Equipment Catalogue

2016/2017

Revised: August 2016
Manikins
SimMan 3G
Quantity Available: 3

- Completely wireless and self-contained
- Internal electrical and pneumatic power
- Supplemental wired connectivity and power
- Swappable, rechargeable batteries
- Approx. 4 hours continuous operating in wireless mode
- Rugged and reliable for use in multiple environments

Capabilities:

Multiple Airway Skills/Features
- Controllable open/close airway; automatically or manually controlled.
- Head tilt/Chin Tilt
- Jaw Thrust w/ articulated jaw
- Suctioning (Oral/Nasopharyngeal
- Bag-mask ventilation
- Otracheal Intubation
- Nasotracheal Intubation
- Combitube, LMA, and other airway placement
- Endotracheal intubation
- Retrograde Intubation
- Fiberoptic Intubation
- Transtracheal jet ventilation
- Needle cricothyrotomy
- Surgical cricothyrotomy
- Variable lung compliance – 4 settings
- Unilateral & Bilateral chest movement
- Unilateral, Bilateral & lobar breath sounds
- Chest tube insertion –Bilateral
- Variable airway resistance – 4 settings
- Right main stem intubation
- Stomach distention
- Connectivity with third party respiratory simulations

Airway Complications:
- Detection of proper head position
- Can’t Intubate/Can ventilate
- Can’t Intubate/Can’t Ventilate
- Tongue Edema
- Pharyngeal swelling
- Laryngospasm
- Decreased cervical range of motion
- Trismus

Breathing Features:
- Simulated spontaneous breathing
- Bilateral and unilateral chest rise and fall
- CO2 exhalation
- Normal and abnormal breath sounds – 5 anterior auscultation sites, 6- posterior auscultation sites
- Oxygen saturation and waveform

Breathing Complications:
- Cyanosis
- Needle Thoracentesis - Bilateral

Cardiac Features:
- Extensive ECG library
- Heart Sounds – four anterior locations
- ECG Rhythm monitoring (4wire)
- 12 lead ECG display
- Defibrillation and cardioversion
- Pacing

Circulation Features:
- BP measured manually by auscultation of Korotkoff sounds
- Carotid, femoral, brachial, radial, dorsalis pedis, popliteal and posterior tibialis pulses synchronized with ECG
- Pulse strength variable with BP
Pulse Palpation is detected & logged

**Vascular Access:**
- IV Access (right arm)
- Intraosseous access (left tibia and sternum)
- Automatic drug recognition

**CPR:**
- Compliant with 2015 Guidelines
- CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts
- Realistic compression depth and resistance
- Detection of depth, release and frequency of compressions
- Real time feedback on quality of CPR

**Eyes:**
- Blinking – slow, normal, fast and winks
- Open, closed and partially closed
- Pupillary accommodations: synchrony/asynchrony, normal and sluggish speed of response

**Other Features:**
- Seizure/Fasciculation
- Bleeding: Simulation of bleeding at multiple sites, Arterial and venous, Vital signs automatically respond to blood loss & therapy, Works with various wound modules & moulage
- Urine output (Variable)
- Foley Catheterization
- Secretions: Eyes, ears, nose, mouth, Blood, Mucous, CSF Etc.
- Diaphoresis
- Bowel Sounds – four quadrants
- Patient Voice: prerecorded sounds, custom sounds, Instructor can simulate patients voice wirelessly
- Instructor communication: Multiple instructors communicate using integrated voice over IP

**Pharmacology:**
- Automatic Drug Recognition System identifies drug & dose
- Extensive dug formulary
- Automatic or programmable physiological responses

**System Features:**
- Wireless tablet PC controls simulator remotely
- Control multiple manikins from one interface
- Control simulations from anywhere on your network
- Multiple interfaces can control/observe a single simulation
- Instructor Mode: Precise control “on the fly”, Design & program custom scenarios, create custom events, run preprogrammed scenarios
- Auto Mode: Physiological & pharmacological models run preprogrammed simulations, unique, simple controls increase/decrease difficulty & pace
- Simulation Controls: Fast forward, pause, rewind, save/restore
- Profile editor
- Future prediction & patient outcome display
- Integrated video debriefing
- Data logging
- Instructor comments

**Patient Monitor:**
- Highly configurable
- Includes: ECG (2 traces), SpO2, CO2, ABP, CVP, PAP, PCWP, NIBP, TOF, Cardiac output, Temperature (core & peripheral), additional and programmable parameters
- X-Ray Display
- 12 lead ECG Display
- Custom Image Display
- Custom Video Display

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

[http://simulation.mcmaster.ca/booking_form.html](http://simulation.mcmaster.ca/booking_form.html)
SimMan
Quantity Available: 2

SimMan is a full body, adult manikin that allows the simulation of basic and advanced life support skills and assessment to develop both individual and team skills. SimMan is not a wireless device.

Capabilities:

Airway Features:
- Airway occlusion (Head tilt/chin lift, jaw thrust)
- Foreign object obstruction
- Instructor controlled mechanical airway closure
- Chest tube insertion – left midaxillary
- Intubation
- Oral/nasal airway insertion
- Endotracheal tubes – insertion, securing and care
- Oropharyngeal and nasopharyngeal airways – insertion and suctioning
- Supraglottic airways (LMA, LTA, and Combitube)
- Right mainstem intubation
- Retrograde intubation
- Trans-tracheal jet ventilation
- Oral and nasal fiberoptic intubation
- Cricothyrotomy
- Sellick maneuver
- Stomach auscultation to verify proper positioning
- Oxygen delivery procedures
- Suctioning techniques
- Tracheostomy care and suctioning
- Auscultation of lung sounds
- Auscultation of lung sounds during ventilation
- Lung sounds, synchronized with breathing rate
- Individual lung or bilateral sound selection
- Needle chest decompression
- Pharyngeal obstruction
- Laryngospasm
- Decreased lung compliance
- Stomach decompression
- Laryngeal mask airway
- CO2 exhalation
- Airway complications (Instructor controlled)
- Realistic chest tide and fall

