

Transportable Simulation-Based Training Curriculum

Module 1

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Module 1

1.1 Scenario Title: Difficult airway management in patient with status asthmaticus

1.2 Date Created: December 23, 2004

Date Revised: November 22, 2007

1.3 Categories: Airway; Nursing; Teamwork; Resident Core Curriculum

1.4 Target Audience: Acute Care and General Physicians / Nurses

1.5 Learning and Assessment Objectives

A. Primary

- i. Recognition and management of respiratory distress
- ii. Recognition and management of status asthmaticus and complications
- iii. Recognition and management of difficult airway
- iv. Crisis resource activation
- v. Teamwork training
- vi. *Recognition and management of tension pneumothorax (optional)*

B. Critical actions checklist (see Appendix A)

1.6 Patient Safety Issues Addressed

A. **Cognitive errors**

(fixation bias, established preconceptions)

- i. Overcoming limiting cognitive framework (assessment of available airway options other than oral endotracheal intubation)
- ii. Troubleshooting behaviors (evaluation and re-positioning of airway)
- iii. Meta-cognitive situational insight (request for expert assistance)

B. Teamwork (see Appendix B)

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. Cardiopulmonary resuscitative management
3. Status asthmaticus management
4. Difficult airway management
5. Vascular access
6. Supportive hemodynamic intervention
7. *Tension pneumothorax management (optional)*

B. Medical Knowledge

Investigatory + Analytic Thinking

C. **Practice-Based Learning + Improvement**

i. Analyze own practice for needed improvement in difficult airway management skills

1. Simulation exercise to acquire and develop alternative airway management skills
2. Simulation exercise to experience and manage complicated and difficult asthma patient presentations

ii. Use of information technology

1. Web video + online references to learn difficult airway skills
2. Simulation environment with audiovisual recording to review clinical management skills

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

1.9 Personnel (see <<Appendix C>>)

1.10 Scenario Narrative

A. This scenario involves management of status asthmaticus and complicated airway in a patient with prior admissions and mechanical ventilation for asthma management. The patient presents after stabilization in the Emergency Department (ED) to a community hospital Intensive Care Unit (ICU) setting, where her condition rapidly deteriorates and she becomes hypoxic and apneic. Ventilatory efforts without endotracheal intubation will be ineffectual. Subglottic stenosis from prior prolonged intubation complicates routine intubation, results in suboptimal ventilation, and will require temporizing bag valve mask (BVM) ventilation or laryngeal mask airway (LMA). Progressive deterioration after BVM or LMA deployment will necessitate definitive airway management with a small-diameter (6.0) endotracheal tube. Appropriate airway management will result in stabilization of patient. *Optional: High airway pressures can cause rapid development of left tension pneumothorax with a requirement for thoracostomy.*

- i. *Patient name / DOB / Sex:* Kathy Tomlinson 5/8/1977 female
- ii. *Mode of arrival:* ED to ICU transfer
- iii. *Accompanied by:* ED nurse
- iv. *ED medical forms:* see <<Appendix D>>
Prior medical records: n/a
- v. *Chief complaint / History of present illness:*
ED nurse: "This is Kathy, she's a young woman being admitted for asthma. Her medical history is significant only for asthma, with two prior intubations about four years ago. She began having difficulty breathing last night, used her home nebulizer 10 times throughout the morning today with no relief. She also took about 20mg of leftover prednisone earlier today. In the ED she was a little dyspneic and received three continuous nebulized albuterol treatments with good response. She has a 20gauge IV in her right antecubital vein and received about one liter of normal saline."

"Since she's been intubated before, she was admitted to the ICU for close monitoring. She was doing a lot better, but started coughing and getting worse in transit on the elevator from the ED. Now she can only speak in one word answers."
- vi. *Past medical history:* asthma
Past surgical history: none
- vii. *Medications:* albuterol (self-started a prednisone taper today)
Medication allergies: none known
- viii. *Social history:* occasional smoker. no alcohol or drugs. single.
Family history: non-contributory

- ix. *Physical examination:* anxious, sitting upright; one word answers only
1. Vital signs: heart rate: 140 / minute
blood pressure: 102 / 68 mmHg
respirations: 36 / minute
oxygen saturation: 93% on 4 liters O2 nasal cannula
temperature: 100.0 degrees F / 37.8 degrees C
 2. Head / Neck: normal, no stridor, able to swallow
 3. Chest: diffuse wheezing with reduced air movement
 4. Heart: tachycardic, no murmurs or heave
 5. Abdomen: normal
 6. Genitourinary: normal
 7. Extremities: 20gauge right antecubital intravenous catheter
 8. Neurologic: non-focal
- x. *Laboratory + EKG values:*
1. all laboratory results: pending (see <<Appendix E>>)
 2. all EKG results: pending
see <<module 1 ekg 1 (sinus tachycardia)>> file
see <<module 1 ekg 2 (ventricular tachycardia)>> file
- xi. *Imaging Studies:*
1. chest x-ray: pending (hyperinflated lungs)
see <<module 1 -image- >> files

B. Scenario Flow

expected interventions in **bold**

time 0 Patient arrives on stretcher.

