Specifications for Adult Simulator:

Software& Computer Workstation:

- Physiologically modelled
- Modeling should be validated
- Pharmacology modeling for drugs: with Pharmacokinetic and Pharmacodynamic programming for at least 60 medications.
- Pharmacology modeling must be automatic, dose dependent and follow appropriate time course of administered medication/s.
- Software must provide for ability to introduce pre-programmed conditions with or without a scenario running.
- Software must be able to run additional scenarios while a scenario is already running.
- Software should run a separate patient profile from the medical scenario.
- Laptop: Allows for manual override of physiologic system
- Laptop: Includes 2 patient profiles and 4 Scenarios
- MacBook computer included for more secure operating environment, less viruses.
- Must be able to program scenarios without the simulator

Manikin/Simulator:

- Adult Patient Simulator 188 cm Max length.
- 45.5 kg Max weight
- Wireless patient monitor shall be an All-in-One Computer at least 21" monitor connected via WiFi
- No hard plastics should be visible on the simulator for better wear and tear, low chance of cracking of the simulator.
- Head & Face: Lifelike skin with "hair" on the head and eyebrows for realism, no molded or painted hair

Wireless Patient Monitor

- Contained via All-In-One Desktop Computer wirelessly connected to simulator via WiFi
- AIO Computer for Patient Monitor: min. 21.5" touchscreen, Intel i3 or equivalent processor, Windows 7 or higher

Simulator Features:

Airway:

- Bag-valve-mask ventilation
- Head tilt/chin lift
- Jaw thrust
- Tongue swelling
- Bronchial occluder
- Upper airway designed from CT scan data of a real human patient
- Surgical cricothyrotomy
- Needle cricothyrotomy
- Intubation: orotracheal, nasotracheal, ET tubes, LMA, retrograde, fiber optic, right mainstem
- Breakaway teeth
- Gastric distention with esophageal intubation
- Laryngospasm
- Airway occluder
- Posterior oropharynx occlusion

Articulation:

- Range of motion in the wrists, elbows,knees and ankles

Breathing:

- Ability to measure presence or absence of carbon dioxide exhalation.
- Bilateral or unilateral chest rise and fall
- Spontaneous breathing
- Bilateral Chest tube insertion (sensored) with output of fluid
- Bilateral Needle decompression generates changes in pulmonary mechanics and gas exchange
- Esophageal intubation fully supported with gastric distention.
- Breathing/Lung sounds must include all the following: Normal, crackles, diminished, wheezing.
- Lung sounds can be independently controlled.
- Integrated SpO2 probe with simulated patient monitor

Circulation:

- Bilateral carotid, brachial, radial, femoral, popliteal, and dorsalis pedis pulses
- (14 pulse sites minimum)
- Decrease of systolic blood pressure beyond certain threshold automatically cause pulse deficit
- Pulses synchronized with ECG
- ECG monitoring with real ECG monitor possible
- Blood pressure can be measured by palpation and auscultation.
- Hemodynamic monitoring for the following:
    - Arterial Blood Pressure
    - Left Ventricular Pressure
    - Central Venous Pressure
    - Right Atrial Pressure
    - Right Ventricular Pressure
    - Pulmonary Artery Pressure
    - Pulmonary Artery Occlusion
    - Thermodilution Cardiac Output

Cardiac:

- Cardiac Sounds must include ALL of the following: Normal, S3, S4, S3 and S4, Early Systolic Murmur, Mid Systolic Murmur, Late Systoloic Murmur, Pan Systolic Murmur, Late Diastolic Murmur.
- 5-lead dynamic ECG Display
- Allows for defibrillation, pacing and cardioversion using actual defibrillator
- During live defibrillation energy is automatically detected, quantified and logged.

CPR:

- CPR Analysis AHA 2015 Compliant
- Proper CPR reflected in physiologic feedback of patient (i.e. changes in patient monitor display when CPR is performed)
- Proper CPR results in changes in circulation, cardiac output, central and peripheral blood pressure, and carbon dioxide return.
- Hand-placement detection

Pharmacology System

- Automatically calculates intravenous and inhaled medications for at least 60 drugs
- Responses are automatic, dose dependent and follow appropriate time course

Gastrointestinal

- Nasogastric tune placements
- Bowel sounds, all 4 quadrants

Vascular Access:

- IV insertion supported in right arm: cephalic, basilic and antebrachial veins
- IO site on anterior tibia
- Right jugular IV line for infusions

Neurological:

- Reactive Pupils and blinking eyes
- Convulsions

Secretions:

- Eyes, nose and mouth

Sounds:

- Heart, breath and Bowel sounds
- Vocal Sounds
- Other sounds can be provided via wireless microphone

Trauma

- Bleeding and fluid drainage linked to physiology
- Two simultaneous bleeding sites
- 1.5 liter blood tank capacity minimum
- Limbs can be removed at knees and elbows to support amputation scenarios

Urological:

- Interchangeable male and female genitalia
- Urine output
- Rate and flow of urine controlled by instructor.

Scenarios and Patient Profile:

- At least 2 patient profiles separate from scenarios
- Scenarios programming should run over or in conjunction with patient profile (i.e. patient affects scenario outcome)
- All scenarios provided must be evidence based and have the following:
    - Synopsis
    - Scenario Programming
    - Patient History
    - SBAR Handoff Report
    - Healthcare Provider Orders
    - Learning Objectives
    - Learning Performance Measures
    - Preparatory Questions
    - Suggested Equipment and Supplies needed
    - Facilitator Notes
    - Debriefing Points
    - Teaching Q & A
    - Clinical References (Evidence Based)

Included Scenarios:4 Scenarios

1. Anaphylaxis
2. Heart failure with pulmonary edema
3. Severe young asthmatic
4. Subdural hematoma

Product Training:

- Must include on-site product training for 14 personnel

- Training to be conducted over 2 days on the use of the simulator/scenario and patient programming/basic maintenance/on-off procedures.

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