



HLL INFRA TECH SERVICES LIMITED  
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HITES/BME/PRE-TENDER/04/SL/2022-23

Date: 10.03.2023

**NOTICE OF INVITATION FOR PRE-TENDER MEETING**

Biomedical Engineering Division of HLL INFRA TECH SERVICES LIMITED (a fully owned subsidiary of HLL Lifecare Limited, a Govt. of India Enterprise) is in the process of finalising technical specifications for various Medical/Laboratory/Scientific equipment. In this context, HITES is organising an ONLINE PRE-TENDER MEETING with prospective vendors for the following items to acquire further insight to make technical specification in general without compromising the quality:

SN	Item Name
1	Skill Lab Equipment _ Group A
2	Skill Lab Equipment _ Group B

All the interested prospective vendors are invited to participate in the online pretender meeting and requested to please send your suggestions with respect to the specifications of above items (**Enclosed in Annexure I\_Technical Specification**) to the below mentioned e-mail IDs on or before 18.03.2023, 11:00 AM. The details of the Pre-Tender meeting are detailed below:

Date & time of the Pre-Tender meeting	20.03.2023 at 11:00 AM
Details of meeting	The meeting shall be conducted through following Google meet Link:  <a href="https://meet.google.com/rxs-rhmw-nyc">https://meet.google.com/rxs-rhmw-nyc</a>
Last date for submitting suggestions with respect to the technical specifications	18.03.2023, 11:00 AM
Contact Details	Ph: 0120-4071500/ 609/577 Email: bmenoida@hllhites.com

*Disclaimer: This notification is not a tender or does not construe that participating vendors shall be qualified for prospective tender in this matter.*

For HLL Infra Tech Services Limited  
Deputy Vice President (BME)

**ANNEXURE 1 \_ TECHNICAL SPECIFICATIONS**

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## 1. Skill Lab Equipment Group A

	<b>GENERAL</b>
	1. All the Manikins should be same manufacturer
	2. All manikins should be Supplied with Demonstration table and Suitable Storage Unit.
<b>1</b>	<b>Pediatric Advance Cardiac life support manikin</b>
	1. The manikin should be designed for AHA Pediatric Advance life support mega code station (PALS) as per 2015 AHA guidelines.
	2. The model should be used for practicing ACLS for a 6-year-old.
	3. The model should be realistic and look like a real 6-year-old child.
	4. Should have following features: -
	<b>A. Airway Management</b>
	· Realistic life-size intubation trainer with a flexible tongue, arytenoid cartilage, epiglottis, vallecula, vocal cords, trachea, esophagus, and simulated lungs
	· Head can be tilted forward, backward, or rotated 90 degrees to either side
	· The following skills can be practiced:
	- Endotracheal Intubation
	- Nasotracheal Intubation
	- Digital Intubation
	- Oropharyngeal airway insertion and suctioning
	- Nasopharyngeal airway insertion and suctioning
	- Bag-Valve Mask Ventilation
	<b>B. Cardiac/Pulse</b>
	· Manually generated carotid pulse
	· Manual chest compressions
	· 3-4 led ECG. With optional patient monitor: 12 lead ECG display image
	· Pacing and defibrillation (25-360j)
	<b>C. IV/IO Training</b>
	· Articulating IV arm with replaceable skin and infusible vein system allows peripheral intravenous therapy and site care
	· Venipuncture possible in the antecubital fossa and dorsum of the hand
	· Accessible veins include median, basilic and cephalic
	· Intraosseous infusion leg with tibial tuberosity and medial malleolus landmarks
	- Aspiration can be realistically simulated
	- Fluid can be infused
	<b>D. Sounds</b>
	· Heart sounds synchronized with ECG
	· Auscultated lung sounds synchronized with breathing, 0 - 60 BPM

	· Individual lung sound selection
	· Normal or abnormal bowel sounds
	· Vocal sounds: Computer-generated sounds, recorded vocal sounds and real-time voice input via headset
	· User generated vocal sounds
	<b>E. Touch Screen Control Unit</b>
	Should be Handheld, intuitive touchscreen remote for easy 'pick up and play' experience
	· Mobile - teach anywhere
	· Should have option to Operate on-the-fly or utilize scenarios and Themes for consistent simulation training
	· Should record Time stamped activities, vital signs, and instructor comments in the event log
	· Should have facility to view log files on the device for post-simulation reflection and debriefing
	· Should have option to upload self-authored scenarios and Themes or download pre-programmed scenarios directly from relevant sources.
	<b>F. Patient Monitor</b>
	· Touchscreen simulated patient monitor should provide concise clinical feedback for physiological parameters.
	· The monitor's color screen should be configurable and should provide multiple simulated parameters, each presenting multi-level alarms.
	· Simulated parameters should include HR, ECG, SpO2, BP, RR, Temperature, and etCO2
	· The System Must have a CE certificate
<b>2</b>	<b><u>Adult ACLS Simulator</u></b>
	It should be able to provide training in quality chest compression as per AHA and ISA protocols, with basic and advanced airway management skills training, vital signs analysis, spontaneous breathing and controlled by an easy-to-use wireless instructor System,
	It should include:
	- Full-body Adult humanoid model with training suit
	· Airway Management head
	· Articulating Lower body
	· Blood Pressure arm and cuff
	· IV Arm
	- Wireless control system
	- 2x AC Adapter, USB Cable
	- Blood pressure cuff
	- Artificial Blood and Airway Lubricant
	- carrying case
	- User Guide
	<b>AIRWAY</b>
	- Realistic airway anatomy including cricoid cartilage

