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
   respiration: 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

☐ *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.

☐ 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 
   Marc Shapiro, MD; RIHMSC, Rhode Island Hospital, Providence RI 
   Leo Kobayashi, MD; RIHMSC, Rhode Island Hospital, Providence RI 

1.16 Additional Debriefing Materials

Print Materials 
Online Materials

Appendix A  Module 1 Global Competency Rating Scale v1.0

<table>
<thead>
<tr>
<th>No.</th>
<th>Competency Dimension and Descriptors</th>
<th>Time</th>
<th>Score</th>
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<td><strong>APPROPRIATE ACTION PERFORMANCE</strong></td>
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<td>□ Patient assessment</td>
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<td>□ Oxygen administration (non-rebreather mask)</td>
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<td>□ Cardiac monitor +continuous pulse oximetry</td>
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<td>□ Additional vascular access (&gt; 18 gauge)</td>
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<td>□ Inhaled beta agonist medication (nebulizer)</td>
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<td>□ Preparation for airway management</td>
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<td>- setup endotracheal intubation equipment</td>
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<td>- call for respiratory personnel if available</td>
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<td>□ Call for assistance (e.g. anesthesia / critical care attending)</td>
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<td>□ Airway assessment:</td>
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<td>□ Standard airway management:</td>
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<td>□ Considers major differential diagnosis elements (foreign body, subglottic stenosis, intrinsic or extrinsic compression of trachea)</td>
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<td>□ Advanced airway management:</td>
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<td>- continued bag valve mask ventilation</td>
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<td>- small-size endotracheal tube intubation</td>
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<td></td>
<td>- Laryngeal Mask Airway</td>
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Adequate status asthmaticus management requires the following:
- inhaled beta-agonist
- inhaled anticholinergic
- IV steroids
- IV magnesium sulfate
- IV fluid bolus
- chest xray
- ventilator management

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

Optional
- Recognize and decompress left chest with needle or tube thoracostomy

### 2. History / Physical Exam
- 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
- Optional: Left pneumothorax
  - 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 | **PRESENTATION SKILLS / INTERPERSONAL RELATIONS**  
   □ Transition of care: 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:**  
□ Alternative ventilatory strategies and rescue airway devices are considered |
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

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**A. Environment**

<table>
<thead>
<tr>
<th>Bed:</th>
<th>hospital / ICU bed</th>
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</table>
| 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 | including in package |

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**B. Advanced medical simulation manikin**

| Gender: | female |
| Clothing: | hospital patient garb |
| Moulage / Props: | 20g IV right arm; sitting |
| Programming: | Laerdal SimMan scenario (including in package)  
METI manikin systems will require on-site programming |

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**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
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

**Community Hospital**
A Standard Medical Corporation Partner

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**EMERGENCY DEPARTMENT RECORD**

<table>
<thead>
<tr>
<th>CENSUS NO.</th>
<th>TIME IN:</th>
<th>TIME OUT:</th>
<th>ADMIT: ICU</th>
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**PATIENT NAME:** TOMLINSON, Kathy  
**DATE OF BIRTH:** 5 / 8 / 1977  
**MEDICAL RECORD NO.:** 0855210

**Triage Assessment:** shortness of breath / asthma  
**SENT ON BY PVT MD? Y/N:**  
**TIME, PLACE OF ACCIDENT OR ILLNESS:**  
**MODE OF ARRIVAL:** ambulance  
**BROUGHT BY:** county EMS

<table>
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<tr>
<th>PULSE OX</th>
<th>TEMP</th>
<th>PULSE</th>
<th>RESP</th>
<th>BP</th>
<th>INITIAL</th>
<th>TIME</th>
<th>LAST DT</th>
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<tr>
<td>93% (2 L)</td>
<td>100 F</td>
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<td>130</td>
<td>80</td>
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**PAIN SCORE:**

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**

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<th>CAD</th>
<th>IDDM</th>
<th>ASTHMA</th>
<th>GERD / ULCER</th>
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**CABG**

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<th>BREATHALYZE</th>
<th>EKG</th>
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**REGISTRATION CLERK NAME:**

**TRIAGE RN SIGNATURE:** SB

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**Diagnosis:** asthma

**ADMIT TO:** ICU  
**C. Jones-Bence, PGY-2**  
**PHYSICIAN 1:** R. Pender

---

Critical Care Time: ____

Patient seen and examined by me. Resident documented. Resident agrees history and physical reviewed and discussed. Resident agrees with my assessment and plan. RP.
**Community Hospital**  
A Standard Medical Corporation Partner