Circulation
- Instructor controlled ECG rhythm
- ECG monitoring
- Defibrillation (manual/automatic)
- Auto conversion of ECG w/defibrillation
- Defibrillation sensors
- Auscultation of heart sounds
- Heart sounds, synchronized with programmable ECG
- Pacing

Blood pressure/Pulses
- Adjustable pulse strength
- Adjustable heart rate
- Automatic heart rate
- Automatic carotid pulse (electronic pulses)
- Synchronized (w/ ECG)
- Carotid pulse during compressions
- Carotid pulse check sensors
- Brachial pulses
- Pulses only active when palpated
- Pulse strengths dependent on blood pressure
- Adjustable BP levels (systolic/diastolic)
- Blood pressure auscultation (left arm)
- Korotkoff sounds, synchronized with ECG
- Auscultative gap, with on/off feature
- Pulse Oximeter
- Bilateral femoral, left radial, and brachial
Catheterization

• Complete urinary catheterization

Debriefing

• Advanced video system (AVS)
• Video debriefing
• Debriefing through recorded events

Breathing

• Spontaneous breathing with external compressor

Circulatory skills and IV drug administration

• IM injections
• Volume infusion
• Realistic flashback
• IV insertion

CPR

• Anatomical landmarks
• Head tilt/chin lift sensors
• Ventilation with bag-valve-mask
• Closed chest compressions

Gastrointestinal

• NG tubes – insertion, care and removal
• Orogastric tubes – insertion, care and removal
• Feeding tubes – insertion and removal
• Auscultation of bowel sounds – normal/abnormal

Eye Features

• Interchangeable pupils

Gender, age, size

• Adult
• Male
• Female
• Full-body manikin

Extrication/Immobilization

• Extrication
• Immobilization

Simulation Administration

• Event logging
• Remote control
• Create and edit scenarios
• Pre-programmed scenarios
• Simulated patient monitor
• Portability kit
• Preset patient state levels
• Patient monitor with configurable vital sign display
• Log
• Laptop PC

Vocal Sounds

• Pre-recorded vocal sounds
• Live vocal sounds (wireless or wired mic)

Wounds/Trauma

• Replication of NBC effects
• Bleeding and hemorrhage Control
• Optional Trauma Limbs

Other

• Realistic patient handling – full range of motion
• Denture care

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

http://simulation.mcmaster.ca/booking_form.html
**SimJunior**

**Quantity Available:** 2 (Tan skin and Brown skin)

SimJunior facilitates interactive training of life-saving skills and responds to clinical intervention by instructor control and/or pre-programmed scenarios for effective practice of diagnosis and treatment of a patient. With Spontaneous breathing, airway, control, voice, sounds, ECG and other clinical features, SimJunior is a fully functional pediatric simulator. SimJunior allows observation and recognition of most vital signs, which enables the instructor to assess the student’s skills based on a realistic clinical situation.

**SimJunior Features:**
- Realistic airway for simulation of difficult airway management, oral, and nasal intubation.
- Observable breathing
- Cardiac features, including defibrillation and cardioversion.
- Eyes with interchangeable pupils (normal, dilated and constricted)
- Convulsions to simulate seizures
- Chest compressions
- Vascular access
- Normal and abnormal heart, breath, and bowel sounds.
- Automatic simulation control based on pre-programmed and validated patient scenarios.

**Airway Features:**
- Head tilt/Chin Lift
- Jaw thrust with articulated jaw
- Cricoid pressure and manipulation
- Suctioning (oral and nasopharyngeal)

The simulator may be ventilated by normal and emergency methods:
- Bag-Mask Ventilation
- Orotacheal intubation
- Nasotracheal intubation

**Breathing Features:**
SimJunior can simulate spontaneous breathing with visible chest rise and fall and variable breathing rates. The breathing is generated by an enclosed air compressor in the simulator's right thigh.
- Bilateral chest rise and fall with spontaneous breathing.
- Unilateral chest rise and fall with right mainstem intubation during ventilations
- Unilateral and bilateral lung sounds
- Normal and abnormal breath sounds
- Variable respiration rate (0-60 breaths per minute)
- Anterior auscultation sites (4)

**Circulatory Features:**
Cardiac:
- Extensive ECG library, pulses from 0-200
- Heart sounds – anterior location
- ECG rhythm monitoring (4-connector, 3-lead ECG)
- 12-lead ECG display
- Pacing
- Defibrillation and cardioversion using live defibrillators

**Blood pressure and Pulses:**
- BP measured manually by auscultation of Korotkoff sounds
- Bilateral carotid pulse
- Central pulses can be set to normal, weak, absent
- Radial/Brachial pulses can be set to Normal, Weak, Absent
- Carotid, brachial and radial pulses synchronized with ECG
- Pulse Strength variable with BP
- Pulse palpitation is detected and logged.

**CPR Features:**
- Compliant with 2015 guidelines
- Compressions generate palpable pulses, blood pressure wave and ECG Artifacts
• Realistic compression depth and resistance
• Detection of depth and rate of compressions

**Vascular Features:**
• IV Access
• IV Access is possible on the right arm and hand. The IV arm can be set up for IV insertion, infusion and bolus into:
  • Peripheral veins of the forearm
  • Antecubital fossa and dorsum of the hand
• Access for IO infusion is possible:
  • Tibial Tuberosity (Right)
  • Medial Malleolus

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

http://simulation.mcmaster.ca/booking_form.html
SimBaby is an advanced infant patient simulator. With realistic anatomy and clinical functionality, SimBaby allows learners to practice and perfect their skills on an infant in a risk-free environment.