	Bag-Valve-Mask (BVM)
	Oropharyngeal and nasopharyngeal Airway
	Supraglottic Airway Devices
	Sellick Maneuver
	- Spontaneous breathing with realistic chest rises and fall
	Controllable On/off & breathing rate
	SpO <sub>2</sub> and etCO <sub>2</sub> settings
	- "Chin lift" & "Jaw thrust" and "Head tilt" sensors including tongue fall back
	- Airway closing mechanism
	Overrides an open airway to simulate an obstruction at any time
	Open or closed airway status operated via wireless control
	<b>CIRCULATION</b>
	- Eyes for pupil assessment
	Normal – Dilated – Constricted
	- Automatically generated pulses synchronized with ECG
	Radial, brachial (right arm only) and carotid pulses both sides
	Pulse strengths dependent on BP or set individually
	Brachial pulse off when BP cuff pressure is above 20 mmHg
	Radial pulse off when BP cuff pressure is above systolic BP level
	- Auscultated and palpated blood pressure simulation
	Korotkoff Sounds synchronized with ECG
	Systolic and diastolic pressure may be set individually in steps of 2 mmHg
	Systolic 0-300 mmHg/diastolic 0-200mmHg
	Auscultative Gap, with on/off feature
	Pressure accuracy +/- 4 mmHg
	Brachial and radial pulse control, palpated BP function
	- Defibrillation capabilities (25-360j)
	4 – Lead ECG monitoring
	Synchronized variable rate, rhythm abnormalities and duration
	Pacing – threshold 20 to 200 mA
	<b>QCPR</b>
	- Live feedback on Basic life support/ cardio-pulmo. resuscitation parameters
	- Detailed information about chest compression, compression rate, ventilation volume and combined graphical display
	- cardio-pulmonary resuscitation Performance Summary
	- Debriefing Screen notes
	<b>Physiological Sounds</b>
	- <b>Lung sounds</b> breath sounds synchronized with breathing rate
	Normal, crackles, pneumonia, stridor, wheeze, rhonchi
	- Individual lung or bilateral sound selection
	- <b>Vocal sounds</b> – computer generated sounds, mixed with live voice input

	- <b>Heart sounds</b> - synchronized with programmable ECG
	Aortic Stenosis, Friction Rub, Austin Flint Murmur, Diastolic Murmur, Systolic Murmur, Mitral Valve Prolapse, Opening Snap 70ms, Normal
	Intravenous cannulation for dorsum of hand, Basilic, cephalic and median veins
	<b>Logging</b>
	Instructor can log activities and CRM skills during training sessions individually
	Log files for debriefing sessions
	cardio-pulmonary resuscitation log file for detailed debriefing
	Downloading of logs for “after actions” review/debriefing via software
	Software for detailed summary of student performance
	Wireless Instructor Faculty Control
	The system shall have the ability to manage the following parameters:
	<b>BLOOD PRESSURE/PULSES</b>
	- The user shall be able to set the blood pressure level, and to make it gradually change over time.
	<b>TEMPERATURE</b>
	- The user shall be able to set the temperature level, and to make it gradually change over time. Temperature can be presented in Celsius or Fahrenheit.
	- Temperature shall be displayed on the Patient Monitor
	<b>PULSE OXIMETRY (SpO2)</b>
	- The user shall be able to set the peripheral capillary oxygen saturation level, and to make it gradually change over time.
	<b>End Tidal CO2 (etCO2)</b>
	- The user shall be able to set the etCO <sub>2</sub> level, and to make it gradually change over time.
	- etCO <sub>2</sub> can be presented in percentage, mmHg or kPa with individual selectable wave forms
	<b>SOUNDS</b>
	- Heart sounds synchronized with ECG
	- Auscultated lung sounds synchronized with breathing, 0 - 60 BPM
	- Individual lung sound selection
	- Normal or abnormal bowel sounds
	- Vocal sounds: Computer-generated sounds, recorded vocal sounds and real-time voice input
	- User generated vocal sounds
	<b>Patient Monitor</b>
	The training system shall also work with a simulated Patient Monitor. The patient monitor shall display ECG, SpO <sub>2</sub> , etCO <sub>2</sub> , BP, Respiration rate and Temperature controllable via wireless device.
	· The System Must have a CE certificate.
<b>3</b>	<b><u>Tracheal Intubation for All Stages of Life</u></b>