- **Patient assessment reveals patient sitting upright in moderate distress, speaking in one word answers, ill-appearing with audible wheezing; if asked:**
 - admitted to hospital / ICU: yes
 - intubated before: yes
 - difficult intubation before: no
 - meds: “inhaler”
 - taking steroids: “today”
 - allergies: no
 - baseline peak flow: don't know
 - smoke: yes
- **Oxygen administration (non-rebreather mask)**
- **Cardiac monitor with continuous pulse oximetry**
- **Additional vascular access (> 18 gauge)**
- **Inhaled beta-agonist administration (nebulizer)**
- **Parenteral adrenergic medication administration (SQ epinephrine)**
- **Steroid medication administration (IV)**
- **Preparation for airway management**
 - setup endotracheal intubation equipment
 - check suction
 - call for respiratory personnel if available
 - de-nitrogenation / “pre-oxygenation” attempt

5 minutes Patient without much improvement despite treatment, becoming confused. Non-invasive ventilation or heli-ox have no effect.

- **Patient assessment reveals confusion and agitation, increasing tachycardia.**

Vital signs: heart rate: 145 / minute

blood pressure: 105 / 70 mmHg

respirations: 38 / minute

oxygen saturation: 82% on 100% O2

temperature: 99.6 degrees F / 37.6 degrees C

- **Call for assistance (e.g. anesthesia / critical care attending)**

- **Airway assessment:**

Attempts by participants to evaluate for objective findings suggestive of a difficult airway will be unrevealing, e.g. LEMON assessment will be normal-

Look for facial / neck findings: none

Evaluate 3-3-2 rule: normal

Mallampati: class I

Obstruction: none

Neck mobility: normal

Beard: none

Obesity: none

No teeth: intact dentition

Elderly: no

Snores: no

5-15 minutes Patient becomes unresponsive, bradypneic and hypoxic.

- **Standard airway management:**
The participants should be guided towards an emergent intubation attempt with direct laryngoscopy and standard endotracheal intubation equipment through delays in availability of assistance. **REGARDLESS OF TECHNIQUE, STANDARD INTUBATION ATTEMPTS ARE TO RESULT IN FAILURE DUE TO OCCULT SUBGLOTTIC STENOSIS.** This may be verbalized to participants as the endotracheal tube going through the vocal cords but not being able to be advanced. (Use of the manikin's laryngospasm feature and forced intubation attempts may result in damage to the manikin.) The patient should transiently be able to be bag valve mask (BVM) or laryngeal mask airway (LMA) ventilated to about 90% SaO₂. However, the BVM or LMA efforts will gradually become less effective over about 5 minutes and result in deteriorating SaO₂ values.
- Considers major differential diagnosis elements of inability to successfully intubate through vocal cords (foreign body, subglottic stenosis, intrinsic or extrinsic compression of trachea)
- **Advanced airway management:**
Due to the complexity and time involved in any discussion of a complicated airway, this simulation scenario will be limited to bag valve mask ventilation, LMA, and small-size endotracheal tube intubation. Additionally, participants should be spared the details and nuances of rapid sequence intubation (RSI) by rapid deterioration of the patient into unresponsiveness (ketamine would still be a viable intervention). Simulation facilitators are encouraged to incorporate institutional or local protocols as appropriate.

Note: as the scenario description uses just one approach to managing a difficult airway in a critical patient, the emphasis should be placed on the decision-making and cognitive debiasing regarding methods of airway management. The consideration of alternative airway devices, rather than the procedure, should be the focus. As most participants are unlikely to have encountered this particular situation, it may be reasonable to offer assistance in deploying the devices, as long as the steps leading up to that point are completed, i.e.:

- initial temporizing ventilation, either with:
 - a.) bag valve mask (BVM), ideally with nasopharyngeal (NPAs) and oropharyngeal airway (OPA)
 - b.) laryngeal mask airway (LMA)
- repeated calls for assistance
- consideration of alternative / rescue airway devices, such as fiberoptic bronchoscopic intubation, retrograde intubation (inadequate), small endotracheal tube (6.0), surgical tracheostomy

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

- ***Investigative probe: alternative ventilatory strategies + rescue airway devices are considered***
- **Adequate airway management** for this case requires the insertion of a small endotracheal tube (6.0)
- Adequate status asthmaticus management requires the following:
 - inhaled beta-agonist (nebulizer or in-line)
 - inhaled anticholinergic (nebulizer or in-line)
 - steroids (IV)
 - magnesium sulfate (IV)
 - intravenous fluid bolus (2 liter bolus)
 - chest xray
 - ventilator management
 - arterial blood gas
- [Possible supplemental therapies:]
- [- beta agonist / methylxanthine infusion]

15-20 minutes If proper airway management actions have not been performed, patient develops progressive hypoxia, acidosis, hypotension, and ventricular irritability resulting ultimately in unstable ventricular tachycardia (VT) and cardiac arrest. Assistance in the form of a senior physician should arrive at this point to manage the airway and resuscitate the patient.

- **Patient assessment reveals unconscious patient**

Vital signs: heart rate: VT at 140 / minute

blood pressure: 52 / 35 mmHg

respirations: 6 / minute

oxygen saturation: 89% with BVM

temperature: 99.6 degrees F / 37.6 degrees C

- **Formal transition of care with report of patient presentation, resuscitative events, and treatment**

If proper airway management and status asthmaticus treatment have been instituted, the patient will be successfully intubated at this time, if not already so, with a 6-0 endotracheal tube by the senior physician. Although not the focus of the case, ventilatory difficulties due to lower airway obstruction from asthma pathology should persist in the form of high peak airway pressures and suboptimal measures of oxygenation + ventilation.