**Capabilities:**

**Normal & Difficult Airway**
- Airway opening acquired by head tilt, chin lift, and jaw thrust
- Oropharyngeal and nasopharyngeal airways
- Bag-Valve-Mask ventilation
- Orotracheal and Nasotracheal intubation
- Sellick maneuver
- LMA insertion
- Endotracheal tube insertion
- Fiberoptic Intubation
- Gastric tube insertion
- Variable lung compliance
- Variable airway resistance
- Tongue edema
- Laryngospasm
- Pharyngeal swelling
- Decreased lung compliance
- Right mainstem intubation
- Gastric distention

**Pulmonary System**
- Spontaneous breathing with variable rate, depth and regularity
- Bilateral and unilateral chest rise and fall
- CO2 exhalation
- Normal and abnormal breath sounds - bilateral
- Lung sounds: Normal, course crackles, fine crackles, stridor, wheezes and rhonchi
- Oxygen saturation
- See-saw respiration
- Retractions
- Pneumothorax
- Unilateral chest movement
- Unilateral breath sounds
- Unilateral needle thoracentesis mid clavicular
- Unilateral chest tube insertion

**Cardiovascular System**
- Extensive ECG library with rate from 20-360
- CPR compressions generate palpable pulses, blood pressure waveform, and generate artifacts on ECG
- Heart sounds: Normal, systolic murmur, holosystolic murmur, diastolic murmur, continuous murmur and gallop
- Blood pressure: Unilateral radial and brachial pulse and bilateral femoral pulses synchronized with ECG
- Pulse strength variable with BP
- Display of cardiac rhythms via 3-lead ECG monitoring
- 12-lead dynamic ECG display
- Live defibrillation, pacing and cardioversion

**Vascular Access**
- Venous access antecubital fossae, dorsum of the hand and long saphenous vein
- Intraosseous (IO) insertion – bilateral
- IV bolus and infusion
- Simulated blood flashback upon venous cannulation

**Other Features**
- Interchangeable eyes with normal, constricted and blown (dilated) pupils
- Fontanel can presents as normal, sunken, or bulging
- Torso motion
- Vocal sounds: crying, content, coughing, hiccup
SimMom is an advanced full body birthing simulator with accurate anatomy and functionality to facilitate multi-professional obstetric training of birth management, with both manual and automatic delivery modes. Learning to make quick decisions during child birth can mean the difference between life and death.

Features and Benefits:

**Deliveries & Drills:**
- Deliveries & drills:
- Normal delivery
- Breech presentation
- Assisted deliveries
  - Forceps
  - Vacuum
- Shoulder dystocia
- Cord prolapse
- Eclampsia & pre-eclampsia
- Maternal collapse
- Post Partum Hemorrhage
- Sepsis
- Uterine inversion
- Ruptured uterus

**Pelvic Components:**
- Tonic uterus modules (for PPH, uterine inversion and retained placenta)
- Fluids (e.g. blood, stained amniotic fluid and urine)
- Urine catheterization/instillation

**Movement:**
- Seizure
- Able to position on all fours:
  - Realistic rotation of the shoulder and hip joints
  - Legs bend at the knees
  - Arms bend at the elbow
- Other positions:
  - Supine
  - Semi-recumbent
  - Left lateral
  - Legs in stirrups
  - McRoberts position

**Breathing Features:**
- Simulated spontaneous breathing
- Variable respiratory rates
- Bilateral and unilateral chest rise and fall
- Normal and abnormal breath sounds
  - 4 anterior auscultation sites
  - Bilateral midaxillary sites

**Airway Features:**
- Obstructed airway
- Tongue edema
- Right lung, left lung and both lung blockage
- Head tilt/Chin lift
- Jaw thrust
- Suctioning techniques (oral and nasopharyngeal)
- Bag-Valve-Mask ventilation
- Oropharyngeal and nasopharyngeal intubation
- Combitube, LMA and other airway device placement
- Endotracheal intubation (ET)
- Retrograde intubation
- Nasal and oral fiberoptic intubation
- Trans-tracheal jet ventilation
- Right mainstem intubation
- Surgical and needle cricothyrotomy
- Chest tube insertion

**Cardiac Features:**
- Extensive ECG library
- Heart sounds synchronized with ECG
- ECG rhythm monitoring
- 12 lead ECG display
- Defibrillation and cardioversion
- Pacing
Other Features:
• Bowel sounds and fetal heart rate (not at the same time)
• Interchangeable pupils (normal, blown and constricted)
• Patient Voice
  • Pre-recorded sounds
  • Custom sounds
  • Instructor can simulate patient’s voice wirelessly
Circulation Features:
• BP measured manually by auscultation of Korotkoff sounds
• Bilateral carotid and brachial pulse, radial (right side only pulses synchronized with ECG
• Pulse strength variable with BP
• Pulse palpation is detected and logged
Vascular Access:
• Pre-ported IV access (both arms)
• Subcutaneous and intramuscular injection sites
Chest Compressions:
• CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts
• Detection and logging of a series of compressions

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

http://simulation.mcmaster.ca/booking_form.html
Newborn Baby HAL

Quantity Available: 1

**Newborn:**

**Airway:**
- Realistic airway
- BVM/ET/LMA
- Sellick maneuver
- Multiple upper airway sounds synchronized with breathing
- Oral and nasal intubation
- Sensors detect depth of intubation
- Stomach distention
- Suctioning techniques can be practiced
- Program blockage of right lung, left lung or both lungs
- Head tilt/chin lift
- Jaw thrust
- Realistic chest rise and fall

**Breathing:**
- Automatic chest rise synchronized with respiratory patterns
- Select independent left or right lung sounds synchronized with breathing
- Assisted ventilation with conventional devices
- Ventilations are measured and logged
- Chest compressions generate palpable blood pressure wave form, and ECG artifacts
- Detect and log ventilations and compressions
- Simulated spontaneous breathing
- Variable respiratory rates and inspiratory/expiratory ratios
- Bilateral and unilateral chest rise and fall
- Respiratory sounds include both normal lungs as well as stridor and grunting
- Anterior auscultation sites

**Cardiac:**
- ECGs generated in real time with physiologic variations in rhythm never repeating textbook patterns
- Multiple heart sounds, rates and rhythms are synchronized with ECG
- Optional automatic mode enables view of dynamic ECG rhythms shown on any of 12 leads.