	<b>A. Infant Airway Management Trainer</b>
	The Infant Airway Management Trainer should provide the realistic anatomy of a 3-month-old infant for teaching and practicing basic and advanced airway management skills. Following features must be present -
	1. Realistic anatomy of the tongue, oropharynx, epiglottis, larynx, vocal cords and trachea
	2. Bag-Valve Mask ventilation
	3. Sellick Maneuver
	4. Intubation (oral and nasal)
	5. Laryngeal Mask Airway (LMA)
	6. Realistic tissue simulation
	7. Correct tube placement can be checked by practical inflation test
	8. Simulated stomach inflation
	<b>B. Pediatric Intubation Trainer</b>
	The manikin should be anatomically accurate reproduction of a paediatric torso designed for teaching the differences in paediatric and adult anatomy for airway management procedures. The manikin should have the following features -
	· Anatomically accurate airway allowing sizing and insertion of various airway adjuncts: Oropharyngeal and nasopharyngeal airway insertion
	· Endotracheal tube insertion and securing
	· Bag valve mask ventilation
	· Tracheal suctioning
	· Manually generated carotid pulse
	· Closed chest compressions should be possible
	· The manikin should be supplied with 1 Pediatric Torso Trainer, 1 Can of Manikin Lubricant, 1 Carry Case and Directions for Use
	<b>C. Adult Airway Management Trainer</b>
	· It should be an Adult upper torso with Tongue and teeth
	· It should be able to teach following Intubation Procedures
	Tracheal (oral and nasal)
	Pharyngeal (oral and nasal)
	Retrograde intubation
	Esophageal
	Fiber optic intubation (oral/nasal)
	· Possibility of Sellick maneuver
	· Right mainstem intubation
	· Should be able to teach Suctioning techniques
	· Should be able to perform Bronchoscopy
	· The Airway Management Trainer shall be an airway training manikin mounted on practice board.
	· It must be able to provide realistic and complete training in all intubation procedures tracheal-oral and nasal and the use of the Laryngeal Mask Airway and Combi tube.

	<ul style="list-style-type: none"> <li>· It should provide realistic anatomy, nostrils. Lips, teeth, tongue, pharynx-oral and nasal, larynx with glottis opening, vallecula, arytenoids, vocal cords, sub glottis cricoid ring, trachea, including carina lungs, esophagus and stomach.</li> </ul>
	<ul style="list-style-type: none"> <li>· It must provide realistic head positioning. Neck flexion, extension and rotation, head lift and jaw movability.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should be able to provide realistic complications as, laryngospasm, vomiting, and with excessive laryngoscope pressure on teeth will produce and audio signal.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should be able to provide realistic checking for proper tube placement with visual inspection of lung expansion during ventilation, and auscultation of breathing sounds.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should be able to establish and maintain an open airway by head tilt, chin lift, neck lift and jaw thrust.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should permit realistic practice in lung ventilation, also with the use of Bag Mask Ventilation.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should be supplied with separate model for demonstration airway anatomy.</li> </ul>
	<ul style="list-style-type: none"> <li>· It must be able to provide the possibilities for practical training in clearing the obstructed airway by suctioning liquid foreign matter from, oral cavity, oro- or naso pharynx, oro- or naso trachea, via endotracheal tube. Gastric drainage may also be practiced.</li> </ul>
	<ul style="list-style-type: none"> <li>· It should be supplied with a sturdy carrying case, directions for use, sanitation kit, lubrication spray and a container of simulated stomach contents.</li> </ul>
<b>4</b>	<b><u>CPR Trainer for All Stages of Life</u></b>
	<b>A. Infant Quality CPR</b>
	The manikin should fulfill following standards
	<b>Teaching Goals –</b>
	1) Should compile with AHA 2015 recommendations.
	2) The manikin should provide feedback on all 5 key points of CPR that is depth, chest recoil & rate of the compressions; interruption time and ventilation volume.
	3) The manikin should be able to provide overall CPR performance score and performance de-briefing.
	4) Should provide visual feedback user-friendly feedback.
	<b>Anatomy -</b>
	<ul style="list-style-type: none"> <li>· Should be a full body manikin with accurate anatomical landmark resembling an infant.</li> </ul>
	<ul style="list-style-type: none"> <li>· Should have nose, eyes, ear canal, articulating mandible to teach the students C-E technique for mask holding.</li> </ul>
	<ul style="list-style-type: none"> <li>· Should have naturally obstructed and the airway to be cleared only when head/tilt or jaw thrust is performed.</li> </ul>



	· Should have collar bones to identify shoulder allowing to teach tap and shout.
	· Should have nipples, sternal notch, belly button and ribs to teach hand placement for chest compression.
	<b>Hygiene -</b>
	1) Should have removable face skin and one additional face skin to be provided.
	2) Should have one-way non-rebreathing lungs and to be provided with one extra airways
	<b>Technical –</b>
	1) Should be portable and light weight
	2) Should have digital feedback device.
	3) Must have CE Certificate
	<b>B. Child Quality CPR</b>
	The manikin should fulfil following standards
	<b>Teaching Goals –</b>
	1) Should compile with AHA 2015 recommendations.
	2) The manikin should provide feedback on all 5 key points of CPR that is depth, chest recoil & rate of the compressions; interruption time and ventilation volume.
	3) The manikin should be able to provide overall CPR performance score and performance de-briefing.
	4) Should provide visual graphical user-friendly feedback.
	5) Should allow instructor to monitor multiple students' performance at one time through smartphones.
	<b>Anatomy -</b>
	1) Should be a half body manikin with accurate anatomical landmark resembling an Child.
	2) Should have nose, eyes, ear canal, articulating mandible to teach the students C-E technique for mask holding.
	3) Should have naturally obstructed and the airway to be cleared only when head/tilt or jaw thrust is performed.
	4) Should have collar bones to identify shoulder allowing to teach tap and shout.
	5) Should have nipples, sternal notch, belly button and ribs to teach hand placement for chest compression.
	<b>Hygiene -</b>
	1) Should have removable face skin and one additional face skin to be provided.
	2) Should have one-way non-rebreathing lungs and to be provided with one extra airways
	<b>Technical –</b>
	1) Should be portable and light weight
	2) Should be able to connect to feedback devices wirelesses.

