

Transportable Simulation-Based Training Curriculum

Module 2

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Module 2

1.1 Scenario Title: Multi-patient multi-trauma leadership scenario

1.2 Date Created: March 11, 2005

Date Revised: November 22, 2007

1.3 Categories: Teamwork Training; Trauma Resuscitation; Resident Core Curriculum

1.4 Target Audience: Acute Care and General Physicians / Nurses

1.5 Learning and Assessment Objectives

A. Primary

- i. Completion of trauma primary survey with appropriate interventions
 1. Airway management
 2. Ventilatory management, needle / tube thoracostomy
 3. Volume resuscitation
- ii. Completion of trauma secondary survey with appropriate interventions
 1. Evaluation of intraabdominal free fluid
 2. Splinting of femur fracture
 3. Continued monitoring for hemodynamic decompensation

B. Critical actions checklist (see Appendix A)

1.6 Patient Safety Issues Addressed

A. **Teamwork** (selected objectives- (see Appendix B)

- i. Establishment + maintenance of team structure
 1. Establishment of team leader
 2. Assembly of team + assignment of roles
 3. Task delegation with accountability
 4. Cross-monitoring of team members for workload + errors
 5. Engagement of team members in decision-making process
 6. Constructive resolution of conflict
- ii. Communication
 1. Requisition + provision of situation awareness updates
 2. Use of common terminology in all communications
 3. Callouts of critical information
 4. Checkbacks to confirm information transfer
 5. Systematic handoff of responsibilities
 6. Solicitation for feedback
 7. Demonstrate mutual respect in all communications

1.7 Graduate Medical Education Competence Domains Addressed

A. Patient Care

Interviewing
Develop / carry out plans
Performance of routine procedures
Work within a team

Clinical skills addressed

- i. Critical event response
 1. Patient assessment
 2. Trauma resuscitative management
 3. Blunt head trauma management
 4. Unstable long-bone fracture management
 5. Tension pneumothorax management
 6. Vascular access
 7. Supportive hemodynamic intervention

B. Medical Knowledge

Investigatory + Analytic Thinking

C. **Systems-based practice**

- i. Understand interaction of practices with the larger system
 1. Simulation scenarios to stress the inter-disciplinary and inter-service coordination required in the care of multi-system injured patients
- ii. Knowledge of practice + delivery systems
 1. Simulation exercise to experience clinical patient care in the context of simultaneous presentation of multiple high-acuity patients
 2. Simulation exercise to re-create resource shortages (supplies, consultants) occurring during the care of multiple high-acuity patients

1.8 Environment and Equipment (see <<Appendix C>>)

1.9 Personnel (see <<Appendix C>>)

1.10 Scenario Narrative

A. This scenario involves the simultaneous management of two high-acuity blunt multi-trauma patients.

-First patient: 30 yo female unrestrained driver, ejected from vehicle with right femur fracture, right epidural hematoma, GCS of 8.

-Second patient: 42 yo male, restrained driver, hypotensive, tension PTX, abdominal free fluid. Patient's BP initially improves with chest tube thoracostomy, then decreases due to intra-abdominal hemorrhage.

An EMS call can start the scenario as follows: "Multi-vehicle accident. Transporting ejected driver, approximately 30 yo female with head injury, moaning, right leg deformity. Moving right upper and lower extremities only, swollen right thigh. HR 118, BP 116/65, 92% oxygen saturation on 100% face mask. IV access obtained. 3 minutes until arrival. A unit with another patient is right behind us."

Immediately after the first radio call, a second EMS call comes in: "Transporting 42 yo male restrained driver involved in a car accident, heavily damaged vehicle. Patient was extricated with jaws of life, alert, talking, complaining of left sided chest pain, says it hurts to breathe. No obvious extremity deformities. Vital signs currently HR 130, BP 85/50, oxygen saturation 94% on 100% face mask. Normal saline running, 250cc infused."

1-2 minutes should afford the trauma team to assemble, assign roles, arrange equipment / services as needed. The first EMS unit arrives with patient:

- i. *Patient name / DOB / Sex:* Joanne Dobson 2/11/1977 female
- ii. *Mode of arrival:* EMS
- iii. *Accompanied by:* EMS
- iv. *ED medical forms:* see <<Appendix D>>
Prior medical records: n/a
- v. *Chief complaint / History of present illness:*
EMS: "This is Joanne, she was driving on the interstate and lost control. Looks like she wasn't restrained, car didn't have an airbag, she was ejected and found about 15 feet from the car. We got her in a cervical collar and backboard and started an IV and got here as fast as we could. I think she's getting worse- she hadn't been moving her left side before and now she's not responding at all..."
- vi. *Past medical history:* unknown
Past surgical history: unknown
- vii. *Medications:* unknown
Medication allergies: unknown

viii. *Social history:* unknown
Family history: unknown

ix. *Physical examination:*

Primary trauma survey:

1. Vital signs: heart rate: 85 / minute
blood pressure: 135 / 58 mmHg
respirations: 24 / minute
oxygen saturation: 92% on 4 liters O2 nasal cannula
temperature: 98.0 degrees F / 36.7 degrees C
2. Airway: some secretions
3. Breathing: sonorous respirations with rapid labored breathing
4. Circulation: tachycardic, bleeding from scalp wound
5. Disability: withdraws right arm and right leg to pain only;
no response on left
6. Exposure: scalp laceration. right thigh contused.

Secondary trauma survey

1. head: 7 cm jagged bleeding laceration posterior occiput
pupils: right 7 mm, not responsive; left 3mm, sluggish
ears: + blood from right ear canal
face: abrasions
breath: no odor of alcohol.
2. neck: c-collar, no stepoff; no JVD
3. chest: stable, no deformity; breath sounds equal bilat
4. abdomen: soft, no distention
5. pelvis: stable
6. back: no stepoff; mild abrasions
7. rectal: normal tone, no blood
8. genitourinary: no blood in vulva
9. extremities: right thigh with ecchymosis, abrasions, edema
DP 2+ bilat
10. neuro: GCS: 8: Eyes 2; Verbal 2; Motor 4
moans; withdraws to pain on right side only
ABIs, if ordered: 0.9 on R, 1.0 on L

x. *Laboratory values:*

1. all laboratory results: pending (see <<Appendix E>>)

xi. *Imaging Studies:*

1. cervical spine: pending (normal)
 2. chest x-ray: pending (normal)
 3. pelvis: pending (normal)
 4. right femur: pending (mid-shaft fracture)
 5. head CT: pending (right epidural hematoma)
 6. FAST ultrasound: normal
- see <<module 2a -image- >> files

3 minutes after arrival of first patient, a second EMS unit arrives with another patient:

- i. *Patient name / DOB / Sex:* Benjamin Collins 8/25/1964 male
- ii. *Mode of arrival:* EMS
- iii. *Accompanied by:* EMS
- iv. *ED medical forms:* see <<Appendix D>>
Prior medical records: n/a
- v. *Chief complaint / History of present illness:*
EMS: "This is Ben, he was on the freeway and got hit on the driver side by the other patient who just showed up. Prolonged extrication, pt is alert and talking. No obvious extremity deformities. He didn't pass out or anything but has been complaining of pretty bad left chest pain, says it hurts to breathe, thinks he got hit hard by the door when the crash happened. VS in the field: HR 130, BP 85/50, O2 94% on 100% NRB."
- vi. *Past medical history:* none
Past surgical history: appendectomy
- vii. *Medications:* none
Medication allergies: none
- viii. *Social history:* non-smoker, no drinking
Family history: non-contributory
- ix. *Physical examination:*

Primary trauma survey:
 1. Vital signs: heart rate: 130 / minute
blood pressure: 83 / 58 mmHg
respirations: 28 / minute
oxygen saturation: 100% on face mask
temperature: 98.0 degrees F / 36.7 degrees C
 2. Airway: patent
 3. Breathing: labored breathing, diminished on left
 4. Circulation: tachycardic, ? slight JVD
 5. Disability: moving all extremities, alert
 6. Exposure: left chest abrasions
Secondary trauma survey
 1. head: normocephalic / atraumatic. pupils 4mm, reactive;
no hemotympanum
 2. neck: non-tender; ? slight JVD
 3. chest: fast, shallow respirations. left chest wall tenderness and
abrasions with diminished breath sounds
 4. abdomen: soft, diffusely tender

pelvis: stable
extremities: no deformities
back: non-tender
rectal: normal tone, no blood
GCS: 15
neuro: awake, oriented x 3, no focal motor / sensory deficits

x. *Laboratory values:*

1. all laboratory results: pending (see <<Appendix E>>)

xi. *Imaging Studies:*

1. cervical spine: pending (normal)
2. chest x-ray: pending (left tension pneumothorax)
3. pelvis: pending (normal)
4. FAST ultrasound: free fluid in abdomen
see <<module 2b -image- >> files

B. Scenario Flow
 expected interventions in **bold**

<p>time 0</p>	<p>Patient 2a arrives on stretcher.</p> <ul style="list-style-type: none"> □ Primary trauma survey <ul style="list-style-type: none"> - findings as above - proper communication of findings within team □ IV / O2 / monitor <ul style="list-style-type: none"> - vascular access (> 18 gauge) - oxygen administration (non-rebreather mask) - cardiac monitor with continuous pulse oximetry □ Airway interventions: <ul style="list-style-type: none"> - bag valve mask ventilation without hyperventilation - cricoid pressure <p>endotracheal intubation</p> <ul style="list-style-type: none"> - preparation (intubation equipment, suction, respiratory personnel if available) - “pre-oxygenation” / de-nitrogenation attempt - positioning - pre-medication (for presumed intracranial hemorrhage and multi-trauma)- medication checkbacks within team - endotracheal tube placement (within 10 minutes of arrival) - post-intubation management (endotracheal tube securement, sedation, orogastric tube, cxr, etc) <ul style="list-style-type: none"> □ Breathing interventions: <ul style="list-style-type: none"> - ventilator setup / settings □ Circulation interventions: <ul style="list-style-type: none"> - additional vascular access (> 18 gauge) □ Disability interventions: <ul style="list-style-type: none"> - emergent head CT scan - emergent neurosurgical consultation - reverse Trendelenberg positioning (as tolerated) - intravenous mannitol + phenytoin infusion □ Exposure interventions (Secondary trauma survey): <ul style="list-style-type: none"> - findings as above - right femur fracture splint application - proper communication of findings within team □ Disposition: <ul style="list-style-type: none"> - expeditious arrangement of orthopedic, neurosurgical and trauma surgical interventions □ Formal transition of care with report of patient presentation, resuscitative events, and treatment
<p>over the next 5-15 minutes</p>	<p>Without adequate ventilatory and circulatory support as above in the first 10 minutes, patient becomes unresponsive + develops hemodynamic instability complicated by impending uncal herniation. If properly managed, she will temporarily “stabilize” in her ventilated state although with hypertension, bradycardia.</p>

red highlight indicates critical action that drives SimMan scenario program (see <<Appendix F>>)



Note: Modules 2a and 2b are designed to run together, with Module 2a initiating the multi-patient multi-trauma scenario at time 0, and Module 2b starting 3 minutes later. (However, Modules 2a and 2b >can< be run independently as needed.)

3 minutes after Patient 2a arrives Patient 2b arrives on stretcher

red highlight indicates critical action that drives SimMan scenario program (see <<Appendix F>>)

- **Primary trauma survey**
 - findings as above
 - proper communication of findings within team
- **IV / O2 / monitor**
 - vascular access (> 18 gauge)
 - oxygen administration (non-rebreather mask)
 - cardiac monitor with continuous pulse oximetry
- **Airway interventions:**
 - supportive measures
- **Breathing interventions:**
 - **left needle thoracostomy** (within 10 minutes of arrival)
- **Circulation interventions:**
 - additional vascular access (> 18 gauge)
 - volume resuscitation (fluids + blood)
- **Disability interventions:**
 - supportive measures
- **Exposure interventions (Secondary trauma survey):**
 - findings as above
 - proper communication of findings within team
- **Disposition:**
 - expeditious arrangement of thoracic and trauma surgical interventions (in operating room)
- **Formal transition of care with report of patient presentation, resuscitative events, and treatment**

over the next 10-20 minutes

Without appropriate pneumothorax decompression in the first 10 minutes after arrival and circulatory support as above, the patient develops respiratory and circulatory failure due to mechanical disruption of pulmonary and cardiac functions. If the patient is appropriately managed initially, he will become "semi-stable" with a BP of 87/42. Too unstable to undergo CT scanning, he should be expeditiously dispositioned to the operating room for exploratory laparotomy.

- ***Investigative probe: team successfully completes airway management of patient 2a (within 10 minutes of arrival)***
AND
needle decompression of patient 2b (within 10 minutes of arrival)
- **The presentation of these patients within a multi-patient scenario tests the simulation participants' ability to function as a team with the following specific elements (as measured with BARS tool):**
 - efficient formation of effective teams with designated leader(s)
 - task delegation with accountability for task completion
 - within-team monitoring for member workload and error avoidance
 - collaborative decision-making during difficult and sophisticated patient care
 - proper communication of key clinical findings through callouts during patient primary and secondary trauma assessments
 - shared mental model within team(s) for resuscitative plan and progression

C. Scenario Distracters – None

D. Trends Needed – in SimMan case

1.11 Instructor Notes

- A. Tips to keep scenario flowing in lab and via computer:
 - presentation of patients with rapidly progressive deterioration should keep the case moving quickly and with learner stress.

- B. Tips to direct actors: as above
 - Patient 2b can attempt to direct simulation participants' attention to the worsening pneumothorax: "My left chest hurts when I breathe !!! Can I get something for the pain ?! It's getting really bad !!!"