**EMERGENCY DEPARTMENT FLOW SHEET**

<table>
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<th>CENSUS NO.</th>
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**PATIENT NAME:** TOMLINSON, Kathy  
**DATE OF BIRTH:** 5 / 8 / 1977  
**MEDICAL RECORD NO.:** 0855210

**Vital Signs:**

<table>
<thead>
<tr>
<th>TIME</th>
<th>TEMP</th>
<th>PULSE</th>
<th>RESP</th>
<th>BP</th>
<th>PULSE OX</th>
<th>INITIALS</th>
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<tbody>
<tr>
<td>125</td>
<td>30</td>
<td>108 / 32</td>
<td>93% (2 liters)</td>
<td>AGS</td>
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<td>110</td>
<td>26</td>
<td>107 / 45</td>
<td>99% (on 100%)</td>
<td>AGS</td>
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<tr>
<td>100 F</td>
<td>108</td>
<td>23</td>
<td>118 / 46</td>
<td>99% (2 liters)</td>
<td>AGS</td>
<td></td>
</tr>
</tbody>
</table>

**IVs:**

<table>
<thead>
<tr>
<th>AMOUNT + TYPE</th>
<th>ADDED MEDICATIONS</th>
<th>CATH SITE</th>
<th>RATE</th>
<th>TIME</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal saline, 1 liter</td>
<td>none</td>
<td>20g</td>
<td>R AC bolus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AGS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Medications:**

<table>
<thead>
<tr>
<th>NAME</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>SITE</th>
<th>RATE</th>
<th>TIME</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td>2.5 mg</td>
<td>neb</td>
<td>neb</td>
<td></td>
<td></td>
<td>AGS</td>
</tr>
<tr>
<td>Albuterol</td>
<td>2.5 mg</td>
<td>neb</td>
<td>neb</td>
<td></td>
<td></td>
<td>AGS</td>
</tr>
<tr>
<td>Albuterol</td>
<td>2.5 mg</td>
<td>neb</td>
<td>neb</td>
<td></td>
<td></td>
<td>AGS</td>
</tr>
</tbody>
</table>

**Nursing Assessment:**

<table>
<thead>
<tr>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>physician evaluating patient</td>
</tr>
<tr>
<td>improved with three nebs</td>
</tr>
<tr>
<td>patient being admitted to ICU for monitoring</td>
</tr>
</tbody>
</table>

**NURSE 1**  
**NURSE 2**  
**NURSE 3**

AG Symonds
# EMERGENCY DEPARTMENT ORDER SHEET

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

## Tests:

<table>
<thead>
<tr>
<th>Test</th>
<th>CULTURES:</th>
<th>TOXICOLOGY SCREEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinalysis</td>
<td>Blood ___ ___</td>
<td>Serum</td>
</tr>
<tr>
<td>Urine dip</td>
<td>Urine</td>
<td>Urine</td>
</tr>
<tr>
<td>Amylase</td>
<td>Wound</td>
<td>Alcohols</td>
</tr>
<tr>
<td>LFT</td>
<td>Sputum</td>
<td></td>
</tr>
<tr>
<td>PT / PTT</td>
<td>Throat</td>
<td>Type + Screen / Type + Cross</td>
</tr>
<tr>
<td>CPK / Troponin</td>
<td>Other</td>
<td>EKG</td>
</tr>
</tbody>
</table>

## Imaging Tests:

<table>
<thead>
<tr>
<th>Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>XRay: C-Spine</td>
<td>Chest</td>
</tr>
<tr>
<td>CT Scan</td>
<td>Ultrasound</td>
</tr>
<tr>
<td>MRI</td>
<td></td>
</tr>
</tbody>
</table>

## IVs:

<table>
<thead>
<tr>
<th>AMOUNT + TYPE</th>
<th>ADDED MEDICATIONS</th>
<th>CATH</th>
<th>SITE</th>
<th>RATE</th>
<th>TIME</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal saline one liter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CJB</td>
</tr>
</tbody>
</table>

## Medications:

<table>
<thead>
<tr>
<th>NAME</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>SITE</th>
<th>RATE</th>
<th>TIME</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td>2.5mg</td>
<td>neb</td>
<td></td>
<td></td>
<td></td>
<td>CJB</td>
</tr>
<tr>
<td>May repeat to 3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CJB</td>
</tr>
</tbody>
</table>

## Consultations:

<table>
<thead>
<tr>
<th>SERVICE</th>
<th>TIME PAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU</td>
<td></td>
</tr>
</tbody>
</table>
Patient Progress

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

Diagnosis

**asthma**

**Disposition:** ICU  
**C. Jones-Bence, PGY-2  
**Physician 1: R. Pender**
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

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Module 1 SimMan v2.3 Scenario Trends

Screenshot images used with permission from Laerdal Medical Corp.