	3) Must Have CE Certificate
	<b>C. Adult quality CPR Manikin</b>
	<b>The manikin should fulfil following standards Teaching Goals –</b>
	1) Should compile with AHA 2015 recommendations.
	2) The manikin should provide feedback on all 5 key points of CPR that is depth, chest recoil & rate of the compressions; interruption time and ventilation volume.
	3) The manikin should be able to provide overall CPR performance score and performance de-briefing.
	4) Should provide visual graphical user-friendly feedback.
	5) Should allow instructor to monitor multiple students' performance at one time through smartphones.
	<b>Anatomy -</b>
	1. Should be a half body manikin with accurate anatomical landmark resembling an adult.
	2. Should have nose, eyes, ear canal, articulating mandible to teach the students C-E technique for mask holding.
	3. Should allow nose pinch technique for mouth to mouth resuscitation.
	4. Should have naturally obstructed and the airway to be cleared only when head/tilt or jaw thrust is performed.
	5. Should have collar bones to identify shoulder allowing to teach tap and shout.
	6. Should have nipples, sternal notch, belly button and ribs to teach hand placement for chest compression.
	<b>Hygiene -</b>
	1) Should have removable face skin and one additional face skin to be provided.
	2) Should have one-way non-rebreathing lungs and to be provided with one extra airways
	<b>Technical –</b>
	1) Should be portable and light weight
	2) Should be able to connect to feedback devices wirelesses.
	3) Must have CE Certificate
<b>5</b>	<b>IM Injection Trainer</b>
	Injection pad should be designed for practicing intradermal, subcutaneous and intramuscular tissue injection techniques.
	The Injection Trainer has multiple tissue layers representing the epidermis, dermis, fat and muscle layer, and can easily attach to an arm or thigh to help teach professional-to-patient communication.
	Overview
	· Epidermis layer peels back to quickly release subcuticular liquid realism
	· Tissues are soft and warm to the touch Versatility
	· Strap for hybrid simulation Cleaning

	· Durable replaceable epidermis Safety
	· Latex free
	Skills Gained
	· Subcutaneous injection
	· Intra dermal and intramuscular injection
	· Management of tissue
	· Professional-to-patient communication
<b>6</b>	<b><u>Birthing Simulator For PPH</u></b>
	Ø The Simulator should be able to train vaginal deliveries, forceps and vacuum deliveries.
	Ø The Simulator Should be simple, non-electrical and highly realistic for training control of postpartum hemorrhage.
	Ø The simulator should be strapped onto instructor and shall manually control the amount of bleeding and the conditions of uterus.
	Ø Instructor shall control dilation of the cervix and fetal heart sounds.
	Ø <b>Simulator should compromise the following:</b>
	· Birthing simulator
	· Placenta with umbilical cord
	· Blood concentrate
	· New-born Suction
	· Fetal stethoscope
	· Fluid collection tray
	· Fluid drain
	· Urine catheter
	· 20 ml syringe
	· New-born skull with fontanelles
	· New-born Simulator
	· Backpack
	· Squeeze bulbs for simulation of birth cries, spontaneous breathing, palpable umbilical pulse and auscultation of heart sounds
	· External umbilical cord and 2 umbilical tie
	· Sheets to simulate towel Head cap
	· Storage/carrying pouch
	· Directions for use
	<b>Birthing simulator should have the facilities to train the following:</b>
	• Fetal heart rate Monitoring
	• Vaginal delivery
	• Breech delivery
	• Vacuum delivery
	• Incomplete placenta
	• Oxytocin injection
	• Controlled cord traction
	• Urine bladder catheterization
<b>7</b>	<b><u>MULTIPURPOSE INJECTION TRAINING ARM</u></b>

	The Male IV Training Arm Kit should include a full-size right arm with replaceable skin and veins designed for peripheral intravenous therapy.
	- Anatomically accurate full arm model
	- Rotation at deltoid for easier anterior and posterior vein access
	- Multiple injection sites for IV insertion
	- Dorsal veins of hand (3)
	- Median Vein
	- Basilic Vein
	- Cephalic Vein
	- Realism of the human arm in appearance, feel and resistance at puncture sites
	- Palpable veins enable site selection and preparation
	- Subcutaneous and intramuscular injections may be performed in the deltoid
	- Infusible veins allow peripheral therapy with IV bolus or push injection
	- Replaceable skin and vein system ensure longevity of model
	- Will articulate to other adult manikins
	Male Multi-Venous IV Training Arm Kit includes:
	Male Multi-Venous IV Arm, 01 Replacement skin and multi-vein system, 01Blood concentrate, 01Blood Bag with Tubing and Connector, 01 Clamp and Hook in the carry case, 5 Syringes, 01Manikin Lubricant, 01Carry Case
8	<b><u>Newborn Manikin</u></b>
	<b>Airway Features</b>
	· Positioning the newborn to simulate opening the airway via head tilt, chin lift or jaw thrust
	· Positive Pressure Ventilation (BVM, T-Piece resuscitator, or anesthesia bag)
	· ET tube intubation
	· LMA insertion
	· Orogastic tube insertion
	· Stomach distension (when ET is misplaced)
	· Suctioning (of the nares, nasopharynx, oropharynx, esophagus and the lungs via an ET tube) - Fluids should not be introduced into the airway
	· Meconium module for suction removal
	<b>Breathing features</b>
	· Bilateral and unilateral (with mainstem intubation) chest rise and fall with mechanical ventilation
	· Pneumothorax - Needle thoracentesis left mid axillary (pneumothorax)
	<b>Cardiac features</b>
	· Manual chest compression at appropriate depth (1/3 AP) and force
	<b>Circulation Features</b>
	· Manual umbilical pulse
	<b>Vascular Access</b>