- C. Scenario programming: see <<Appendix F>>

1.12 Debriefing Points

- A. Critical Event Response
 - i. Severe head blunt trauma
 - ii. Severe thoracic blunt trauma
 - iii. Severe abdominal blunt trauma
 - iv. Crisis resource activation
 - v. Airway management
 - vi. Pneumothorax management
 - vii. Vascular access

- B. Teamwork
 - i. Leadership
 - resuscitation leadership establishment
 - role and responsibility assignment
 - ii. Collaboration
 - recognition and integration of team input
 - error recognition and correction
 - iii. Communication
 - callouts of critical information
 - callbacks for confirmation of information
 - iv. Situational awareness
 - continued patient reassessment
 - plan development and execution
 - task prioritization
 - workload assessment
 - team member cross-monitoring
 - requests for assistance
 - v. Professionalism

- C. Practice-based Learning + Improvement
 - i. Understand interaction of practices with the larger system
 - 1. Simulation scenarios to stress the inter-disciplinary and inter-service coordination required in the care of multi-system injured patients
 - ii. Knowledge of practice + delivery systems
 - 1. Simulation exercise to experience clinical patient care in the context of simultaneous presentation of multiple high-acuity patients
 - 2. Simulation exercise to re-create resource shortages (supplies, consultants) occurring during the care of multiple high-acuity patients

1.13 Performance Measurement Instruments

- A. Global Competency Rating Scale (see <<Appendix A>>)
- B. Investigative probe: Team successfully completes airway management of patient 2a (within 10 minutes of arrival)
AND
Needle decompression of patient 2b (within 10 minutes of arrival)
- C. BARS (see <<Appendix B>>)

1.14 Pilot Testing and Revisions

- A. Numbers of participants- 4-6 learners (1-2 leaders)
- B. Performance expectations, anticipated management mistakes
 - failure to successfully manage patient 2a's airway within 10 minutes of arrival
 - failure to successfully needle decompression patient 2b's tension pneumothorax within 10 minutes of arrival
 - failure to function as an effective team in a multi-patient scenario

1.15 Authors and their Affiliations

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 - David Lindquist, MD; RHMSC, Rhode Island Hospital, Providence RI
 - Leo Kobayashi, MD; RIHMSC, Rhode Island Hospital, Providence RI

1.16 Additional Debriefing Materials

Print Materials

Eckstein M, Henderson S. Thoracic Trauma. In: Marx A, Hockberger RS, Walls RM et al. (eds) *Rosen's Emergency Medicine: Concepts and Clinical Practice*. Philadelphia, PA: Mosby Elsevier, 2006, p453-86.

Fakhry SM, Trask AI, Waller MA et al. Management of brain-injured patients by an evidence-based medicine protocol improves outcomes and decreases hospital charges. *J Trauma* 2004; 56(3): 492-9.

Heegaard WG, Biros MH. Head. In: Marx A, Hockberger RS, Walls RM et al. (eds) *Rosen's Emergency Medicine: Concepts and Clinical Practice*. Philadelphia, PA: Mosby Elsevier, 2006, p349-79.

Marx JA, Isenhour J. Abdominal trauma. In: Marx A, Hockberger RS, Walls RM et al. (eds) *Rosen's Emergency Medicine: Concepts and Clinical Practice*. Philadelphia, PA: Mosby Elsevier, 2006, p489-512.

Online Materials

Bowman JG. Pneumothorax, tension and traumatic. In eMedicine Specialties > Emergency Medicine > Trauma + Orthopedics. Salomone JA, Talavera F, Legome E et al. (eds), eMedicine Web site. Updated Feb 5, 2009. Available at: <http://www.emedicine.com/emerg/topic470.htm> Accessed July 8, 2009.

Cripeen DW, Shepard S. Head trauma. In eMedicine Specialties > Trauma > Head and Neck Trauma. Dulebohn SC, Talavera F, Grosso MA et al. (eds), eMedicine Web site. Updated Aug 6, 2008. Available at: <http://www.emedicine.com/med/topic2820.htm> Accessed July 8, 2009.

Tolias C, Sgouros S. Initial evaluation and management of CNS injury. In eMedicine Specialties > Trauma > Trauma Management. Dulebohn SC, Talavera F, Sheridan RL et al. (eds), eMedicine Web site. Updated June 13, 2008. Available at: <http://www.emedicine.com/med/topic3216.htm> Accessed July 8, 2009.

Udeani J, Steinberg SR. Abdominal trauma, blunt. In eMedicine Specialties > Trauma > Abdominal Trauma. Dunn E, Talavera F, Sheridan RL et al. (eds), eMedicine Web site. Updated Aug 22, 2008. Available at: <http://www.emedicine.com/med/topic2804.htm> Accessed July 8, 2009.

Appendix A Module 2 Global Competency Rating Scale v1.0

Rating Scale						
Very Poor	Poor	Marginal	Acceptable	Good	Very Good	Superior
1	2	3	4	5	6	7

No.	Competency Dimension and Descriptors	Time						Score
		start	2min	3min	5min	10min	20min	
1	APPROPRIATE ACTION PERFORMANCE							
	PATIENT 2A							
	<input type="checkbox"/> Primary trauma survey <ul style="list-style-type: none"> - findings as above - proper communication of findings within team 							
	<input type="checkbox"/> IV / O2 / monitor <ul style="list-style-type: none"> - vascular access (> 18 gauge) - oxygen administration (nonrebreather mask) - cardiac monitor with continuous pulse oximetry 							
	<input type="checkbox"/> Airway interventions: <ul style="list-style-type: none"> - bag valve mask ventilation without hyperventilation - cricoid pressure endotracheal intubation <ul style="list-style-type: none"> - preparation (intubation equipment, suction, respiratory personnel if available) - "pre-oxygenation" / de-nitrogenation attempt - positioning - pre-medication (for presumed intracranial hemorrhage and multi-trauma)- medication checkbacks within team - placement of endotracheal tube (within 10 minutes of arrival) - post-intubation management (endotracheal tube securement, sedation, orogastric tube, cxr, etc) 							<i>Investigative probe: team successfully completes airway management of patient 2a (within 10 minutes of arrival)</i>

<input type="checkbox"/> Breathing interventions: - ventilator setup / settings							
<input type="checkbox"/> Circulation interventions: - additional vascular access (> 18 gauge)							
<input type="checkbox"/> Disability interventions: - emergent head CT scan - emergent neurosurgical consultation - reverse Trendelenberg positioning (as tolerated) - intravenous mannitol + phenytoin infusion							
<input type="checkbox"/> Exposure interventions (Secondary trauma survey): - findings as above - right femur fracture splint application - proper communication of findings within team							
<input type="checkbox"/> Disposition: - expeditious arrangement of orthopedic, neurosurgical and trauma surgical interventions							
<input type="checkbox"/> Formal transition of care with report of patient presentation, resuscitative events, and treatment							

