. It should be possible to combine any patient with any scenario, creating a wide variety of clinical care simulations.

B. It should be possible to run multiple software patients simultaneously to create multi-patient care simulations.

C. It should be possible to run multiple injury/disease scenarios simultaneously on a particular patient to create multi-trauma simulations.

The patient simulator should include educationally complete properly documemnted clinical simulations including information : Clinical background and scene, Prehospital and emergency department learning objectives, Student critical actions, Simulation algorithm, Equipment required for the simulation, and Instructor notes etc.

Patient simulator should be supplied complete with

a) Disaster/Casualty make up kit which allows the patient to show trauma , simulated bleeding in various locations

b) Wireless instructors workstation communicating over RF (radio frequency) allowing it to be located up to 150 feet away from the patient mannequin during simulation /training exercise

c) Should have the facility to run control software and monitor waveform display on same instructor's workstations thus allowing to use it for developing simulations at other locations independent of the patient mannequin.

18. US FDA (510K)/ European CE (Issued by Notified Body) Approved model should be offered.

Nerve locator

- Should be hand held type, light weight Should work on alkaline battery
- Low battery indicator
- LCD/LED display
- Should have features of both nerve locator during regional anesthesia and neuromuscular monitoring during anesthesia.
- Should be programmable
- For Nerve Stimulation :Current output: 10 to 150-160mA
- Stimulation pattern: TW,TOF,TET,PTC DBS Nerve locator
- For Nerve Location: Current output: beginning from 0.1/0.2 mA till 10mA Stimulation pattern: Twitch
- CE/FDA/BIS approved
- Accessories: electrodes

Adult Manikin

1. The human patient simulator comprise of a life like mannequin. It should employ multiple models of human physiology including cardiovascular system, pulmonary system, neuromuscular system, and central nervous system. The models should allow the patient to exhibit clinical signs (e.g., spontaneous breathing, eyelid blinking) and monitored parameters (e.g., electrocardiogram, blood pressure) and should automatically respond totherapeutic intervention without any/ minimal input from the instructor.

2. The mannequin should be controlled completely wirelessly and should not be connected to any control system/instructor computer through wires/hoses.

3 The mannequin should have a realistic skeletal structure, providing true- to-life articulated motion.

4. ABP, CVP, Pulmonary artery pressure, Pulmonary artery occlusion (wedge) pressure, cardiac output

5. The patient simulator should have a pulmonary system that calculate etO2, inO2, etCo2, inN2O, etN2O, metabolic gas exchange. (for example, apnea or hypoventilation and should automatically result in hypercarbia, hypoxemia, decreasing oxyhaemoglobin saturation and tachycardia

A. During spontaneous ventilation, the patient mannequin should breathe with a spontaneously controlled respiratory rate and tidal volume to maintain normocarbia and adequate oxygenation

B. Positive pressure ventilation or return of spontaneous ventilation should automatically reverse apnea with the response appropriate to the rate and tidal volume or ventilation.

C. The Patient Simulator should automatically responds to the fraction of inspired oxygen present, such as with smoke inhalation or supplemental oxygen.

6. The patient simulator should have a pharmacology system model with automatic drug recognition and calculation of pharmacodynamics for all commonly used intravenous and inhaled medications, yielding appropriate changes in patient clinical signs and

monitored parameters. All patient responses to drug administration should be automatic, dose dependent, and follow an appropriate time course.

7. Patient outcome should be solely based on patient physiology and the treatment administered (e.g., ventilation, oxygen therapy, drug therapy) and should not be influenced by subjective assessment of the operator,Thus providing objective evaluation of clinical performance and reducing risk of negative training transfer.

8. The mannequin should have a realistic airway (mouth, oropharynx, larynx, esophagus, trachea, carina) resembling to that of an actual human patient.

A. Depending on head positioning, choice of clinical tools, and other maneuvers, it should be possible to achieve anywhere from a Cormack Class I (e.g., easy intubation) to a Cormack Class IV (e.g., difficult intubation) airway.

B. The mannequin airway should allow use of airway adjuncts (e.g., combitube, laryngeal mask airway) as they are used in real patients, without any special adjustments by the instructor (e.g., activation of posterior swelling to seat the LMA).

C. The success or failure of airway management should be automatically reflected in the resulting ventilation, oxyhemoglobin saturation, and overall cardiopulmonary stability.

9. The patient simulator should have trauma simulation capabilities, such as:

A. Surgical cricothyroidotomy

B Articulated mandible

C Neck articulation

D Simultaneous bleeding at different sites linked to physiology

E Secretions from eyes, ears, mouth.

F. Bi-lateral pneumothorax needle decompression at the clinically appropriate location

G. Bi-lateral chest tube insertion at the clinically correct location.

10. Each trauma capability should require minimal instructor input and physiological consequences (e.g., improvement in blood pressure, ventilation, and oxyhemoglobin saturation) should be automatic.