	· Umbilical Vein/ Artery access via patent umbilicus
	· IO access in left and right lower leg, tibial tuberosity and medial malleolus
	<b>Other Features</b>
	· Full articulation
9	<b><u>Interval, Post-abortion and post-partum intrauterine device (IUD) insertion trainer</u></b>
	1. The manikin should be accompanied with surgical tools. It should provide comprehensive IUD training at all stages.
	2. Simplified human anatomical model of a postpartum uterus after birth. It should support training in postpartum intrauterine device insertion, uterine balloon tamponade insertions and other postpartum uterus interventions.
	3. Simplified human anatomical model with both an interval uterus and a post-abortion uterus. It should support training for a variety of sexual and reproductive health interventions such as vaginal examinations, IUD insertion and removal, and for inspecting anteverted and retroverted position of the uterus.
	4. The manikin should be supplied with surgical tools- Kelly Forceps, Sponge forceps, Sim Speculum, Sponge forceps, Vullselum Forceps, Cusco Speculum, Uterine sound tool, MVA Cannula, Artery Forceps.

## 2. Skill Lab Equipment Group B

	<b>GENERAL</b>
	1. All the Manikins should be same manufacturer
	2. All manikins should be Supplied with Demonstration table and Suitable Storage Unit.
<b>1</b>	<b><u>AED Trainer</u></b>
	1. The AED Training System must contain an AED Trainer and remote control
	2. The AED Trainer must resemble a realistic automated external defibrillator (AED).
	3. The AED Trainer must be preprogramed with 10 scenarios
	4. The AED Trainer must have clear, audible voice prompts
	5. The speaker volume must be adjustable with or without the optional remote control
	6. The AED Trainer must include a soft carry case
	7. The unit must be powered by 6 C-cell batteries contained in a battery case simulating actual AED battery
	8. The AED Trainer must contain a status display window that can be manually changed by the instructor
	9. The AED Trainer must contain an LED display indicating selection of volume level and scenario chosen
	10. The AED Trainer must simulate the following conditions in preprogramed scenarios and be able manually override them with the remote control
	· Artifact motion
	· Poor pad placement
	· Correct pad placement
	· Shockable rhythm
	· Non-shockable rhythm
	· Low Battery
	· Replace Battery
	· Error Condition
<b>2</b>	<b><u>Skin Suturing Trainer-</u></b>
	<b><u>Knot Tying Trainer</u></b>
	Skills Gained-
	· One-handed reef knot technique
	· Instrument tie
	· Surgeon's knot
	· Slip knot
	· Tying in a small opening
	· Tying at depth vertically in a large opening
	· Tying at depth, at an angle, in a large opening
	Product Features-
	· Light and compact

	<ul style="list-style-type: none"> <li>· Cylinders are transparent to allow the trainer to observe and assess trainee competence</li> </ul>
	<ul style="list-style-type: none"> <li>· Unique magnetic system to represent tissue strength</li> </ul>
	<ul style="list-style-type: none"> <li>· Parallel knotting tubes are elastic for a realistic tissue response</li> </ul>
	<ul style="list-style-type: none"> <li>· Latex free</li> </ul>
	<b>Anatomy</b>
	<ul style="list-style-type: none"> <li>· 2 perioperative openings represented by: <ul style="list-style-type: none"> <li>o Small, shallow fixed cylinder for tying in a small opening</li> <li>o Large, deep removable cylinder, reversible for angled abdominal and gynecological depth tying</li> </ul> </li> </ul>
	BSS Kit –
	<b>Skills Gained-</b>
	<ul style="list-style-type: none"> <li>· Knot-tying: one-handed reef knot, instrument tie, surgeon’s knot, tying at depth</li> </ul>
	<ul style="list-style-type: none"> <li>· Suturing techniques: holding/manipulation of needles, interrupted, simple and mattress, continuous, subcuticular</li> </ul>
	<ul style="list-style-type: none"> <li>· Skin lesions and LA techniques: excising a skin lesion, excising a sebaceous cyst</li> </ul>
	<ul style="list-style-type: none"> <li>· Hemostasis: clip tie, continuity tie, pedicle transfixion</li> </ul>
	<ul style="list-style-type: none"> <li>· Tissue handling - bowel: end-to-end interrupted sutures</li> </ul>
	<ul style="list-style-type: none"> <li>· Fine tissue handling: tendon repair</li> </ul>
	<ul style="list-style-type: none"> <li>· Abdominal closure and drain insertion: open abdominal wall, insert drain and secure, close abdominal wall with Aberdeen knot</li> </ul>
	<ul style="list-style-type: none"> <li>· Fine tissue handling: vein patch exercise</li> </ul>
	<ul style="list-style-type: none"> <li>· Wound management: abscess drainage, traumatic wound debridement</li> </ul>
<b>3</b>	<b>Breast Examination Trainer</b>
	Breast Examination Trainer should provide a highly realistic learning platform for acquiring the skills required to Perform Clinical Breast Examination (CBE).
	Should feature 6 readily interchangeable and multi-positional pathologies, providing healthcare professionals with the tools to identify various complications and pathologies, including carcinomas, cysts, fibrocystic disease and fibroadenoma.
	Should be able to use as both Simulated Patient and benchtop training.
	<b>Should be used for following skills:</b>
	<ul style="list-style-type: none"> <li>· Clinical breast examination (CBE)</li> </ul>
	<ul style="list-style-type: none"> <li>· Self-breast examination (SBE)</li> </ul>
	<ul style="list-style-type: none"> <li>· Identification of anatomical landmarks</li> </ul>
	<ul style="list-style-type: none"> <li>· Identification of lymph nodes (axillary, supra &amp; infraclavicular)</li> </ul>
	<ul style="list-style-type: none"> <li>· Location and diagnosis of pathologies</li> </ul>
	<ul style="list-style-type: none"> <li>· Professional-to-patient communication</li> </ul>
	<b>Product should have anatomy as:</b>
	<ul style="list-style-type: none"> <li>· Realistic soft tissue breast anatomy</li> </ul>
	<ul style="list-style-type: none"> <li>· Pathologies to be supplied: carcinomas: 2cm, 3cm, 5cm, cyst, fibrocystic disease, fibroadenoma</li> </ul>
	<ul style="list-style-type: none"> <li>· Soft tissue breasts look and feel realistic Clavicular and axilla pads for accurate lymph node placement</li> </ul>