OPTIONAL: At this point, a left-sided pneumothorax can develop and rapidly progress to a tension pneumothorax.

see <<module 1 -image- >> files

- **Patient assessment reveals unconscious patient, progressive tachycardia, hypotension and hypoxia**

Physical examination:

Chest: diminished left breath sounds + tympany

- **Recognize and decompress left chest with needle or tube thoracostomy**
- **Formal transition of care with report of patient presentation, resuscitative events, and treatment**

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 patient with rapidly progressive deterioration should keep the case moving quickly and with learner stress.
 - lulls in activity may be broken with entry of agitated significant other
- B. Tips to direct actors: as above
- C. Scenario programming: see <<Appendix F>>

1.12 Debriefing Points

- A. Critical Event Response
 - i. Respiratory distress
 - ii. Status asthmaticus and complications
 - iii. Crisis resource activation
 - iv. Difficult airway management
 - v. Subglottic stenosis management
 - vi. Vascular access
 - vii. *Pneumothorax management (optional)*
- B. Cognitive Errors
(anchoring bias, bounded rationality, established preconceptions)
 - i. Overcoming limited cognitive framework (assessment of available airway options other than oral endotracheal intubation)
 - ii. Troubleshooting behaviors (evaluation and re-positioning of airway)
 - iii. Meta-cognitive situational insight (request for expert assistance)
- C. Teamwork
- D. Practice-based Learning + Improvement
 - i. Analyze own practice for needed improvement in difficult airway management skills
 - 1. Simulation exercise to acquire and develop alternative airway management skills
 - 2. Simulation exercise to experience and manage complicated and difficult asthma patient presentations
 - ii. Use of information technology
 - 1. Web video + online references to learn difficult airway skills
 - 2. simulation environment with audiovisual recording to review clinical management skills

1.13 Performance Measurement Instruments

- A. Global Competency Rating Scale (see <<Appendix A>>)
- B. Investigative probe: Alternative ventilatory strategies and rescue airway devices are considered
- C. BARS (see <<Appendix B>>)

1.14 Pilot Testing and Revisions

- A. Numbers of participants- 3-5 learners (1-2 leaders)
- B. Performance expectations, anticipated management mistakes
 - failure to consider alternative ventilatory strategies + rescue airway devices
 - failure to consider subglottic stenosis
 - inadequate status asthmaticus treatment
 - failure to detect and manage pneumothorax (optional)*

1.15 Authors and their Affiliations

- A. RIHMSC CMS Transportable Simulation-Based Training Curriculum Project team
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1.16 Additional Debriefing Materials

Print Materials

Ander DS, Hanson A, Pitts S. Assessing resident skills in the use of rescue airway devices. *Ann Emerg Med* 2004; 44(4): 314-9.

Levitan RM, Kush S, Hollander JE. Devices for difficult airway management in academic emergency departments: results of a national survey. *Ann Emerg Med* 1994; 33(6): 694-8.

Orebaugh SL. Difficult airway management in the Emergency Department. *J Emerg Med* 2002; 22(10): 31-48.

Rodrigo GJ, Rodrigo C, Hall JB. Acute asthma in adults: a review. *Chest* 2004; 125(3): 1081-102.

Sandur S. Pulmonary complications of mechanical ventilation. *Clin Chest Med* 1999; 20(2): 223-47.

Siwik JP, Nowak RM, Zoratti EM. The evaluation and management of acute, severe asthma. *Med Clin North Am* 2002; 86(5): 1049-71.

Online Materials

Garnett JD. Subglottic stenosis in adults. In eMedicine Specialties > Otolaryngology and Facial Plastic Surgery > Laryngology. Sclafani AP, Talavera F, Kellman RM et al. (eds), eMedicine Web site. Updated Feb 8, 2008. <http://www.emedicine.com/ent/topic499.htm> Accessed July 8, 2009.

Saadeh C, Malacara J. Status asthmaticus. In eMedicine Specialties > Pulmonology > Obstructive Airways Diseases. Hollingsworth HM, Talavera F, Anders GT et al. (eds), eMedicine Web site. Updated June 4, 2009. <http://www.emedicine.com/med/topic2169.htm> Accessed July 8, 2009.

Appendix A Module 1 Global Competency Rating Scale v1.0

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

No.	Competency Dimension and Descriptors	Time						Score
		start	2min	3min	5min	10min	20min	
1	APPROPRIATE ACTION PERFORMANCE							
	<input type="checkbox"/> Patient assessment							
	<input type="checkbox"/> Oxygen administration (non-rebreather mask)							
	<input type="checkbox"/> Cardiac monitor +continuous pulse oximetry							
	<input type="checkbox"/> Additional vascular access (> 18 gauge)							
	<input type="checkbox"/> Inhaled beta agonist medication (nebulizer)							
	<input type="checkbox"/> Parenteral adrenergic medication administration (SQ epinephrine)							
	<input type="checkbox"/> Steroid medication administration (IV)							
	<input type="checkbox"/> Preparation for airway management - setup endotracheal intubation equipment - check suction - call for respiratory personnel if available - de-nitrogenation / pre-oxygenation attempt							
	<input type="checkbox"/> Call for assistance (e.g. anesthesia / critical care attending)							
	<input type="checkbox"/> Airway assessment:							
	<input type="checkbox"/> Standard airway management:							
	<input type="checkbox"/> Considers major differential diagnosis elements (foreign body, subglottic stenosis, intrinsic or extrinsic compression of trachea)							
<input type="checkbox"/> Advanced airway management: - continued bag valve mask ventilation - small-size endotracheal tube intubation - Laryngeal Mask Airway								