**Circulation:**
- Colour responds to hypoxic event and interventions
- Programmable to comply with current or future CPR standards
- Measure blood pressure
- Virtual oxygen saturation
- Fontanelle, Brachial and umbilical pulses are synchronized with heart rate and ECG
- Bilateral IV arms with fill/drain sites
- SubQ and IM Injection sites
- Chest compressions are measured and logged
- ECG monitoring using real devices
- Multiple heart sounds
- ECGs are generated in real time
- Heart sounds synchronized with ECG
- ECG rhythm monitoring
- Umbilicus may be used for “cut-down” procedure
- Umbilicus has pulse and patent arteries and vein
- Pulse strength varies
- Intraosseous access

**Speech:**
- Vigorous cry is synchronized with breathing

**Vital Signs Monitor**
- Controlled via wireless tablet PC
- Display neonatal vital signs in real time
- Use selected configuration or create your own configuration to mimic the monitors used at your facility
- Customize alarms
- Easy to operate and control
• Modify newborn’s condition during the scenario
• Share images such as ultrasounds, CT scan and Lab results
• Newborn heart tones
• Touchscreen control
• Display up to 8 numeric values
• Select up to 5 real time waveforms in normal mode
• Select up to 12 real time waveforms in advanced mode
• Display pre-ductal and post-ductal oxygen saturation
• Display blood glucose level

**Articulation and Movement**
• Seizure/convulsions
• Programmable arm movement and posture responds to hypoxic events and interventions
• Realistic rotation of shoulder and hip joints
• Legs bend at knees
• Arms bend at elbows
• Remains fully functional even in transit.

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

http://simulation.mcmaster.ca/booking_form.html
MegaCode Kelly
Quantity Available: 3

MegaCode Kelly is a full-body, lifelike manikin designed for practice of advanced, difficult and obstructed airway scenarios and IV Therapy. When used with VitalSim Vital sign simulator; MegaCode Kelly allows cardiac defibrillation, pacing with or without capture and variable threshold, ECG interpretation over 1100 rhythm variations, measurement of non-invasive blood pressure, and the auscultation and recognition of heart, breath and abdominal sounds. VitalSim allows the use of pre-recorded vocal sounds, and live voice through the use of a wireless microphone and logging and scenario functions.

Capabilities:

Airway Management Skills:
• Obstructed airway
• Endotracheal intubation
• Nasotracheal intubation
• Digital intubation
• Oropharyngeal airway insertion
• Nasopharyngeal airway insertion
• Bag Valve Mask
• Retrograde intubation
• Lightwand intubation
• Laryngeal Mask Airway insertion
• Laryngeal tube insertion
• Combitube insertion
• Trans-Tracheal Jet ventilation
• Surgical cricothyrotomy
• Needle cricothyrotomy
• Suctioning techniques
• Stomach auscultation to verify proper airway positioning

Drug Administration:
• IV Insertion, infusion and bolus into peripheral veins of forearm, antecubital fossa and dorsum of the hand
• Subcutaneous and intramuscular injections

Tension Pneumothorax Decompression:
• Bilateral mid-clavicular sites
• Mid-axillary site (Right)

Chest Tube Insertion
• Mid-axillary site (Left)

Cardiac Related Skills (With use of VitalSim only)
• 3-4 lead ECG with over 1100 rhythm variations available for interpretation
• Packing with variable threshold, with or without capture
• Defibrillation capabilities (25-360 Jules)
• Programmable scenario base algorithms for instructor control

Circulatory Skills: (With use of VitalSim only)
• Bilateral carotid pulse
• Measurement of Noninvasive Blood Pressure: Brachial and radial pulses, auscultation of palpation of noninvasive blood pressure measurement, VitalSim allow values to be set for systolic, diastolic pressures, heart rate, ausculatatory gap and volume

Sounds and Speech: (With use of VitalSim Only)
• 9 preprogrammed vocal sounds
• Live voice through use of a wireless microphone

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:
http://simulation.mcmaster.ca/booking_form.html
MegaCode Kid VitalSim is a full body, lifelike manikin which realistically simulates a 6 year old patient. It is specifically designed for training professionals in the practice of emergency care, patient handling and the transportation of the sick and injured.

Capabilities:

Airway Features:
- Intubation
- Oral/Nasal airway insertion
- Endotracheal tubes- insertion, securing and care
- Oropharyngeal and nasopharyngeal airways – insertion and suctioning
- Right mainstem intubation
- Sellick maneuver
- Stomach auscultation to verify proper positioning
- Oxygen delivery procedures
- Suctioning techniques
- Auscultation of lung sounds
- Auscultation of lung sounds during ventilation
- Lung sounds, synchronized with breathing rate
- Individual lung or bilateral sound selection
- Needle chest decompression

Circulation:
- Instructor controlled ECG rhythm
- ECG Monitoring
- Defibrillation (manual/automatic)
- Auto conversion of ECG w/ defibrillation
- Defibrillation sensors
- Auscultation of heart sounds
- Pacing

Blood Pressure/Pulses
- Adjustable heart rate
- Manual carotid pulses (Pulse bulb)

Circulatory skills and IV Drug administration:
- IM Injections
- Volume infusion
- Realistic flashback
- IV insertion
- IO insertion

CPR:
- Anatomical landmarks
- Ventilation with bag-valve-mask
- Closed chest compressions
- abdominal thrusts

Gastrointestinal:
- Auscultation of bowel sounds – normal/abnormal

Other:
- Extrication
- Immobilization
- Victim Handling
- Event logging
- Remote control
- Create and edit scenarios
- Pre-recorded vocal sounds

If you are interested in using this manikin for a high fidelity simulation session please complete the online booking form at:

http://simulation.mcmaster.ca/booking_form.html
Simulators
The full size manikin realistically simulates nearly any cardiac disease at the touch of a button by varying blood pressure, pulses, heart sounds, and murmurs.