	· Can be used with a Standardized Patient
	· Pathologies can be placed in various predetermined location points and are easily changeable
	· Hard torso to be supplied for bench top use
	· Pathologies can be placed in various predetermined location points and are easily changeable
	· Latex free
	· Skin surface should be washable using soap and water
<b>4</b>	<b><u>Urinary Catheterization Training Manikin</u></b>
	<b>Life-size female pelvis with interchangeable genitalia designed for practicing urologic and rectal access gastrointestinal care procedures.</b>
	Should have realistic articulation enabling proper positioning for procedures
	Should have Interchangeable male and female genitalia
	Genitalia, when used with urinary connectors and reservoir, should facilitate urologic care procedures such as perineal care, insertion of vaginal medications and indwelling catheter insertion, care, irrigation and removal
	Genitalia, when used with anal connectors and colon reservoir, should facilitate enema administration using fluid for realistic return
	Should have abdominal plate with interchangeable stoma site, allowing simulation of cystostomy tube care and urinary diversion stoma care
	Should have single plug with valve in abdominal plate, used to pressurize the reservoir during urinary catheterization procedures
	Should have bilateral thigh, dorsal gluteal, and ventral gluteal IM injections possible
	· The kit should be supplied with 1 Female Pelvis with Thighs, 1 Male Genitalia, 1 Female Genitalia, 3 Urinary Connector Valves, 3 Anal Connector Valves, 1 Carry Case and Directions for Use
<b>5</b>	<b><u>CHEST TUBE &amp; PNEUMOTHORAX TRAINER</u></b>
	It should be used for training in surgical or guidewire assisted thoracostomy, and thoracentesis.
	It should be complete with interchangeable modules, allows for a variety of chest drain insertion techniques to be performed including ultrasound-guided techniques.
	<b>Skills</b>
	· Needle decompression of tension pneumothorax
	· Ultrasound-guided chest drain insertion (Seldinger-type), including insertion of needle under direct vision, and ultrasonic recognition of chest structures
	· Open, or cut-down chest drain insertion: recognition of correct position, surgical incision, blunt dissection through chest wall, perforation of pleura, and finger sweep
	· Suture of tube to chest wall
	· Representation of adult male thorax with arms raised
	· Suitable for supine, sitting, or leaning forwards positions
	· Bony and soft tissue landmarks: manubriosternal joint, clavicles, ribs, pectoralis major and latissimus dorsi
	· Bilateral chest drains and needle decompression pads
	· Internal ultrasound anatomy: diaphragmatic structures and collapsed lung



	<ul style="list-style-type: none"> <li>• Can give the impression of breathing under ultrasound when using the Advanced Pad</li> </ul>
	<ul style="list-style-type: none"> <li>• Works with thoracic seals when using the Standard Pad</li> </ul>
	<ul style="list-style-type: none"> <li>• Reservoirs can be filled with fluid or mock blood to represent pleural effusion</li> </ul>
	<b>Ultrasound-able</b>
	<ul style="list-style-type: none"> <li>• For use with liquids – e.g. effusion, or haemothorax</li> </ul>
	<ul style="list-style-type: none"> <li>• Needle, guide-wire, dilator, and drain-tube can all be realistically inserted</li> </ul>
	<ul style="list-style-type: none"> <li>• Guidewire insertions will self-seal allowing multiple uses</li> </ul>
	<ul style="list-style-type: none"> <li>• For open/surgical techniques where effusion or haemothorax are required</li> </ul>
	<ul style="list-style-type: none"> <li>• Open/surgical incisions will not self-seal</li> </ul>
	<ul style="list-style-type: none"> <li>• Can be sutured</li> </ul>
	<ul style="list-style-type: none"> <li>• Pleural layer, providing realistic give, or “pop”, on puncture with forceps or finger</li> </ul>
	<ul style="list-style-type: none"> <li>• Improved respiratory swing</li> </ul>
<b>6</b>	<b><u>Female Pelvic Examination</u></b>
	The Female Pelvic Examination should be an anatomically accurate and tactile representation of the female pelvis. It should be ideal platform for hands-on examination as well as diagnosis of female conditions and minor pathologies. Can be used for many levels of training from undergraduate onwards, as well as in family health.
	<b>Should help gain following skills-</b>
	<ul style="list-style-type: none"> <li>· Recognition of perineal and pelvic anatomy including bony landmarks</li> </ul>
	<ul style="list-style-type: none"> <li>· Digital vaginal examination</li> </ul>
	<ul style="list-style-type: none"> <li>· Bi-manual examination</li> </ul>
	<ul style="list-style-type: none"> <li>· Cervical smear procedure (including use of speculum)</li> </ul>
	<ul style="list-style-type: none"> <li>· Digital rectal examination</li> </ul>
	<b>Should be anatomically correct representation of –</b>
	<ul style="list-style-type: none"> <li>· Abdomen, pelvis and genitalia</li> </ul>
	<ul style="list-style-type: none"> <li>· Vagina, cervix, anus and lower bowel</li> </ul>
	<ul style="list-style-type: none"> <li>· Interchangeable uterine modules with different complications</li> </ul>
	<ul style="list-style-type: none"> <li>· Modules:</li> </ul>
	Normal - Nulliparous Cervix
	Large Fibroid - Nulliparous Ectropion Cervix
	Small Fibroid - Nulliparous Polyp Cervix
	Ovarian Cyst - Multiparous Cervix
	Retroverted - Multiparous Cervix
	10-12 Weeks Pregnant
	14-16 Weeks Pregnant
	<ul style="list-style-type: none"> <li>· Abdominal wall with fat layer makes palpation more realistic</li> </ul>
	<ul style="list-style-type: none"> <li>· Labia can be parted realistically</li> </ul>
	<ul style="list-style-type: none"> <li>· Each uterus is presented at the correct</li> </ul>
	<ul style="list-style-type: none"> <li>· anatomical angle</li> </ul>
	<ul style="list-style-type: none"> <li>· Partial thighs aid anatomical orientation</li> </ul>
	<ul style="list-style-type: none"> <li>· Soft and strong perineum and labia</li> </ul>
	Product should be latex free & Skin surface washable using soap and water