	<input type="checkbox"/> Adequate status asthmaticus management requires the following: <ul style="list-style-type: none"> - inhaled beta-agonist - inhaled anticholinergic - IV steroids - IV magnesium sulfate - IV fluid bolus - chest xray - ventilator management 							
	<input type="checkbox"/> Formal transition of care with report of patient presentation, resuscitative events, and treatment							
	<i>Optional</i> <input type="checkbox"/> <i>Recognize and decompress left chest with needle or tube thoracostomy</i>							
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 - Status asthmaticus / respiratory failure - Subglottic stenosis - <i>Optional: Left pneumothorax</i>	Rapid recognition of disease process with appropriate management actions						
4	DIFFERENTIAL DIAGNOSIS - foreign body - subglottic stenosis - intrinsic or extrinsic compression of trachea	Proper consideration of alternate diagnoses and precipitants Avoidance of premature diagnostic closure						

5	<p>PRESENTATION SKILLS / INTERPERSONAL RELATIONS</p> <p><input type="checkbox"/> <i>Transition of care:</i> formal report of patient presentation, resuscitative events, and treatment</p>	<p>Succinct and complete verbal presentation to accepting personnel Respectful interaction with patient and staff Safe medication ordering</p>	
6	<p>SCENARIO SYNTHESIS / COGNITION</p>	<p>Recognition of critical patient state and need for emergent treatment Awareness of unresolved issues</p>	
7	<p>EXPERTISE / LEADERSHIP</p>	<p>Manages scenario and leads team members with fluency, automaticity, simultaneity, rapidity and knowledge base</p>	
X	<p>INVESTIGATIVE PROBE:</p> <p><input type="checkbox"/> Alternative ventilatory strategies and rescue airway devices are considered</p>		

Appendix B Module 1 BARS Teamwork Behavioral Ratings

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

Appendix C Module 1 Scenario Setup Checklist

key: solid text - minimum requirements
light text - optional

A. Environment Community Hospital Intensive Care Unit (ICU)

- bed: hospital / ICU bed
 - actor roles: ED nurse
Respiratory technician
Radiology technician
Senior physician (expert)
 - personnel: Manikin operator / Audiovisual technician
Facilitator x 1-2
Actor x 1-2
 - patient medical forms (included in package)
-

B. Advanced medical simulation manikin

- gender: female
 - clothing: hospital patient garb
 - moulage / props: 20g IV right arm; sitting
 - programming: Laerdal SimMan scenario (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)

-difficult airway management equipment

- endotracheal tubes (assorted, including size 6.0)
- surgical tracheostomy kit

-medications

- general medications
 - adenosine
 - amiodarone
 - atropine
 - dextrose (D50)
 - dopamine infusion
 - epinephrine
 - vasopressin
- asthma medications
 - anti-cholinergic (inhalational + nebulization; e.g. ipratropium)
 - beta-agonist (inhalational + nebulization; e.g. albuterol)
 - heliox
 - magnesium (parenteral)
 - methylxanthine (parenteral; e.g. aminophylline)
 - steroid (parenteral; e.g. prednisolone)
- 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)

- chest radiograph (hyperinflated lungs)
- electrocardiograph (sinus tachycardia)
- electrocardiograph (ventricular tachycardia)
- laboratory values

E. For optional pneumothorax section:

- 14gauge over-the-needle catheter*
- thoracostomy kit, chest tube*
- sealed suction setup*
- chest radiograph (left tension pneumothorax)*

Appendix D Module 1 Patient Chartwork



EMERGENCY DEPARTMENT RECORD

CENSUS NO. _____

PATIENT NAME: **TOMLINSON, Kathy**
 DATE OF BIRTH: **5 / 8 / 1977**
 MEDICAL RECORD NO.: **0855210**

TIME IN:
 TIME OUT:
 ADMIT: **ICU**

Triage Assessment: **shortness of breath / asthma** SENT **IN** BY PVT MD? Y / N

TIME, PLACE OF ACCIDENT OR ILLNESS _____ MODE OF ARRIVAL **ambulance** BROUGHT BY **county EMS**

PULSE OX 93% (2 L)	TEMP	PULSE 100 F	RESP 130	BP / 30	INITIAL	TIME 130	LAST DT DATE / 80	ALLERGIES: SB
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PAIN SCORE **none**

increased shortness of breath for one day

Medications: **albuterol, prednisone (leftover from prior asthma attack))**

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

difficulty breathing for 1 day. slight cough, no chest pain.

similar to prior asthma attacks. home inhalers not working.

CRITICAL CARE TIME: _____

Patient seen and examined by me. Resident - documented history and physical reviewed and discussed. Resident agrees with my assessment and plan. RP

Diagnosis: **asthma**

ADMIT TO: **ICU**

C. Jones-Bence, PGY-2 PHYSICIAN 1

R. Pender



EMERGENCY DEPARTMENT FLOW SHEET

CENSUS NO.