Capabilities:

**Venous and Arterial Pulses:**
- Carotids
- Jugular venous pulses
- Blood pressure on right arm
- Right brachial pulse
- Femoral pulses

**Precordial Movements:**
- Pulmonary
- Displaced left ventricular
- Right ventricular
- Left ventricular

**Cardiac Auscultation:**
- Carotids
- Aortic radiation
- Aortic
- Tricuspid
- Mitral
- Mitral radiation
- Pulmonary
- Pulmonary radiation

**Pulmonary Auscultation:**
- Speaker for taking history
- Right upper
- Left upper
- Right inferoposterior
- Left inferoposterior
- Right/ left inferoanterior
- Abdominal breathing

**Other:**
- Self learning with Harvey Linked to UMedic software
- Instructor using Harvey in lecture setting
- Instructor in small-group sessions

**Curriculum:**
- Introductory program
- Normal patient
- Innocent murmur
- Aortic valve sclerosis
- Hypertension
- Angina pectoris
- Acute inferior myocardial infarction
- Acute Anterior myocardial infarction
- Ventricular aneurysm
- Mitral Valve Prolapse (MVP)
- MVP, Isolated Click & murmur
- Mitral regurgitation, chronic
- Mitral regurgitation, mild
- Mitral regurgitation, acute
- Mitral stenosis (MS) with severe tricuspid regurgitation (TR)
- MS with mild TR
- Mitral stenosis & Regurgitation
- Aortic Regurgitation, chronic
- Aortic Regurgitation, Acute
- Aortic stenosis
- Hypertrophic obstructive cardiomyopathy
- Cardiomyopathy
- Acute pericarditis
- Primary pulmonary hypertension
- Atrial septal defect
- Ventricular septal defect
- Patent Ductus Arteriosus
- Pulmonary stenosis
- Coarctation of aorta
- Tetralogy of fallot

Special training and approval is required in order to be able to use Harvey, please complete the online form:

[http://simulation.mcmaster.ca/harvey_training_request.html](http://simulation.mcmaster.ca/harvey_training_request.html)
The LapSim virtual reality system is a combination of computer hardware and software modules which recreate the procedures and environment of abdominal keyhole surgery, providing a safe and effective learning experience. The LapSim system utilizes advanced 3D technology, including interactive live video, to provide the trainee with a realistic virtual working environment. Practice sessions can vary in graphic complexity as well as in the level of difficulty.

Capabilities:

**Basic Skills:**
- Camera Navigation
- Instrument navigation
- Coordination
- Grasping
- Cutting
- Clip applying
- Lifting and grasping
- Suturing
- Precision and speed
- Handling intestines
- Fine dissection
- Seal and cut

**Task Trainer:**
- Peg Transfer
- Pattern cutting
- Ligating loop
- Intra-corporeal knot tying

**Camera Anatomy Training:**
- Abdominal Anatomy camera training
- Female pelvic anatomy camera training
- Opportunity to change scope angle during session from 0, 30, and 45 degree angles
- Ability to measure horizontal deviation from horizontal line
- Focus, zoom, and light intensity management
- Drift measurement deviation in time and mm

**Gynecology:**
- Tubal occlusions
- Salpingectomy
- Salpingostomy
- Myoma suturing
- Laparoscopic hysterectomy

**Appendectomy:**
- Loop technique
- Single stapling technique
- Dual stapling technique
- Optional stapling technique

**Hysterectomy:**
- Right & left uterine artery dissection
- Vaginal cuff opening
- Suturing off the cuff after removal of uterus

**Bariatrics:**
- Handling bowel exercise
- Lap banding exercise

**Nephrectomy:**
- Camera management module
- Kidney clip exercise

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Special Training and Approval is required before being able to use or book LapSim, please complete the online booking form:

[http://simulation.mcmaster.ca/lapsim_authorization_request.html](http://simulation.mcmaster.ca/lapsim_authorization_request.html)
General Procedural Skills
This airway management trainer realistically simulates a non-anesthetized patient. It can also be used to demonstrate and practice intubations, ventilation, suction and bronchoscopy. Realistic practice is the key to developing proficiency in airway management skills. The Airway Management trainer’s lifelike upper torso and head simulates real-world complications when practicing a variety of intubation, ventilation, and suction techniques.

- Intubation
- Oral/nasal airway insertion
- Endotracheal tubes – insertion, securing and care
- Oropharyngeal and nasopharyngeal airways – insertion and suctioning
- Right mainstem intubation
- Retrograde intubation
- Oral and nasal fiberoptic intubation
- Oxygen delivery procedures
- Suctioning techniques
- Auscultation of lung sounds during ventilation
- Laryngospasm
- Laryngeal Mask Airway
- Positive pressure ventilation
- Realistic chest rise and fall
- Bronchoscopy
- Vomiting
- Bronchial intubation
- Esophageal intubation
- Mouth to mouth ventilations
- Ventilations with face shield
- Ventilations with pocket mask
- Ventilations with Bag-Valve-Mask

Adult Airway Management Trainers
Quantity Available: 6
The deluxe difficult airway trainer features a manually inflatable tongue to simulate obstructed airway and is designed for training the management of difficult airways.

- Obstructed airway simulation
- Intubation
- Oral/nasal airway insertion
- Endotracheal tubes – insertion, securing and care
- Oropharyngeal and nasopharyngeal airways – insertion and suctioning
- Right mainstem intubation
- Retrograde intubation
- Oral and nasal fiberoptic intubation
- Cricothyrotomy
- Stomach auscultation to verify proper positioning
- Oxygen delivery procedures
- Suctioning techniques
- Positive pressure ventilation
- Realistic chest rise and fall
- Manual carotid pulses
- CPR- closed chest compressions
- Manually inflatable tongue to simulate obstructed airway
- Nasal fiberoptic intubation
- Lightwand intubation
- Combitube
- Abdominal thrust
The Pediatric intubation trainer realistically simulates the head and upper body of a six-year old hospital patient. It is specifically designed for learners in the field of pediatric airway management techniques.

- Intubation
- Oral/Nasal airway insertion
- Endotracheal tubes – insertion, securing and care
- Oropharyngeal and Nasopharyngeal airways – insertion and suctioning
- Suctioning techniques
- Positive pressure ventilation
- Realistic chest rise and fall
The Neonatal intubation trainer is a lifelike manikin head which realistically simulates that of a newborn baby. It is specifically designed for learners in the practice of oral and nasal intubation.

- Intubation
- Positive pressure ventilation
- Realistic anatomy of a newborn baby
- Bag-valve-mask ventilation
- Correct tube placement can be checked by practical inflation test
The male multi-venous access IV arm is a full-size lifelike arm, which realistically simulates that of a patient. It is specifically designed for training in the practice of venipuncture.

