

Transportable Simulation-Based Training Curriculum

Module 3

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Module 3

3.1 Scenario Title: Antidote Dosing Error in a Pediatric Acetaminophen Overdose Patient

3.2 Date Created: January 6, 2005

Date Revised: November 22, 2007

3.3 Categories: Pediatrics; Toxicology; Nursing; Teamwork

3.4 Target Audience: Pediatric Acute and Critical Care Residents / Nurses

3.5 Learning and Assessment Objectives

A. Primary

- i. Recognition and management of acetaminophen toxicity
- ii. Resource utilization to identify new medication regimens and protocols
- iii. Crisis resource activation
- iv. Teamwork training
- v. Error disclosure and critical communications with patient family
- vi. *Recognition and management of concurrent severe tricyclic antidepressant toxicity (optional)*

B. Critical actions checklist (see [Appendix A](#))

3.6 Patient Safety Issues Addressed

A. **Authority gradient / Cultural change**

- i. Surmounting of authority gradients as patient advocate
- ii. Cross-checking of medication orders

B. Medical treatment skills in pediatric staff

C. Teamwork (see [Appendix B](#))

3.7 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. Transition of care
 1. Patient report and acceptance
- ii. Routine medical care
 1. Patient assessment
 2. Vascular access
 3. Medication administration
 4. Airway management
 5. Gastric decontamination
 6. *Ventilatory support (optional)*
 7. *Circulatory support (optional)*
 8. *Seizure management (optional)*

B. Medical Knowledge

Investigatory + Analytic Thinking

C. Practice-Based Learning + Improvement

- i. Analyze own practice for needed improvement in pediatric toxicology management skills
 1. Simulation exercise to acquire and develop management skills for the acutely intoxicated pediatric patient
 2. Simulation exercise to experience and manage difficult communication issues surrounding patient safety and medical error disclosure
- ii. Use of information technology
 1. Web video + online references to assist with management of intoxicated patients
 2. Simulation environment with audiovisual recording to review clinical management and teamwork skills

D. Interpersonal + Communication Skills

- i. Listening skills (within team for information sharing and for conflict resolution)
- ii. Error disclosure
 1. objective disclosure of error; institutional policy + procedure
 2. activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting)
 3. critical incident debriefing

3.8 Environment and Equipment (see Appendix C)

3.9 Personnel (see Appendix C)

3.10 Scenario Narrative

- A. An 18 month old child reportedly ingesting a toxic amount of acetaminophen is brought in to a rural hospital ED setting. The initial treating physician decides to intravenously administer N-acetylcysteine (NAC) as the child refuses to take oral NAC and vigorously resists a nasogastric tube, and IV NAC is ordered. The physician calculates and writes the dose incorrectly, such that a massive NAC overdose will result if not picked up and corrected. If the error is picked up by the SIM participants, the facilitating nurse will be resistant to correction because she knows the initial / ordering physician (who is no longer available) and trusts her experience. Additional evidence-based support (e.g. Web references, drug package inserts, pharmacist review) will be required to change the medication order. If the error is not picked up early on, the child will receive a first dose that is 4-fold the intended dose, after which the pharmacist will identify the error and report the error to the treating team. No adverse outcome will result from the slip / error. Error disclosure to the patient and family will need to be addressed at this point. *Optional: Unidentified tricyclic antidepressant overdose can complicate the case with arrhythmias, seizures and hemodynamic instability and require resuscitation with intubation, sodium bicarbonate administration, and cardiopulmonary resuscitation.*
- i. *Patient name / Age / Sex:* Samuel Tiersen 18 month old male
 - ii. *Mode of arrival:* ambulance
 - iii. *Accompanied by:* mother with patient
 - iv. *ED medical forms:* see <<Appendix D>>
Prior medical records: n/a
 - v. *Chief complaint / History of present illness:*
A child is brought in by ambulance with his mother, who states that her child had ingested a full bottle of acetaminophen suspension (160mg / 5mL). The child swallowed approximately 95mL about sixty minutes ago. The mother is sure of the dose because she has just given one 5mL dose from the newly-opened bottle a few days ago. No other ingestions are known to her. The paramedics have started a 22gauge IV in his right arm and infused about 200cc of normal saline.
 - vi. *Past medical history:* otitis media
Past surgical history: none
 - vii. *Medications:* none
Medication allergies: none known
Immunizations: up to date
 - viii. *Social history:* healthy pre-schooler, lives with parents
Family history: non-contributory