PATIENT NAME: **TOMLINSON, Kathy**
DATE OF BIRTH: **5 / 8 / 1977**
MEDICAL RECORD NO.: **0855210**

SHEET ____ OF ____

Vital Signs:

TIME	TEMP	PULSE	RESP	BP	PULSE OX	INITIALS
		125	30	108	/ 32 93%	(2 liters)
	AGS					
		110	26	107	/ 45 99%	(on 100%) AGS
	100 F		108	23	118 / 46	99% (2 liters)
AGS						

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS
normal saline,	1 liter	none		20g	R AC	bolus
AGS						

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS
Albuterol	2.5 mg	neb		neb		AGS
Albuterol	2.5 mg	neb		neb		AGS
Albuterol	2.5 mg	neb		neb		AGS

Nursing Assessment:

TIME		
	physician evaluating patient	AGS
	improved with three nebs	AGS
	patient being admitted to ICU for monitoring	AGS

NURSE 1 AG Svmonds	NURSE 2	NURSE 3
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EMERGENCY DEPARTMENT ORDER SHEET

CENSUS NO. _____

PATIENT NAME: **TOMLINSON, Kathy**
DATE OF BIRTH: **5 / 8 / 1977**
MEDICAL RECORD NO.: **0855210**

SHEET ____ OF ____

Tests:

<u>CBC</u>	<u>CHEM7 / BMP</u>
<u>URINALYSIS</u>	<u>UCG</u>
URINE DIP	LACTATE
AMYLASE	LIPASE
LFT	<u>ABG</u>
PT / PTT	ESR
CPK / TROPONIN	BNP

CULTURES:
BLOOD ____
URINE
WOUND
SPUTUM
THROAT
OTHER _____

TOXICOLOGY SCREEN
SERUM
URINE
ALCOHOLS
TYPE + SCREEN / TYPE + CROSS _____
EKG

Imaging Tests:

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

IVs:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	INITIALS
<i>normal saline one liter</i>				<i>bolus</i>		<i>CJB</i>

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	INITIALS
<i>Albuterol</i>	<i>2.5 mg</i>	<i>neb</i>				<i>CJB</i>
	<i>may repeat to 3 doses</i>					<i>CJB</i>

Consultations:

SERVICE	TIME PAGED	SERVICE	TIME PAGED
<i>ICU</i>			

EMERGENCY DEPARTMENT PHYSICIAN DOCUMENTATION

CENSUS NO.

PATIENT NAME: **TOMLINSON, Kathy**
DATE OF BIRTH: **5 / 8 / 1977**
MEDICAL RECORD NO.: **0855210**

Chief complaint *shortness of breath / asthma*

History of Present Illness *Young asthmatic patient, brought in by ambulance for shortness of breath starting 1 day ago. Patient has been having moderate dyspnea and coughing at home, both of which persist in the Emergency Dept. No fever/chills, no chest discomfort, ankle swelling or leg pain. P/s she has had these symptoms before and been intubated previously
+ smoker; use of inhalers at home without improvement.*

ROS	Constitutional: <i>fatigue</i>	Eyes: <i>vision normal</i>	PMHx:	<i>asthma</i>
	Ear / Nose / Throat: <i>odynphagia</i>	Neurologic: <i>normal</i>		
	Respiratory: <i>cough, dyspnea</i>	Genitourinary: <i>normal</i>		
	Cardiovascular: <i>normal</i>	Skin: <i>no rash</i>		
	Gastrointestinal: <i>no abd pain</i>	Lymphatics: <i>normal</i>	Social History	<i>smoker</i>
	Hematologic: <i>normal</i>	Musculoskeletal: <i>normal</i>	Family History	<i>non-contributory</i>

see front sheet *no known drug allergies*

Vital signs: *see front sheet*
Head / Neck: *normocephalic, atraumatic. pharyngeal erythema, no stridor*
Chest: *moderate wheezing, mild respiratory distress*
Heart: *rapid heart beat, no murmurs*
Abdomen: *benign*
Genitourinary:
Extremities: *no edema*
Neurologic: *non-focal*
Skin: *warm, dry*

Electrocardiogram:
X-rays:
CT scans:
Lab values: *pending*

less dyspnea, improved air movement, minimal wheezing, no distress. plan admit to ICU for observation for prior history of intubation / status asthmaticus.

Diagnosis *asthma*

DISPOSITION: ICU	<i>C. Jones-Bence, PGY-2</i> PHYSICIAN 1	R. Pender
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Appendix E Module 1 Patient Laboratory Values