11. The patient simulator should have fully independent left and right lungs.

A. A one-sided pneumothorax should result in chest distention on one side, with the other side rising and falling with spontaneous breathing.

B. The simulator should have independent breath sounds linked to ventilation of each lung for both spontaneous and mechanical ventilation.

C. One-lung ventilation should automatically result in appropriate breath sounds, chest excursion, and pulmonary gas exchange.

D. Independent bilateral trauma feature (needle decompression / chest tube) No Change

12. The patient simulator should have independent blinking eyes and reactive pupils. Eye blinking should be automatic and dependent on the underlying patient physiology (i.e., level-of- consciousness, level of neuromuscular blockade). It should be possible to easily set the pupils manually to different settings (i.e., pinpoint, reactive, non reactive, blown).

13. The patient simulator should be capable of physically shaking, giving a visible cue of convulsions, tremors, or other similar conditions.visible cue of convulsions, tremors, or other similar conditions.

14. The patient simulator should have touch activated, bi-lateral palpable pulses in the following locations: Carotid, Brachial, Radial, Femoral, Popliteal, Pedal (dorsalis and tibialis)

15. The patient simulator should have an advanced cardiac life support system in which:

A. Effective chest compressions automatically yield artificial circulation, cardiac output, central and peripheral blood pressures, palpable pulses, and exhaled CO2.

B. Ineffective chest compressions yield inadequate cardiac output and circulation and an absence of exhaled CO2.

C. Defibrillation energy is automatically identified, quantified, and logged physiological response.

D. Pacing current is automatically identified, quantified, and logged, with appropriate physiological response.

16. The patient simulator should include independent simulations of patients (e.g., young healthy male, pregnant female, elderly patient with coronary artery disease) and injury/disease scenarios (e.g., anaphylactic shock, ruptured spleen, subdural hematonia.)

A. It should be possible to combine any patient with any scenario, creating a wide variety of clinical care simulations.

B. It should be possible to run multiple software patients simultaneously to create multi-patient care simulations.

C. It should be possible to run multiple injury/disease scenarios simultaneously on a particular patient to create multi-trauma simulations.

17. The patient simulator should include educationally complete properly documemnted clinical simulations including information : Clinical background and scene, Pre-hospital and emergency department learning objectives, Student critical actions, Simulation algorithm, Equipment required for the simulation, and Instructor notes etc.

18. Patient simulator should be supplied complete with

a) Disaster/ Casualty kit which allows the patient to automatically physically bleed in various locations simultaneously and excrete body fluids from the eyes, ears, and mouth.

b) Wireless instructors workstation communicating over RF (radio frequency) allowing it to be located up to 150 feet away from the patient mannequin during simulation /training exercise

c) Should have the facility to run control software and monitor waveform display on same instructor's workstations thus allowing to use it for developing simulations at other locations independent of the patient mannequin.

20. US FD (510K) / European CE (Issued by Notified Body) Approved model should be offered.

Resuscitation equipment (CPR)- Ambu bag with face mask

Ambu Bag

- Ambu bag should be self inflatable and should have pop up valve, attachment for oxygen tube & oxygen reservoir
- Bag should be made up of Silicon, latex free double layered rubber and should retain sensivity and should be resistant to rough use.
- Inlet end of the bag should have separate port for Oxygen supplement.
  Outer port should be such that re-breathing valve or non return valve can be attached.

1. Self-inflating bag

2. Silicone made

3. Provided with closed ended reservoir with two valves

4. Patient valves pliable, well-sealed, have minimum dead space and no forward or backward leaks

5. The bag should have an oxygen inlet which fits into the standard oxygen tubing both from a cylinder and central supply

6. Face masks should be transparent, fit the patient outlet easily and have minimum dead space.

7. The system should withstand washing scrubbing and autoclaving procedures

8. Face masks: 3 sizes i.e. 00, 01, 02,: 3 set with each bag.

9. Should be provided with one set of oxygen tubing and reservoir with each self inflating bag.

10. Should have a safety valve to control maximum PIP

11. Option to control PEEP (optional)

12. European CE and USFDA approved and certificate should be provided. A maximum of 15% variation is allowed in the volumes of self inflating bags of different volumes as mentioned below:

1. 250 ml- 22 Nos.

2. 500 ml- 14 Nos.

3. 1500 ml- 04 Nos.