Competency Dimension and Descriptors	Time						Score
	arrival	2min	3min	5min	10min	20min	
PATIENT 2B							
<input type="checkbox"/> Primary trauma survey - findings as above - proper communication of findings within team							
<input type="checkbox"/> IV / O2 / monitor - vascular access (> 18 gauge) - oxygen administration (nonrebreather mask) - cardiac monitor with continuous pulse oximetry							
<input type="checkbox"/> Breathing interventions: - left needle thoracentesis (within 10 minutes of arrival)					<i>needle decompression of patient 2b (within 10 minutes of arrival)</i>		
<input type="checkbox"/> Circulation interventions: - additional vascular access (> 18 gauge) - volume resuscitation (fluids + blood)							
<input type="checkbox"/> Disability interventions: - supportive measures							
<input type="checkbox"/> Exposure interventions (Secondary trauma survey): - findings as above - proper communication of findings within team							
<input type="checkbox"/> Disposition: - expeditious arrangement of thoracic and trauma surgical interventions (in operating room)							
<input type="checkbox"/> Formal transition of care with report of patient presentation, resuscitative events, and treatment							

2	HISTORY / PHYSICAL EXAM <input type="checkbox"/> Patient report and acceptance	Acquisition and acknowledgement of all vital signs Performance of history and exam targeted to situation and patient presentation	
3	DISEASE PROCESS - blunt head trauma - blunt thoracic trauma - blunt abdominal trauma	Rapid recognition of disease process with appropriate management actions	
4	DIFFERENTIAL DIAGNOSIS - n/a	Proper consideration of alternate diagnoses and precipitants Avoidance of premature diagnostic closure	
5	PRESENTATION SKILLS / INTERPERSONAL RELATIONS <input type="checkbox"/> <i>Transition of care:</i> formal report of patient presentation, resuscitative events, and treatment	Succinct and complete verbal presentation to accepting personnel Respectful interaction with patient and staff Safe medication ordering	
6	SCENARIO SYNTHESIS / COGNITION	Recognition of critical patient state and need for emergent treatment Awareness of unresolved issues	
7	EXPERTISE / LEADERSHIP	Manages scenario and leads team members with fluency, automaticity, simultaneity, rapidity and knowledge base	
X	INVESTIGATIVE PROBE: <input type="checkbox"/> team successfully completes airway management of patient 2a (within 10 minutes of arrival) AND <input type="checkbox"/> needle decompression of patient 2b (within 10 minutes of arrival)		

Appendix B Module 2 BARS Teamwork Behavioral Ratings

Note: Team Dimensions Rating Form not included due to copyright issues.

Appendix C Module 2 Scenario Setup Checklist

key: solid text - minimum requirements
light text - optional

A. Environment Community Hospital Emergency Department (ED)

- bed: ED bed x 2
 - actor roles: ED nurse x 2-4
EMS provider x 1-2
Respiratory technician
Radiology technician
 - personnel: Manikin operator x 2 / Audiovisual technician x 1
Facilitator x 2
Actor x 1-2
 - patient medical forms (included in package)
-

B. Advanced medical simulation manikin x 2

- | | <u>patient 2a</u> | <u>patient 2b</u> |
|---|---|---|
| <input type="checkbox"/> gender: | female | male |
| <input type="checkbox"/> clothing: | regular women's clothing | regular men's clothing |
| <input type="checkbox"/> moulage / props: | scalp lac + blood
cervical collar / backboard
right thigh contusion
20g IV right arm | cervical collar / backboard
left chest contusion
20g IV right arm |
| <input type="checkbox"/> programming: | Laerdal SimMan scenarios (included in package)
METI manikin systems will require on-site programming | |
-

C. Medical equipment

- patient assessment equipment
 - blood pressure cuff
 - cardiac monitor / defibrillator (incl. electrodes, defib gel, recorder paper)
 - EKG machine
 - pulse oximeter
 - stethoscope
- standard resuscitation equipment ("code cart" / "crash cart")
 - protective equipment (gloves, goggles, gowns)
 - CPR board
 - basic airway management devices
 - oropharyngeal airway (OPA; assorted)
 - nasopharyngeal airway (NPA; assorted)
 - bag-valve mask (adult)

DE-IDENTIFY IMAGES AND PROPS TO
COMPLY WITH HIPAA REGULATIONS!!!

- intubation equipment
 - laryngoscope handles / blades / batteries (assorted)
 - water-based lubricant
 - endotracheal tubes (assorted)
- intravenous access equipment
 - tourniquets
 - gauze pads
 - intravenous catheters (assorted)
 - intravenous fluid tubing drip sets (micro + macro)
 - intravenous fluid bags (normal saline)
 - phlebotomy supplies
 - sterile saline for flushes
 - stopcocks and connectors
- dressings (assorted)
- naso-/oro-gastric tubes (assorted)
- nebulizer
- oxygen source
- oxygen delivery devices (face masks, nasal cannulas)
- syringes (catheter tip; assorted)
- syringes (lavage tip)
- tape
- urinary catheters (assorted)
- ventilator
- wall suction and suction tubing (Yankower and tracheal suction)

-trauma resuscitation equipment

- backboard (2)
- blood products (simulated bags)
- cervical collars (assorted)
- pleural drainage kit with water seal
- pressure infusion / fluid warming devices
- femur (traction) splint setup
- tube thoracostomy (assorted)
- tube thoracostomy insertion kit

-medications

- general medications
 - adenosine
 - amiodarone
 - atropine
 - dextrose (D50)
 - dopamine infusion
 - epinephrine
 - vasopressin
- rapid sequence induction / intubation medications (institution-specific)
 - e.g. etomidate / midazolam / ketamine / propofol
 - e.g. succinylcholine / vecuronium

**DE-IDENTIFY IMAGES AND PROPS TO
COMPLY WITH HIPAA REGULATIONS!!!**

D. Radiographs, electrocardiograms, and other patient data
(included in package)

patient 2a

- cervical spine (normal)
- chest x-ray (normal)
- pelvis (normal)
- right femur (mid-shaft fracture)
- head CT (right epidural hematoma)
- FAST ultrasound (normal)
- laboratory values

patient 2b

- cervical spine (normal)
- chest x-ray (left tension pneumothorax)
- pelvis (normal)
- FAST ultrasound (free fluid in abdomen)
- laboratory values

Appendix D Module 2a Patient Chartwork



EMERGENCY DEPARTMENT RECORD

CENSUS NO.