Module 1 Complete Blood Count

White Blood Cell (3.5-11.0) K/uL: 10.5

Hemoglobin (11.0-15.0) G/DL: 14.1

Hematocrit (32.0-45.0) %: 42.7

Platelet (150-400) K/uL: 345

Module 1 Chemistry Panel

Na⁺ (135-145) MEQ/L: 142

K⁺ (3.6-5.1) MEQ/L: 4.8

Cl⁻ (98-110) MEQ/L: 108

CO₂ (20-30) MEQ/L: 19 L

BUN (6-24) MG/DL: 20

Creat (0.4-1.3) MG/DL: 1.1

Glu (67-109) MG/DL: 88

Module 1 Urinalysis

Urinalysis: normal

Urine pregnancy test: negative

Module 1 Arterial blood gas

pH (7.35-7.45): 7.28 L

PaCO₂ (35-45) MMHG: 22 H

PaO₂ (78-82) MMHG: 68 L

O₂ Sat (93-98) %: 89 L

Appendix F Module 1 SimMan v2.3 Scenario Programming

Frame0
 A:Sinus 140
 Blood Pressure 102/68
 Monitor Controls
 SpO2 = 93
 Temp. = 100.0 (°F)
 Breathing Rate: 36
 Airway
 Reset All
 Auscultation Sounds
 Left Lung: Wheezes Volume: 7
 Right Lung: Wheezes Volume: 7
 Trend Max/Min
 SpO2 : 97/75
 CO2 : 150.0/0.0 mmHg
 Temp. : 113.0/77.0 (°F)
 BP Sys. : 230/60
 HR. : 170/0
 Breathing Rate : 40/0
 Start Trend (Stop All Others): module 1 worse (Start: 0 min, Dur.: 10 min)

FrameTime=5:00

Frame7
 Comment:
 -THE SCENARIO IS PRIMARILY EVENT DRIVEN AND CLOSELY FOLLOWS THE CASE DESCRIPTION.
 -THE "MISCELLANEOUS" MENU BUTTONS WITH BRANCH POINT FUNCTIONS ARE:
 adequate airway management (RESULTS IN PATIENT STABILIZATION)
 PTX start (INITIATES OPTIONAL PNEUMOTHORAX SECTION AFTER AIRWAY MANAGEMENT)
 PTX decompression (STABILIZES PATIENT AFTER PNEUMOTHORAX DECOMPRESSION)
 -THE REMAINING "ABC ACTION" MENU BUTTONS SERVE AS TIMESTAMP MARKERS

Frame2
 Comment:
 5 MINUTES INTO SCENARIO: PATIENT BECOMES UNRESPONSIVE. ALL TRENDS WILL BE STOPPED FOR 10 MINUTES TO ALLOW FOR PARTICIPANTS TO ATTEMPT AIRWAY MANAGEMENT. OXYGEN SATURATION WILL NOT RISE ABOVE 91% OR GO BELOW 78% UNTIL AIRWAY MANAGEMENT IS SUCCESSFULLY COMPLETED OR TEN MINUTES HAVE ELAPSED.
 Stop All Trends
 Trend Max/Min
 SpO2 : 91/78

adequate airway management

FrameTime=10:00

Frame1
 Trend Max/Min
 SpO2 : 100/60
 CO2 : 150.0/0.0 mmHg
 Temp. : 113.0/77.0 (°F)
 BP Sys. : 230/50
 BP Dia. : 290/26
 HR. : 200/30
 Breathing Rate : 40/0
 Start Trend (Stop All Others): module 1 much worse (Start: 0 min, Dur.: 10 min)
 Comment:
 15 MINUTES INTO SCENARIO: PATIENT DEVELOPS PROGRESSIVE HEMODYNAMIC INSTABILITY

adequate airway management

FrameTime=3:00

Frame4
 Comment:
 CLINICAL IMPROVEMENT BEGINS AFTER ADEQUATE AIRWAY MANAGEMENT
 A:Sinus 118 EMD/PEA Off
 Auscultation Sounds
 Left Lung: Wheezes Volume: 5
 Right Lung: Wheezes Volume: 5
 Start Trend (Stop All Others): module 1 better (Start: 0 min)
 Trend Max/Min
 SpO2 : 94/88
 BP Sys. : 122/92
 BP Dia. : 68/33
 HR. : 127/82

PTX start

Frame3
 Comment:
 18 MINUTES INTO SCENARIO WITHOUT ADEQUATE AIRWAY MANAGEMENT: PATIENT GOES INTO VT ARREST FROM PROLONGED HYPOXIA AND HYPERCARBIA. A "CODE TEAM" WILL BE ACTIVATED, MANAGE THE AIRWAY, AND RESUSCITATE THE PATIENT AT THIS POINT.
 A:V tach 160 EMD/PEA On
 Trend Max/Min
 SpO2 : 100/0
 BP Sys. : 300/0
 BP Dia. : 300/0
 HR. : 300/0
 Breathing Rate : 40/0