- Adult venipuncture
- Anatomy represented: Dorsal veins of hands (3), Cephalic, Median, Basilic, Antecubital

Male Multi-Venous IV Training Arm
Quantity Available: 4
The male multi-venous access IV arm is a full-size lifelike arm, which realistically simulates that of a patient. It is specifically designed for training in the practice of venipuncture.

- Adult venipuncture
- Anatomy represented: Dorsal veins of hands (3), Cephalic, Median, Basilic, Antecubital
The Advanced Venipuncture Arm features a closed blood flow system rather than the Bag and Stand supply that comes with the Standard model. It allows easy adjustment of the pressure. The Advanced arm also has a greater number of vein types.

**Skills Gained:**
- Venipuncture
- IV Cannulation
- IV Infusion
- Professional-to-patient communication
- Realistic blood flashback
- Arm allows for digital pressure to stem blood flow
- Infusion Tube allows for volume IV fluids to be administered
- Skin is durable
- Veins last for up to 500 insertions of 21g needle
- Blood has been reformulated to improve leak resistance of veins. (Concentrated liquid to save you money and storage space).
- Can be used with vacuum blood collection systems, needle and syringe and IV cannulas
- Can be used for hybrid simulation and for professional-to-patient communication when using the optional Arm Harness

Advanced Venipuncture Arm

Quantity Available: 2
The IV torso is a male torso where areas for IV access are simulated by soft pads. These are covered by realistic skin with a touch as close as you can get to human tissue. The simulated veins inside the pads provide a natural resistance during venipuncture and a natural flashback of blood. When the needle is withdrawn, both veins and skin will self seal so that the site of puncture is not visible to the next learner.

- Practice IV access to the external jugular vein, to the internal jugular vein via the anterior, central and posterior approach to the subclavian vein and to the femoral vein.
- Long catheter placement
- A pulse bulb enables the instructor to create palpable pulse in the manikins arteries
- Practice cannulation and catheterization using appropriate techniques
Physical Examination Skills
For training in the examination of the breasts, axillae & clavicular regions and for the communication skills involved.

Skills:
• Professional-to-patient communication (Used with Standardized patients)
• Clinical breast examination techniques
• Identification of anatomical landmarks and lymph nodes
• Diagnosis of pathologies

Features:
• Soft tissue chest (including lower neck, clavical, and both axilla) which attaches to the vest
• Soft tissue looks and feels realistic
• Breasts are of realistic weight with significant ptosis
• Supplied with normal nodes on one side and enlarged nodes on the other

Strap on Breasts
Quantity Available: 6
Eva is a lifelike female pelvis for developing diagnostic skills in gynecologic procedures through anatomical instruction, abdominal palpation and speculum instruction. This manikin eases the way into the clinical experience by allowing both comprehensive, stress free introduction of gynecological examinations, and the more advanced tactile comparisons of pelvic pathologic conditions in the classroom setting.

- Detailed life-like anatomical features and references
- Interchangeable inserts: normal cervix and uterus for IUD insertion and removal, normal parous cervix, cervix with endocervical polyp, cervix with ectropion characteristics, cervix with neoplasia (carcinoma), pregnant 10 week uterus, and 2 adnexal masses.
Female Pelvic Examination Models
Quantity Available: 3

This model is a body cast soft silicone with anatomically correct Vagina, Cervix, Uterus and vaginal and uterine attachments. The model can easily be placed in Anteverted, retroverted and axial positions. Bimanual palpation, Pap smear, pessary fitting and endometrial biopsy (with specimen collection) and I.U.D insertion can all be performed. The model is so realistic that the external and internal oz can be felt as you pass through them.
This versatile childbirth simulator is used worldwide by healthcare educators. It not only provides an excellent simulation of the normal delivery experience for the student and educator, but also provides instruction in abnormal and multiple deliveries. It may be used for demonstration of the following obstetric procedures:

- Normal vaginal delivery
- Complete, frank and footling breech birth
- C-Section delivery
- Ritgens maneuver
- Episiotomy
- Vertex presentation
- Intrauterine manipulation
- Vertex/vertex, vertex/breech, breech/vertex, or breech/breech presentation in multiple birth
- Prolapse of umbilical cord
- Demonstration of placenta previa: total, partial, and marginal
- Normal delivery of Umbilical cord and placenta
- Palpation of fetal fontanelles
- Simulation suction of nose and mouth
- Removable diaphragm end plate for manual positioning of fetal baby/babies
- Removable stomach cover for positioning fetus
- Life-size pelvic cavity with major anatomic landmarks
- Hand-painted outline of boney pelvis
- Three soft vulval inserts for episiotomy exercises
- One baby boy and one baby girl, each with umbilical cord and placenta
- Anatomically accurate backbone and fontanelles on fetal baby/babies
Rectal Exam Trainers
Quantity Available: 2

A realistic representation of buttocks, anus and rectum allowing for the practice of diagnostic skills associated with rectal examination. An additional rectal examination perineum is included which contains 2 rectal pathologies.

Skills:
• Digital examination of prostate
• Digital rectal examination
• Insertion and use of anoscope and proctoscope
• 2 interchangeable perineum's: normal for prostate examination, pathology featuring polyp & carcinoma
• 5 interchangeable prostates: normal, bilateral benign, unilateral benign, bilateral carcinoma, unilateral carcinoma
• Carcinomas of prostates are hard to the touch
• When in use the prostate is hidden and cannot be seen by the trainee
• Prostates can be easily and quickly changed.
Our anatomically accurate trainer is an ideal platform for teaching and learning ‘hands-on’ male pelvic examination and diagnosis. The user-friendly design, combined with clear anatomic landmarks and a range of pathologies creates a realistic training experience for students across all levels of healthcare education.

Skills:
- Correct examination procedure of male pelvis
- Examination and evaluation of:
  - Normal anatomy
  - Testicular abnormalities
  - Abdominal and pelvic pain
  - Dry catheterization
This Male Pelvic Trainer presents key anatomical features, both externally and internally, for teaching “Hands on” examination and diagnosis. The uncluttered design of the model enables learners to focus on essential anatomy and procedure.