PATIENT NAME: DOBSON, Joanne
 DATE OF BIRTH: 2 / 11 / 1977
 MEDICAL RECORD NO.: 0922183

TIME IN:
 TIME OUT:
 ADMIT:

Triage Assessment: multi-trauma SENT IN BY PVT MD? Y / N

TIME, PLACE OF ACCIDENT OR ILLNESS				MODE OF ARRIVAL ambulance			BROUGHT BY county EMS		
PULSE OX	TEMP	PULSE	RESP	BP /	INITIAL	TIME	LAST DT DATE	ALLERGIES:	
92% (2 L)		98.0 F	85	24		135	/ 85	SB	
PAIN SCORE unknown									
ejected from car. head injury. right leg deformity.									
Medications: unknown									
BARRIERS TO COMMUNICATION: SIGHT HEARING LANGUAGE (IF NOT ENGLISH) INTERPRETER									

LMP

CAD	IDDM	ASTHMA	GERD / ULCER	PSYCH	OTHER _____
HTN	NIDDM	COPD	SEIZURES	MIGRAINE	_____
MI	CHF	BACK PAIN	CANCER	SMOKER	PPD: _____
CABG _____	STENT _____				
FSBS _____ AT _____	BREATHALYZE _____ AT _____			EKG AT _____	

REGISTRATION CLERK NAME: _____ TRIAGE RN SIGNATURE: SB

TIME _____

TIME _____ CRITICAL CARE TIME: _____

Diagnosis: _____

ADMIT TO:	PHYSICIAN 1	PHYSICIAN 2
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EMERGENCY DEPARTMENT FLOW SHEET

CENSUS NO.

PATIENT NAME: DOBSON, Joanne
DATE OF BIRTH: 2 / 11 / 1977
MEDICAL RECORD NO.: 0922183

SHEET ____ OF ____

Vital Signs:

TIME	TEMP	PULSE	RESP	BP	PULSE OX	INITIALS

IVS:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS

Nursing Assessment:

TIME	

NURSE 1	NURSE 2	NURSE 3
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EMERGENCY DEPARTMENT ORDER SHEET

CENSUS NO. _____

PATIENT NAME: **DOBSON, Joanne**
 DATE OF BIRTH: **2 / 11 / 1977**
 MEDICAL RECORD NO.: **0922183**

SHEET ____ OF ____

Tests:

CBC	CHEM7 / BMP	CULTURES:	TOXICOLOGY SCREEN
URINALYSIS	UCG		SERUM
URINE DIP	LACTATE	BLOOD ____	URINE
AMYLASE	LIPASE	URINE	ALCOHOLS
LFT	ABG	WOUND	
PT / PTT	ESR	SPUTUM	TYPE + SCREEN / TYPE + CROSS _____
CPK / TROPONIN	BNP	THROAT	EKG
		OTHER _____	

Imaging Tests:

XRAY: C-SPINE CHEST PELVIS TLS EXTREMITY _____
 CT SCAN _____
 ULTRASOUND _____
 MRI _____

IVs:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS

Consultations:

SERVICE	TIME PAGED	SERVICE	TIME PAGED

Module 2b Patient Chartwork



EMERGENCY DEPARTMENT RECORD

CENSUS NO.

PATIENT NAME: COLLINS, Benjamin
 DATE OF BIRTH: 8 / 25 / 1964
 MEDICAL RECORD NO.: 0922185

TIME IN:
 TIME OUT:
 ADMIT:

Triage Assessment: multi-trauma SENT IN BY PVT MD? Y / N

TIME, PLACE OF ACCIDENT OR ILLNESS				MODE OF ARRIVAL <u>ambulance</u>			BROUGHT BY <u>county EMS</u>		
PULSE OX <u>94% (on 100%)</u>	TEMP <u>98 F</u>	PULSE <u>85</u>	RESP <u>130</u>	BP <u>28</u>	INITIAL	TIME <u>85</u>	LAST DT DATE <u>50</u>	ALLERGIES: <u>SB</u>	

PAIN SCORE none
motor vehicle crash. complaining of left chest pain.

Medications: none

BARRIERS TO COMMUNICATION: SIGHT HEARING LANGUAGE (IF NOT ENGLISH) INTERPRETER

LMP

CAD	IDDM	ASTHMA	GERD / ULCER	PSYCH	OTHER _____
HTN	NIDDM	COPD	SEIZURES	MIGRAINE	_____
MI	CHF	BACK PAIN	CANCER	SMOKER	PPD: _____
CABG _____	STENT _____				
FSBS _____ AT _____	BREATHALYZE _____ AT _____		EKG AT _____		

REGISTRATION CI FRK NAME: _____ TRIAGE RN SIGNATURE: SB

TIME _____

TIME _____ CRITICAL CARE TIME: _____

Diagnosis: _____

ADMIT TO:	PHYSICIAN 1	PHYSICIAN 2
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EMERGENCY DEPARTMENT FLOW SHEET

CENSUS NO.

PATIENT NAME: COLLINS, Benjamin
DATE OF BIRTH: 8 / 25 / 1964
MEDICAL RECORD NO.: 0922185

SHEET ____ OF ____

Vital Signs:

TIME	TEMP	PULSE	RESP	BP	PULSE OX	INITIALS

IVS:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS

Nursing Assessment:

TIME	

NURSE 1	NURSE 2	NURSE 3
---------	---------	---------

EMERGENCY DEPARTMENT ORDER SHEET

CENSUS NO. _____

PATIENT NAME: COLLINS, Benjamin
DATE OF BIRTH: 8 / 25 / 1964
MEDICAL RECORD NO.: 0922185

SHEET ____ OF ____

Tests:

CBC	CHEM7 / BMP	CULTURES:	TOXICOLOGY SCREEN
URINALYSIS	UCG	BLOOD ____	SERUM
URINE DIP	LACTATE	URINE	URINE
AMYLASE	LIPASE	WOUND	ALCOHOLS
LFT	ABG	SPUTUM	
PT / PTT	ESR	THROAT	TYPE + SCREEN / TYPE + CROSS _____
CPK / TROPONIN	BNP	OTHER _____	EKG

Imaging Tests:

XRAY: C-SPINE CHEST PELVIS TLS EXTREMITY _____
CT SCAN _____
ULTRASOUND _____
MRI _____

IVs:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS

Consultations:

SERVICE	TIME PAGED	SERVICE	TIME PAGED

Appendix E Module 2a Patient Laboratory Values

Module 2a Complete Blood Count

White Blood Cell (3.5-11.0) K/uL: 13.5

Hemoglobin (11.0-15.0) G/DL: 12.8

Hematocrit (32.0-45.0) %: 38.4

Platelet (150-400) K/uL: 166

Module 2a Chemistry Panel

Na+ (135-145) MEQ/L: 134

K+ (3.6-5.1) MEQ/L: 4.7

Cl- (98-110) MEQ/L: 106

CO2 (20-30) MEQ/L: 18 L

BUN (6-24) MG/DL: 18

Creat (0.4-1.3) MG/DL: 0.9

Glu (67-109) MG/DL: 98

Module 2a Urinalysis

Urinalysis: normal

Urine pregnancy test: negative

Module 2b Patient Laboratory Values

Module 2b Complete Blood Count

White Blood Cell (3.5-11.0) K/uL: 15.2

Hemoglobin (11.0-15.0) G/DL: 10.2

Hematocrit (32.0-45.0) %: 31.1

Platelet (150-400) K/uL: 192

Module 2b Chemistry Panel

Na+ (135-145) MEQ/L: 136

K+ (3.6-5.1) MEQ/L: 3.3 L

Cl- (98-110) MEQ/L: 102

CO2 (20-30) MEQ/L: 17 L

BUN (6-24) MG/DL: 15

Creat (0.4-1.3) MG/DL: 1.2

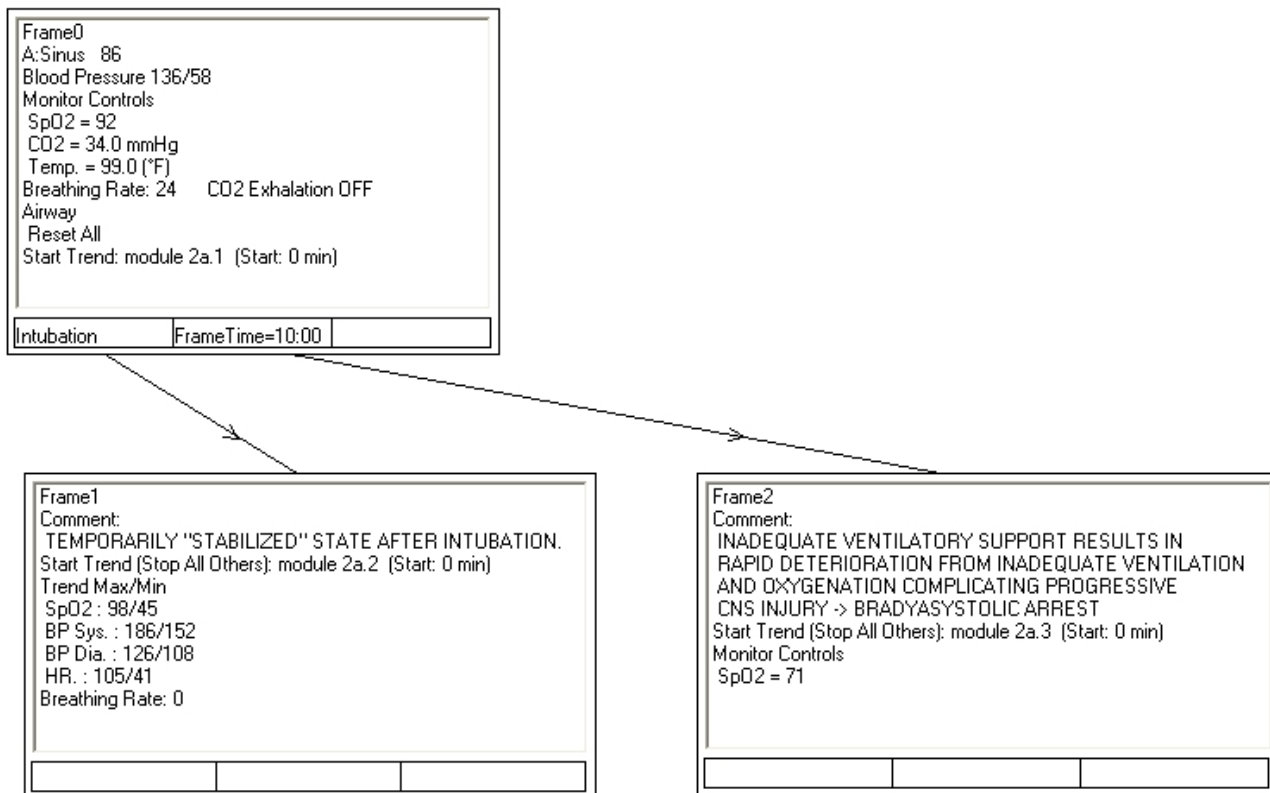
Glu (67-109) MG/DL: 92

Module 2b Urinalysis

Urinalysis: normal

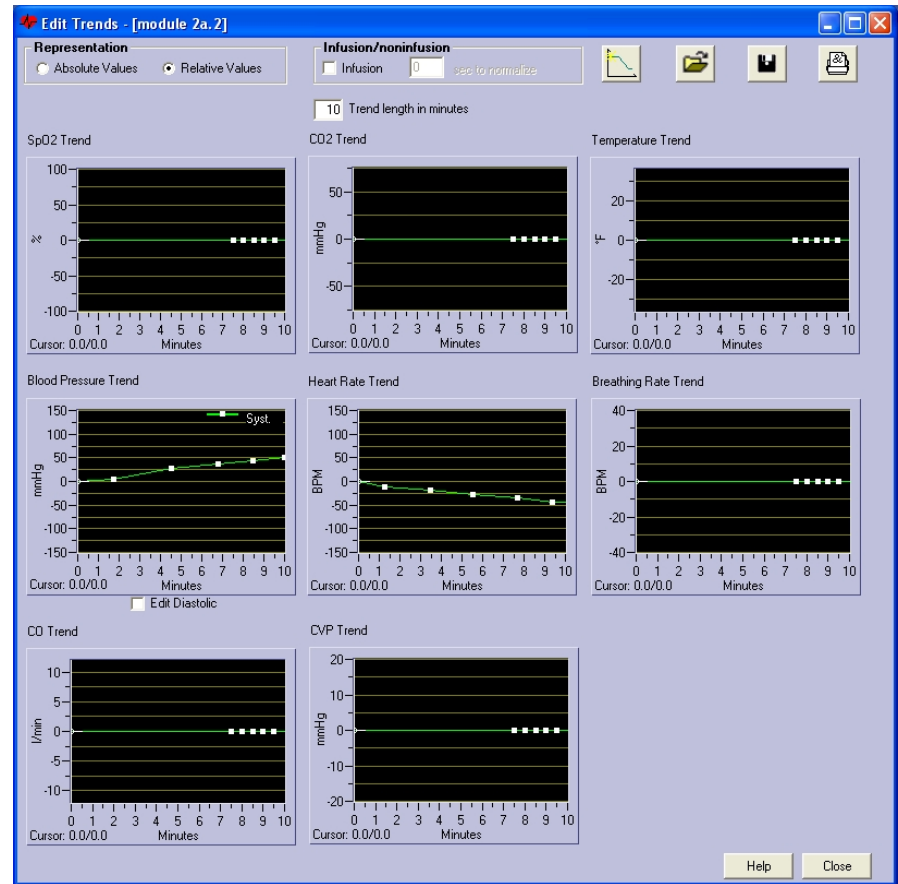
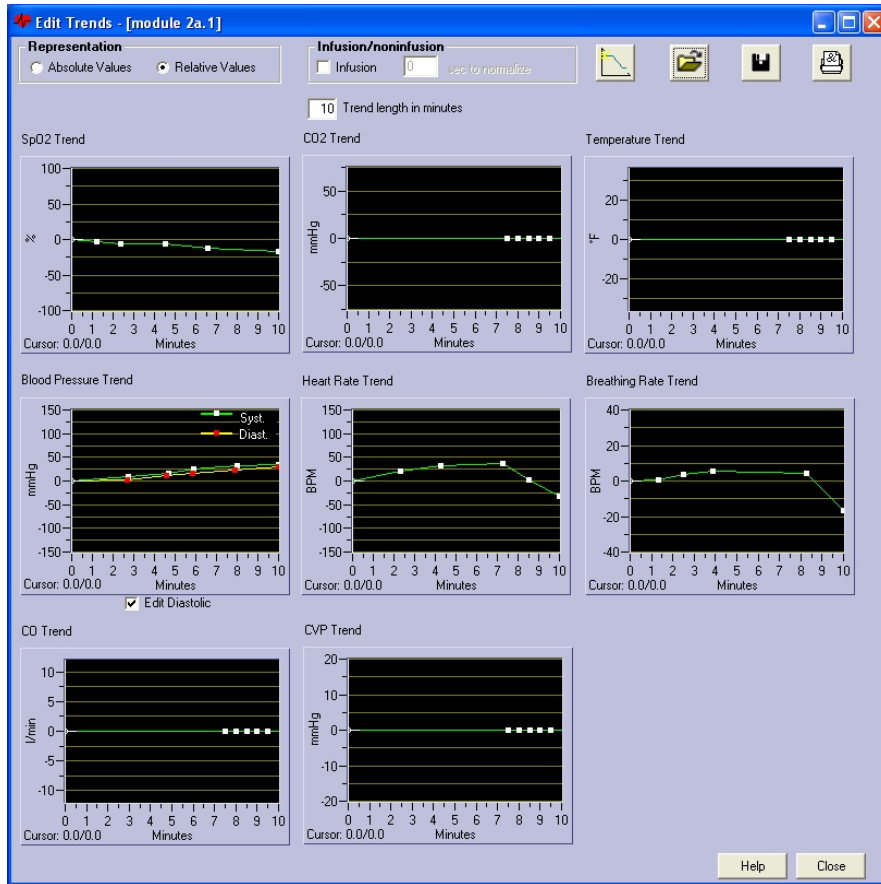
Appendix F Module 2a SimMan v2.3 Scenario Programming