adequate airway management

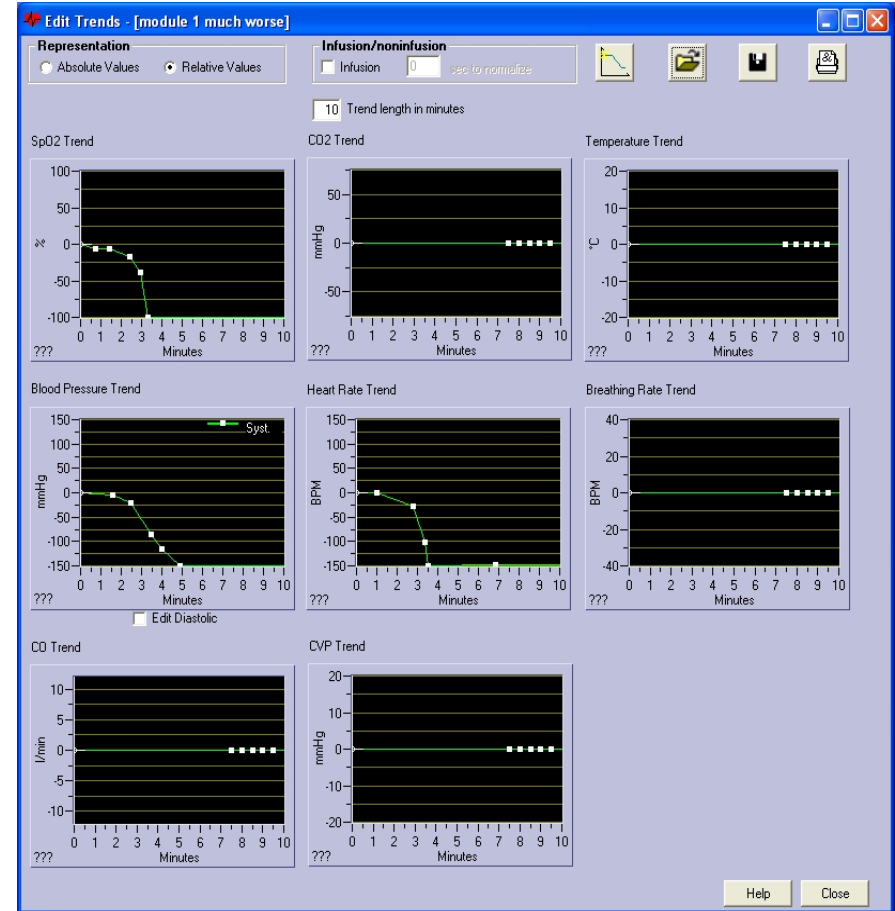
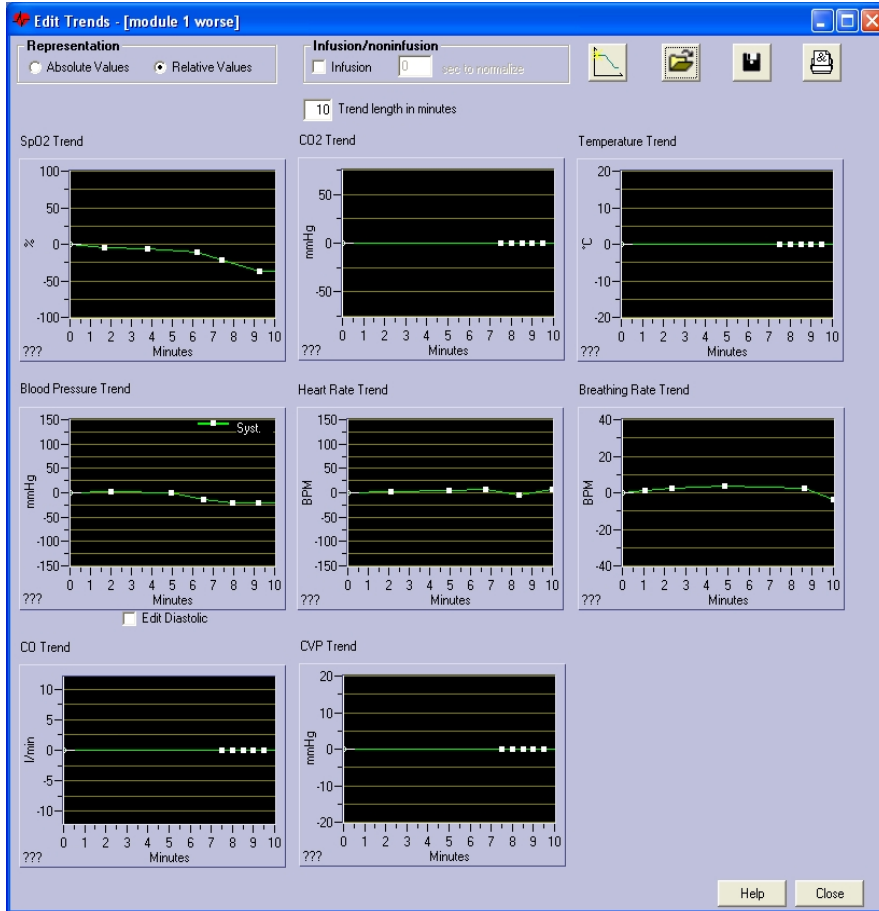
Frame5
 Comment:
 OPTIONAL: L SIDED TENSION PNEUMOTHORAX REQUIRING DECOMPRESSION
 Start Trend (Stop All Others): module 1 ptx (Start: 0 min)
 Airway
 L Lung Comp. ON
 L Pneumo ON
 Auscultation Sounds
 Left Lung: Wheezes Volume: 0
 Right Lung: Wheezes Volume: 10

PTX decompression

Frame6
 Stop All Trends
 A:Sinus 112 EMD/PEA Off
 Blood Pressure 98/62
 Airway
 Reset All
 Auscultation Sounds
 Left Lung: Wheezes Volume: 7
 Right Lung: Wheezes Volume: 7
 Monitor Controls
 SpO2 = 93