- Learning examination procedure
- Testicular examination
- Rectal examination
- Dry catheterization
- Gonads and vas deferens are present
- Realistic anus
- Can be used in two positions (supine and left lateral)
- Soft tissue elements are removable and replaceable – penis, bladder & prostate, perineum, testicles & bowel, abdominal wall

Male Pelvic Trainer
Quantity Available: 3
Specialized Skills
This upper torso ultrasound guided central line placement trainer model with tissue insert allows users to develop and practice the skills necessary to gain proficiency in using ultrasound to guide central catheter insertions in the internal jugular vein (IJ), subclavian vein, and axillary veins, and has anatomical landmarks such as venous and arterial vessels as well as accessory boney structures. Please note: recommended needle size is between 18-21 gauge and no larger than 7Fr. Catheters for these models.

Specifications:

- Manufactured using Blue Phantom patented ultra-durable tissue and is extremely realistic in ultrasound imaging characteristics feels and cannulates like real human tissue
- Realistic and ultra-durable central venous access ultrasound training model excellent for training clinicians in the psychomotor skills associated with ultrasound guided central venous access procedures
- Developed with the goal of helping clinicians bridge the learning gap by allowing them to see the internal anatomical structures with their eyes as well as with ultrasound imaging
- Superb ultrasound imaging characteristics
- Ultra-durable self healing tissue is extremely realistic in ultrasound imaging characteristics and feels like real human tissue
- Self healing tissue will withstand tremendous use and will save you money by dramatically reducing the necessity for purchasing replacement parts
- Contains anatomically correct vascular anatomy of the right upper thorax and neck including the internal jugular vein, brachiocephalic vein, subclavian vein, axillary vein, carotid artery, subclavian artery, and axillary artery, as well as anatomical landmarks including the clavicle, the two heads of the sternocleidomastoid muscle, and the sternal notch
- Accommodates full threading of guide wires and catheters
- Venous and arterial fluids that are removed during central catheter insertions training are easily refilled using quick fill ports
- Three arterial pulse configurations are available; no pump, hand pump, and integrated automated pump
- Positive fluid flow in the vessels provides users with immediate feedback when vessels are accessed
- Simulated blood fluids in the arterial vessels differ from the venous system allowing for users to easily verify successful venous access procedures
- Tissues match the acoustic characteristics of real human tissue so when you use your ultrasound system on our training models, you experience the same quality you expect from imaging patients in a clinical environment
- Performs well using any ultrasound imaging system
- Practice using ultrasound system controls
This model is an ultrasound compatible trainer that includes the lumbar vertebrae, iliac crest, spinous process, ligamentum flavum, the epidural space and dura with a reduction disc thickness for a training variation.

Skill Development:
- Practice lumbar puncture (Spinal Tap)
- Practice the epidural procedure
- Use Ultrasound

Features and Benefits:
- Fluid can be added to tissue
- Durable tissue for multiple procedures
- Position on its side or upright

Product Components:
- Lumbar Puncture/Epidural Trainer body form
- Obese replaceable tissue

Ultrasound Capable Lumbar Puncture/Epidural Trainer
Quantity Available: 1
The pediatric lumbar puncture trainer simulates a two week old infant that can be positioned either lateral or decubitus. The body form is anatomically correct with a partial iliac crest and umbilicus. The replaceable tissue has L3-L5 vertebrae with partial sacrum and the gluteal crest. Each tissue includes a spinal cord filled with simulated CSF and the epidural venous plexus filled with simulated blood.

**Skill Development:**
- Use of lateral decubitus and sitting positions for pediatric lumbar puncture
- Palpate external landmarks
- Proper technique for lumbar puncture (spinal tap) procedure on an infant

**Features:**
- Anatomically correct two week old infant with flexible body form
- Ultrasound compatible
- Visible and palpable landmarks include umbilicus, gluteal fold, iliac crest and vertebrae
- Insertion sites include L3-L4 and L4-L5
- Simulator can be positioned then flexed in the lateral decubitus or sitting position
- Flexible body form adds realism when flexing the infant – simulating moving the interspinous process from a neutral to open position
- Accurate needle placement allows for positive response and collection of simulated cerebrospinal fluid (CSF)
- Simulated epidural venous plexus and bony spinous process provides user with feedback for improper needle placement.
Blue Phantom Lumbar puncture and spinal Epidural training model offers learners the flexibility to practice and teach a wide variety of procedures including lumbar puncture, lumbar epidural, and cervical epidural diagnostic and therapeutic procedures. This lumbar puncture trainer with lumbar epidural is available with a Lumbar puncture block and cervical epidural module.

Specifications: Please note: recommended needle size is between 18-21 gauge and no larger than 7Fr. Catheters for these models.

• Excellent training platform for lumbar puncture, lumbar epidural, and cervical epidural procedures.
• Excellent for blind insertion techniques or using ultrasound for guided lumbar puncture and spinal epidural procedures.
• Superb for needle access as well as the placement of catheters.
• Can be positioned in the upright or lateral decubitus position allowing users to accurately position the model for appropriate training scenarios.
• External landmarks as the iliac crests can be palpated in the model to initially orient the user to the proper access points.
• Palpation of the spinous processes provides additional landmarks.
• The accessory obese spinal insert provides more adipose tissue disallowing the palpation of the spinal processes.
• Each spine tissue module is superb in its realism and contains the appropriate spinal segment, skin tissue, ligamentum flavum, epidural space, dura, subarachnoid membrane and subarachnoid space containing cerebral spinal fluid.
• Utilize for full procedural training including injecting local anesthetics, introduce the needle to the epidural space and/or subarachnoid space, thread catheters, infuse simulated anesthetics, and obtain manometer measurements.
• Realistic tissue response including the pop encountered when traversing the ligamentum flavum, loss of resistance when entering the epidural space, and the cerebral spinal fluid flow when the spinal cistern is accurately accessed.
• The cerebral spinal fluid pressures can be easily increased in order to simulate pathological scenarios during lumbar puncture procedures.
• The optional cervical/upper thoracic spine insert allows users to practice cervical epidural needle and catheter placements.
• Ultrasound can be used for identification of the optimal insertion points, angle of needle, insertion, and determination of the depth of the ligamentum flavum, epidural space and spinal cistern.
• Ultra-durable self-healing tissue is extremely realistic in ultrasound imaging characteristics and feels like real human tissue.
The Arthrocentesis Model is an anatomically correct task trainer that is perfect for performing arthrocentesis. The ultrasound compatible model represents an extended left leg and includes the patella, patella ligament, tibia, fibula, femur, synovial sac, and synovial fluid. Simulated synovial fluid can be removed from a joint cavity using either the medial or lateral approach and insertion sites include suprapatellar and parapatellar.