7	<b><u>First Aid Manikin</u></b>
	Mannequin should be durable, rugged training mannequin with an intubation head for advanced airway management training and realistic articulation allowing the mannequin to be placed in various settings for extrication or rescue, with realistic patient handling - full range of motion and should have the following features-
	<b>Airway Features</b>
	· Intubation
	· Oral/nasal airway insertion
	· Endotracheal tubes - insertion, securing and care
	· Oropharyngeal and nasopharyngeal airways - insertion and suctioning
	· Right mainstem intubation
	· Sellick maneuver
	· Oxygen delivery procedures
	· Suctioning techniques
	<b>Eye features</b>
	· Dilated pupil
	<b>Drug administration</b>
	· IM Injections
	<b>CPR</b>
	· Anatomical landmarks
	· Ventilation with bag-valve-mask
	<b>Extrication / Immobilization</b>
	· Extrication
	· Immobilization
	· Victim handling
	<b>Wounds / Trauma</b>
	· First aid
8	<b><u>Advanced Epidural &amp; Lumbar Puncture Model</u></b>
	The Advanced Epidural & Lumbar Puncture Model allows training in both Lumbar Puncture and Epidural administration.
	<b>Realism</b>
	· Can feel when the dura has been punctured
	· Able to practice loss of resistance technique
	· Obese skin options
	· Optional steeper spine and smaller vertebral spaces
	<b>Versatility</b>
	· All inserts compatible with common base
	· Rotatable skin to ensure cost-effective training
	<b>Cleaning</b>
	· After each use drain all water from the product and clean with a damp soft cloth or sponge, using only warm water with mild detergent
	<b>Safety</b>
	· Latex free
	<b>Anatomy</b>

	· Palpable sacrum, iliac crests and vertebrae L2-5
	<b>Skills Gained</b>
	· Injection of local anaesthetics
	· Lumbar Puncture
	· Collect and measure CSF
	· Epidural Administration
<b>9</b>	<b><u>Paracentesis Trainer</u></b>
	· Landmark or ultrasound techniques can be practiced (side by side)
	· Internal echogenic anatomy should allow recognition of landmarks under ultrasound
	· Two 3.5 l/3.5-literbers can be filled with water for drainage practice
	· Should have realistic tissue and needle response
	· Should have self-sealing pads to withstand up to 200 needle or up to 100 rocket catheter insertions
	· Should have ability to insert and remove drain
	· Should allow both supine and lying on side position
	· Skin surface should be washable using soap and water
	· Should be Latex free
	· Should be torso featuring bony landmarks and umbilicus
	· Internal anatomy should include:
	o Liver
	o Spleen
	o Bowel
	o Floating Bowel
	<b>Following Skills Should be Gained</b>
	· Familiarity with the abdominal regions and underlying anatomy
	· Palpation of anatomical landmarks
	· Identification of excess fluid
	· Using ultrasound guidance, trainees can visualize the insertion site and check for vital organs beneath
	· Insertion of needle into the peritoneal cavity for therapeutic or diagnostic purposes
	· Professional-to-patient communication
<b>10</b>	<b><u>Premature Baby</u></b>
	-
	Premature baby is a realistically proportioned 25-week preterm manikin developed in collaboration with the American Academy of Pediatrics (AAP). Premature Anne is designed to facilitate the training of healthcare professionals in the initiation of proper care and resuscitation of preterm infants.
	The AAP Premature Anne Pack consists of the Premature simulator and hand-held remote with 8 pre-programmed scenarios written by the American Academy of Pediatrics and supports the Neonatal Resuscitation Program™.