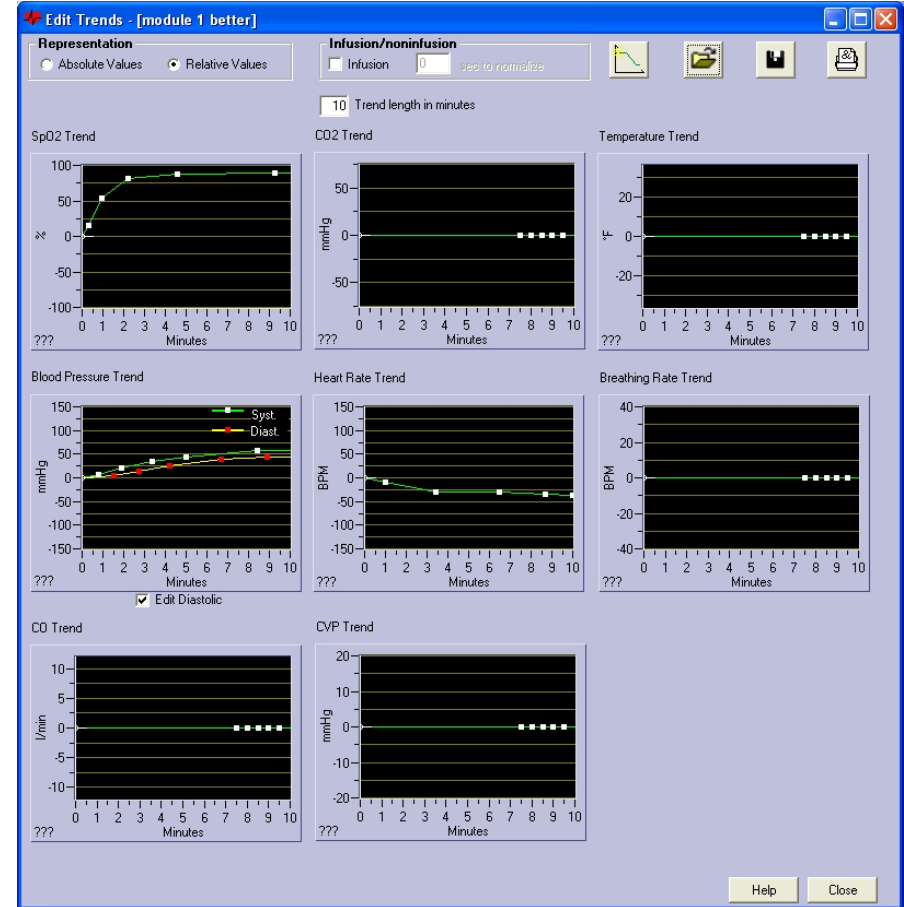
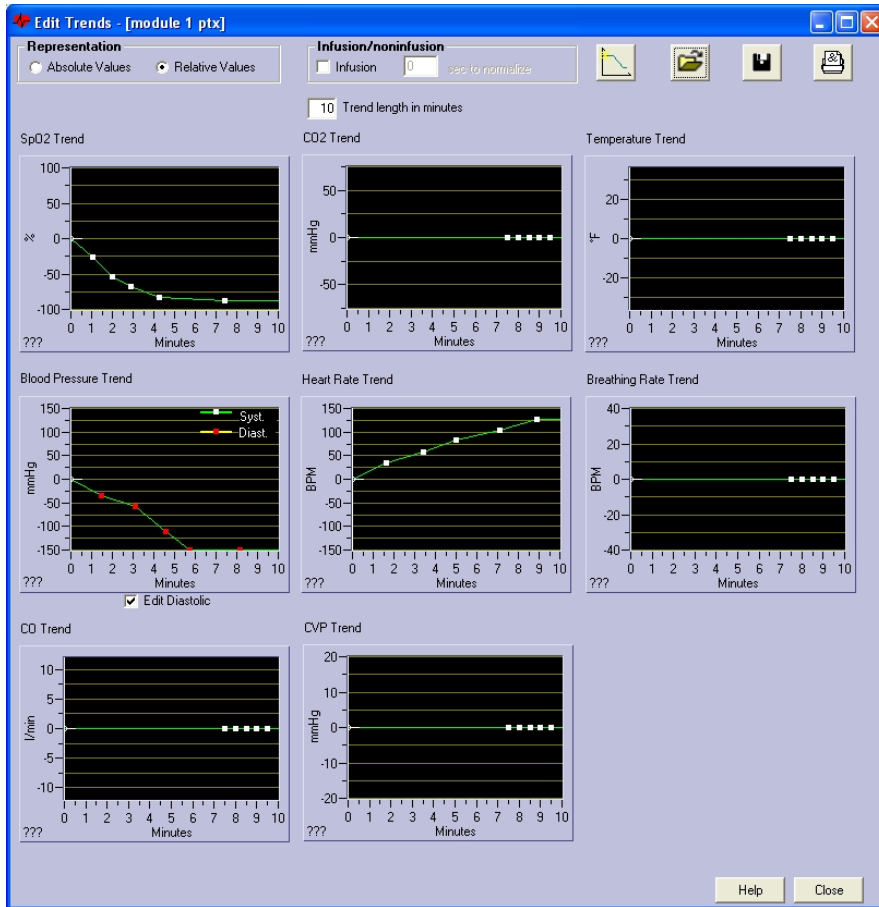
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Module 1 SimMan v2.3 Scenario Trends



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