Note: Modules 2a and 2b are designed to run together, with Module 2a initiating the multi-patient multi-trauma scenario at time 0, and Module 2b starting 3 minutes later. (However, Modules 2a and 2b >can< be run independently as needed.)



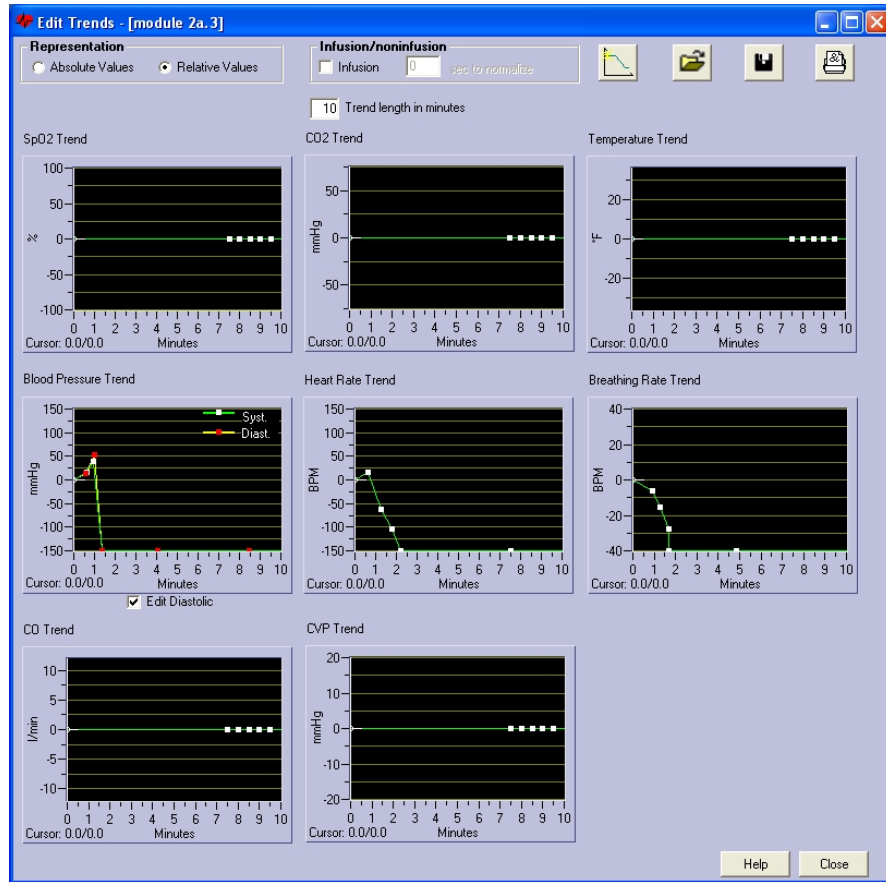
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Module 2a SimMan v2.3 Scenario Trends



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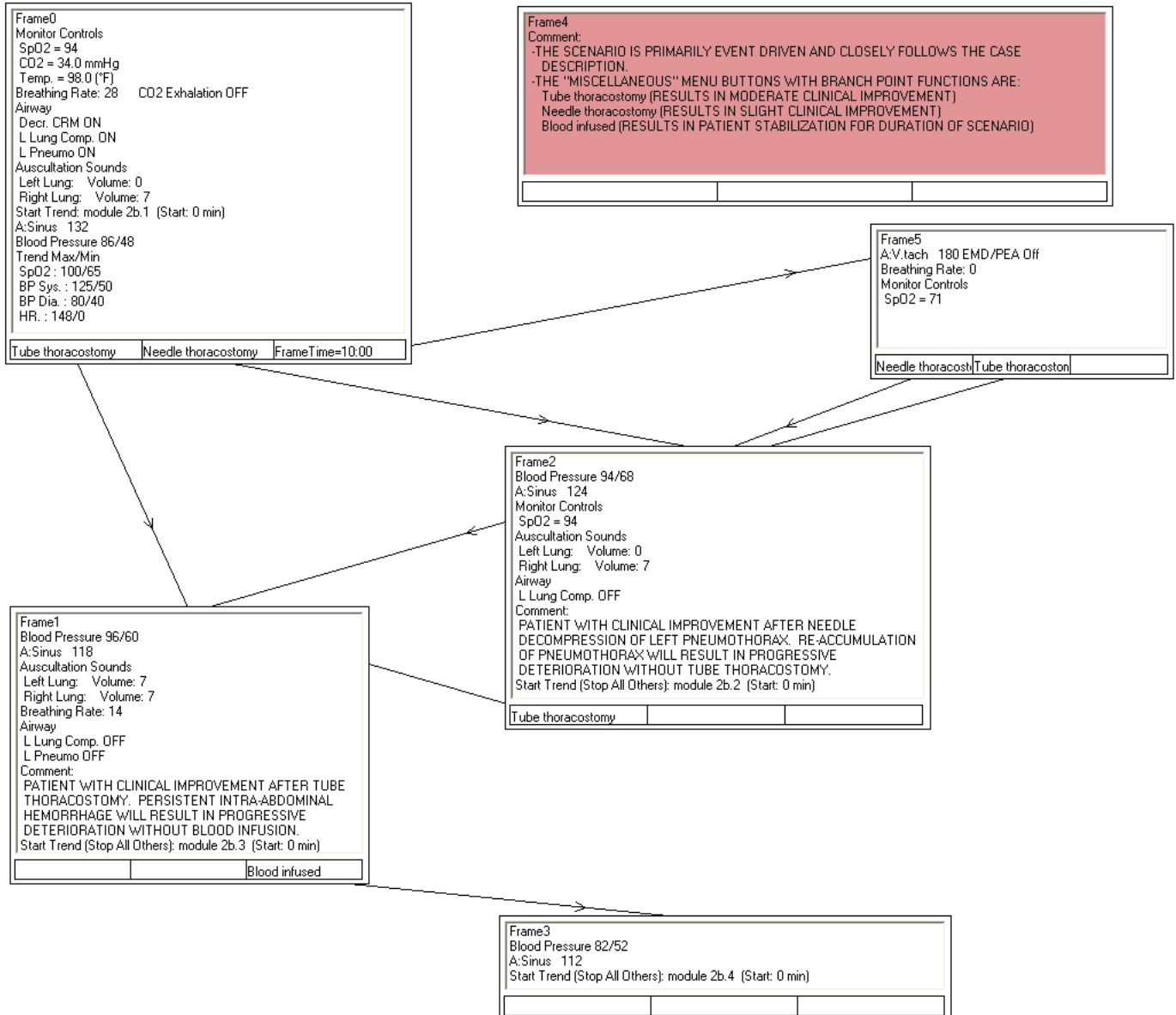
Module 2a SimMan v2.3 Scenario Trends