	<b>Neonatal Resuscitation Program™ scenarios are designed for the resuscitation of a 25-week old newborn with:</b>
	· Positive-Pressure Ventilation and Continuous Positive Airway Pressure (CPAP)
	· Positive-Pressure Ventilation and Endotracheal Intubation
	· Positive-Pressure Ventilation, Endotracheal Intubation, and Chest Compressions
	· Positive-Pressure Ventilation, Endotracheal Intubation, Chest Compressions, and Medication
	· CPAP, Oxygen Management, and Orogastic Tube
	· Positive-Pressure Ventilation, CPAP, Intubation, and Surfactant Administration
	· Intubation, Chest Compressions and Umbilical Vessel Catheter Placement: Ethics and Care at the End of Life
	· Resuscitation of 25-Week Newborn Twins
	Following features are available
	<b>Airway Features</b>
	· Anatomically accurate, realistic airway
	· ET tube insertion
	· Sellick Manoeuvre
	· Positive Pressure Ventilation
	· Right mainstem intubation
	· Suctioning
	· OG/NG tube insertion
	<b>Breathing Features</b>
	· Bilateral and unilateral chest rise and fall with mechanical ventilation
	· Cyanosis
	<b>Breathing Complications</b>
	· Unilateral chest movement (right mainstem intubation) with mechanical ventilation
	<b>Cardiac</b>
	· Realistic Compressions
	<b>Vascular Access</b>
	· Patent, cuttable umbilicus with venous and arterial access for bolus or infusion
	· Simulated blood flashback upon cannulation of umbilical vein
	· Peripheral IV access (dry ports only)
	<b>Sounds</b>
	· Auscultation of lung sounds during ventilation
	· Heart sounds
	· Vocal sounds
<b>11</b>	<b><u>Advance Video Debriefing System with inbuilt OSCE feature</u></b>
	<b>(Compatible with all Hi-fidelity Simulators)</b>
	· The system should be able to Automate, track and report on every aspect of your simulation center's activities
	· The system should be user-friendly and reliable

	<ul style="list-style-type: none"> <li>The system should be able to reduce the workload of Simulation center activities</li> </ul>
	<b>Features</b>
	<ul style="list-style-type: none"> <li>Capture and stream multiple angles of synced video</li> </ul>
	<ul style="list-style-type: none"> <li>Capture simulator data and real medical devices</li> </ul>
	<ul style="list-style-type: none"> <li>Annotate, debrief and assess</li> </ul>
	<ul style="list-style-type: none"> <li>Secure, cloud-based storage and playback</li> </ul>
	<ul style="list-style-type: none"> <li>Control access by role, department and organizations</li> </ul>
	<ul style="list-style-type: none"> <li>Scheduling, self-enrollment, and center sign-in</li> </ul>
	<ul style="list-style-type: none"> <li>Seamlessly integrated checklist and EMR builder</li> </ul>
	<ul style="list-style-type: none"> <li>Large-scale and automated OSCE workflows</li> </ul>
	<ul style="list-style-type: none"> <li>In-depth and customizable reporting</li> </ul>
	<ul style="list-style-type: none"> <li>Flexible design and installation option</li> </ul>
	<ul style="list-style-type: none"> <li>Synchronized capture of multiple camera angles</li> </ul>
	<ul style="list-style-type: none"> <li>Simulator data capture and visualization</li> </ul>
	<ul style="list-style-type: none"> <li>Medical device capture (EKG, Ultrasound, EMR)</li> </ul>
	<ul style="list-style-type: none"> <li>Learner and faculty tracking and portfolios</li> </ul>
	<ul style="list-style-type: none"> <li>Center sign-in directs and tracks users</li> </ul>
	<ul style="list-style-type: none"> <li>Video annotation and session self-reflection*</li> </ul>
	<ul style="list-style-type: none"> <li>Debrief from anywhere using just a browser</li> </ul>
	<ul style="list-style-type: none"> <li>Learner, faculty and facility usage reports</li> </ul>
	<ul style="list-style-type: none"> <li>Customizable scenarios, roles and permissions</li> </ul>
	<ul style="list-style-type: none"> <li>Flexible and scalable - one room or many</li> </ul>
	<ul style="list-style-type: none"> <li>Secure, mobile-friendly and cloud-based</li> </ul>
	<ul style="list-style-type: none"> <li>Training and 24/7 Support</li> </ul>
	<ul style="list-style-type: none"> <li>Checklist builder and custom assessments</li> </ul>
	<ul style="list-style-type: none"> <li>Fully customizable and integrated EMR</li> </ul>
	<ul style="list-style-type: none"> <li>Courses and curriculum tracking</li> </ul>
	<ul style="list-style-type: none"> <li>Robust and customizable assessment reports</li> </ul>
	<ul style="list-style-type: none"> <li>Scheduling, self-enrollment and notifications</li> </ul>
	<ul style="list-style-type: none"> <li>Resources and inventory management</li> </ul>
	<ul style="list-style-type: none"> <li>OSCE module for large-scale exams</li> </ul>
	<ul style="list-style-type: none"> <li>Lightweight Directory Access Protocol or Single Sign On module</li> </ul>
	<b>Debriefing features</b>
	<ul style="list-style-type: none"> <li>Simulation Instructors can annotate sessions, leverage simulator event and trend data, and administer learner self-reflection evaluations for a true 360-degree view during debriefing and when providing additional feedback to learners.</li> </ul>
	<p>The System should automatically track valuable information about program utilization such as total sessions, learner contact hours and recording hours. Reports can be filtered by scenario, organization, simulators and locations. They can also be exported to Excel to share with other educators or administrators</p>