LARYNGOSCOPE

LARYNGOSCOPE ADULT AND PEDIATRIC

1. Should supply 4 different size standard blades and one handle for adult and pediatric separately and one short stubby handle
2. Should be stainless Steel matt finished.
3. Should provide curved blades for both adult and pediatric.
4. An extra-large blade should be supplied along with each scope.
5. Should be provided with battery
6. Should provide spare bulb – 6 no’s

LARYNGOSCOPE NEONATAL

1. Should supply 2 different size standard blades and one handle.
2. Should be stainless steel matt finished.
3. Should provide straight blades - 2Nos each

4. Should be provided with battery
5. Should provide spare bulb – 6 no'

Certificates: Notified CE/BIS/FDA and ISO 13485

Patients controlled analgesia system (portable)

1 TECHNICAL CHARACTERISTICS.

1.1 Clinical performances- Should be light weight, support the bolus supply of drug on press of single button, as per need and should be able to preset different range of Bolus supply. Preferably the unit should be of bottom / side loaded to avoid accidental spilling of drugs and damage to the machine unit should have locking system with pump to prevent accidental disconnection of drugs.

2 Technical characteristics (specific to this type of device)

2.1 Flow must be adjustable between 0.1 ml to 50 ml/hr, with 0.1 ml increment

2.2 Dosage adjustments should be possible in mg and ml/hr for neonate and paediatric patient is very important.

2.3 It should have system to give bolus volumes of 5ml or more than 5ml during infusion.

2.4 Bolus rate adjustable from 0 to 9.9ml/hour.

2.5 Accuracy +/- 6%.

2.6 The dosing modes: it should have continuous rate, demand dose, clinician bolus or equivalent modes.

2.7 KVO adjustable.

2.8 Monitoring time frame -1-24hr.

2.9 Lockout time- minimum 5min; lockout time range- 5 min to 24 hours

2.10 Basal rate:

2.11 It should be provide security against tampering with ability to record and retrieve drug pump/Microprocessor malfunction.

2.12 Graphic LCD bright display to denote infusion & alarm status & keypad.

2.13 Set flow rate and volume infused should be digitally displayed.

2.14 Delivery rate should be preset on Delivery rate and on volume and time pre selection.

2.15 Volume infused should be displayed.

2.16 Should have audio and visual alarms for:

(a) Occlusion

(b) Very Low Battery

(c) End of Infusion

(d) Cover Unlocked

(e) Patient Handset Disconnected

(f) Limit Dose Reached

(g) Accumulated Dose

(h) No Mains

(j) Low Battery

2.17 Necessary drug holding chamber to be supplied

2.18 Machine should be password or code protected to prevent accident and safety.

2.19 Dose attempted option should be added to check patient effort in the time of lock out.

2.20 Different options of drug chamber should be there like 50ml, 100ml, 250 ml, to prevent frequent change of drug chamber.

2.21 Should have more option of drug delivery root like intravenous, Epidural, Intrathecal, for ease of treatment.

3 Accessories per pump:

(a) Headboard/footboard mounting clamp - 1 Set.

(b) Universal mounting clamp for mounting on IV stand pole available in hospital- 1nos.

(c) Patient handset – 2 Nos.

(d) Nurse call cable - 2 nos.

(e) AC power lead 2m (6 feet) long with plug that fits Indian sockets. - 1 no.

4 Settings-Single loadable with one syringe of minimum 5 ml.

5 User's Interface-Automatic

6 Software and/or standard of communication-Inbuilt

7 PHYSICAL CHARACTERISTICS- Should be compact, lightweight, and made of tamper-resistant material.

8 PRODUCT & MANUFACTURER QUALITY STANDARDS:

(a) Should be European CE (Notified as per medical device directive with 4 digit body number) or USFDA certified or BIS for the quoted model only.

(b) Electrical safety conforms to standards for electrical safety IEC-60601-1, class II Shall meet IEC 60601-1-2 EMC standard requirements

(c) Certified to IEC-60601-2-24: Particular requirements for the safety of infusion pumps and controllers.

Spinal epidural set

- Precision filtration of drugs.
- Ergogenic designed (as per ISO 80369) filter disc with screwed connection for easy fit.
- Hypodermic syringe clear material used for better observation of drugs.
- 3 Different size Hypodermic needle.
- Ergogenic design single click closed & connection with catheter without leakage.
- Product LOR indicator syringe makes the puncture process visualized, improves success rate and safety of puncture.
- Epidural Needle with stylet, the epidural needle deals with a special process, has clear puncture feeling and smooth insertion of anaesthesia catheter.
- Epidural needle Tuohy's needle: 16 -18-gauge, 8 cm long with surface markings at 1 cm interval & blunt bevel with a gentle curve of 15 -30 degree at tip (Huber's tip).
- Anti-injury anaesthesia catheter has strong tensile property, blue soft tip reduces injury during placement.

Magill's forceps

- Color Sliver
- Stainless Steel
- Size/Dimension 24cm
- ISO 9001

LMA / PLMA of all sizes

LMA all sizes

PLMA all sizes