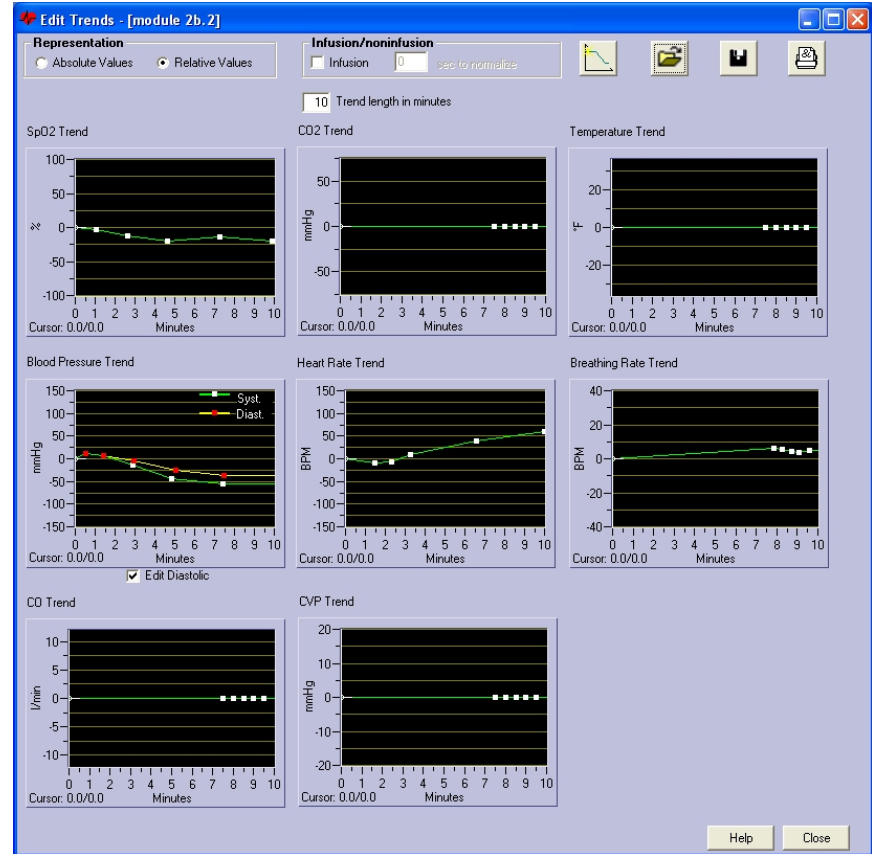
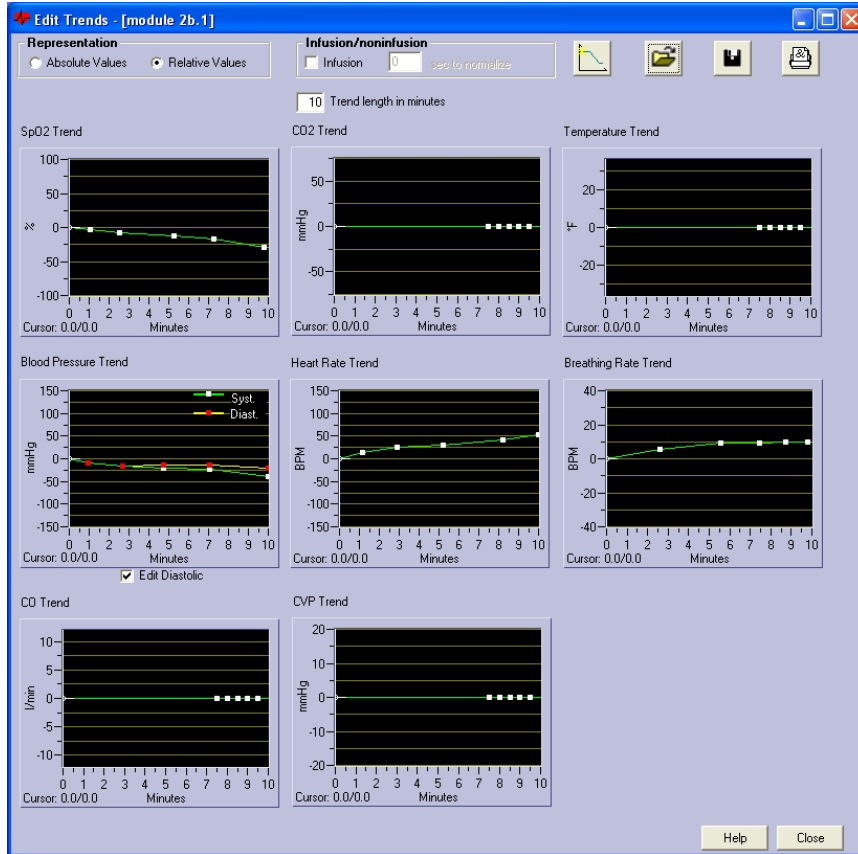
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Module 2b SimMan v2.3 Scenario Programming

Note: Modules 2a and 2b are designed to run together, with Module 2a initiating the multi-patient multi-trauma scenario at time 0, and Module 2b starting 3 minutes later. (However, Modules 2a and 2b >can< be run independently as needed.)



Module 2b SimMan v2.3 Scenario Trends



Module 2b SimMan v2.3 Scenario Trends