Skills Development:
- Use medial and lateral approaches
- Use suprapatellar and parapatellar insertion sites
- Learn to milk the suprapatellar pouch
- Palpating anatomic landmarks significant to the procedure

Features and Benefits:
- Ultrasound compatible tissue is durable and refillable
- Left leg model with a base visually showing the tibia and fibula (smaller) bones and replaceable tissue that can be refilled
- Anatomy includes: Patella, Patella ligament, tibia and fibula, femur, synovial sac or membrane, and synovial fluid (which can be left clear, or can be coloured red or yellow)
- Medial and lateral approaches
- Both suprapatellar and parapatellar insertion sites
- Ability to increase or decrease size of effusion with up to 60cc of fluid
- Palpable anatomy and realistic needle response
Cricothyrotomy Simulator
Quantity Available: 2

Designed for learning and practicing the technique necessary to perform an emergency cricothyrotomy. Paramedics, EMT’s, other emergency personnel and anesthesiologists all now have the opportunity to perfect their skills.

- Palpable landmarks include the cricoid and thyroid cartilage
- The prominetia laryngea is prominent on the hyperextended neck
- All landmarks are accurately placed and allow for fast action
Equipment
The Venue 40 compact digital ultrasound machine console provides a sleek, sophisticated solution for point of care ultrasound guidance and diagnosis in an easy to use. A easy to use touch interface, automatic image optimization, on screen keyboard for data entry and free typing annotations, caliper measurements, one touch patient ID, biopsy guidelines and stylus. Data management: JPEG, MPEG4 file formats, cine loop capture, patient data management and archiving via removable SD card or USB flash Drive. B-Steer + Needle recognition helps provide more accurate detail in three key areas – needle, anatomy, and motion. This always on feature harnesses pattern recognition technology that recognizes and accurately reveals the structure of a needle within anatomy, without distortion of the needle.

**Transducers available in the Centre for Simulation-Based Learning:**
- 12L-SC- Linear Array Transducer 8-13MHZ broadband
- 4C-SC Convex Array Transducer 2.5-6.0 MHZ broadband
GE Logiq E Ultrasound Machine
Quantity Available: 1

Transducers available in the Centre for Simulation-Based Learning:
• 9L-RS Wide Band Linear Array Transducer 3.33-10.0MHz
• 4C-RS Wide Band Convex array Transducer 2.0-5.5MHz
• 12L-RS Wide Band Linear array Transducer 5.0-13.0MHz
Bronchoscope
Quantity Available: 1

Bronchoscopy is a technique of visualizing the inside of the airways for diagnostic and therapeutic purposes. The Bronchoscope can be inserted through the airways usually nose or mouth, or occasionally through a tracheostomy.

Diagnostic:
• To view abnormalities of the airway
• To obtain tissue specimens of the lung in a variety of disorders. Specimens may be taken from the inside of the lung by biopsy, bronchoalveolar lavage, or endotrachial brushing
• To evaluate a person who has bleeding in the lungs, possible lung cancer, a chronic cough, sarcoidosis

Therapeutic:
• To remove secretions, blood, or foreign objects lodged in the airway
• Laser resection of tumors or benign tracheal and bronchial strictures
• Stent insertion to palliate extrinsic compression of the tracheobronchial lumen from either malignant or benign disease processes
• Bronchoscopy is also employed in percutaneous tracheostomy
• Tracheal intubation of patients with difficult airways is often performed using a flexible bronchoscope.
The GlideScope Video Laryngoscope (GVL) system incorporates a miniature, autofocusing, high resolution colour camera, an LED Light source, a rechargeable lithium battery, and NTSC video output for remote display or video recording. The GVL system is useful for anterior airways, neonatal intubations, obese patients, and patients with limited neck extension. Additionally it is useful for teaching purposes, verification of endotracheal (ET) position, nasal intubation and ET exchange. The GVL is designed for “1st” pass success, they provide consistently clear view of a patients airway, enabling quick intubation.

GVL may be useful for the teaching the following procedures:

- First use intubations, replacing Direct Laryngoscopy (DL)
- Normal or restricted Oropharyngeal views/visualization and assessment of oropharynx
- Cormack-Lehane grades I-IV laryngeal views
- Trauma airways – excellent when dealing with blood and secretions in the airway
- Airway Management in morbidly obese patients
- Preterm or Neonatal intubations
- Cervical spine immobilization
- Intubation in Intensive Care Unit (ICU) settings
- Supervision and documentation of the laryngoscopy
- Nasal tracheal intubation
- Insertion of transesophageal echo cardiac probes
- Laryngoscopic for difficult airway management
- Insertion of double lumen tubes
- Teaching the anatomy of the airway
Crash Cart with Zoll M Series Defibrillator
Quantity Available: 3
Welch Allyn Spot Vital Signs Devices
Quantity Available: 4

Beko – CARLO Comfort Sling Lift
Quantity Available: 1
LTV 1200 Series MR Ventilator
Quantity Available: 1

- One ventilator for all patients 5 kg and above
- Invasive and Noninvasive modes of ventilation
- A wide range of ventilation therapies to meet demanding patient needs, including Volume Control, Pressure Control, Pressure Support and Spontaneous Breath Types
- Excellent for use in emergency clinical situations as well as transport.
- Provides complete critical care ventilation in a small, lightweight, portable system.