ix. *Physical examination:*

1. Vital signs: weight: 13 kg
heart rate: 110 / minute
blood pressure: 98 / 62 mmHg
respirations: 20 / minute
oxygen saturation: 98% on room air
temperature: 97.8 degrees F /
36.6 degrees C
2. Head / Neck: normal, anterior fontanelle closed
3. Chest: normal, equal breath sounds
4. Heart: normal, no murmurs or heave
5. Abdomen: normal, good bowel sounds
6. Genitourinary: normal developmental stage
7. Extremities: 22gauge right hand intravenous catheter
8. Neurologic: normal

x. *Laboratory Values:*

1. all: pending

i. *Imaging Studies:*

1. chest x-ray: pending (normal lungs)
see <<module 3 -image- >> files

C. Scenario Flow

expected interventions in **bold**

time 0 The attending ED physician, Dr. Finlay, briefly assesses the child and finds him to be cooperative and playful, with no acute distress. She is called away to an emergent patient and requests the ED staff and treating nurses to start “routine medical therapy.”

- **Patient report and acceptance from EMS / ED provider**
- **Patient assessment reveals vital signs and physical exam as above, without significant changes**
- **Application of monitoring equipment (cardiac monitor, pulse oximetry)**
- **Check vascular access**

5 minutes Dr. Finlay returns after having called the regional poison control center and speaking with a toxicology specialist who recommends administration of N-acetylcysteine and activated charcoal based on the mother's reliable history as well as the dose and timing of ingestion. She orders activated charcoal mixed in with chocolate milk, which the child drinks happily, and oral N-acetylcysteine, which the child vigorously refuses to take. Dr. Finlay then orders intravenous N-acetylcysteine in the following regimen (the written dose is for diluent, and at least an order of magnitude greater than recommended N-acetylcysteine dose):

- First infusion: 3mL/kg (39mL) of Mucomyst 20% to make 200mL of dextrose 5% solution, administered over 40 minutes
- Second infusion: 10mL/kg (130mL) of Mucomyst 20% to make 500mL of dextrose 5% solution, administered over 4 hours
- Third infusion: 20mL/kg (260mL) of Mucomyst 20% to make 1000mL of dextrose 5% solution, administered over 16 hours

Dr. Finlay is called away STAT to an emergent patient resuscitation and will be unavailable for the rest of the case. The SIM facilitator nurse will have the improperly prepared N-acetylcysteine infusion ready and start it immediately as ordered to drive scenario progression.

Medical Error Detection + Correction Point #1

- **N-acetylcysteine infusion should be discontinued**
- **Patient re-assessment reveals vital signs and physical exam as above, without significant changes**
- **Continued consultation with poison control center to determine further treatment**
- **Close monitoring for complications of N-acetylcysteine dosing error (hyponatremia, seizures)**
- **As the initial ordering physician (Dr. Finlay) is no longer available, the SIM facilitator nurse will be resistant to changing N-acetylcysteine dose because she knows and trusts Dr. Finlay. She will require evidence-based support (e.g. Web references, drug package inserts, pharmacist review) to change the medication order.**
- **Error disclosure and followup**
 - objective disclosure of error to family
 - activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting)
 - critical incident debriefing
- ***Investigative probe: incorrect medication order is detected by treatment team and corrected***

10 minutes If the dosage error is not picked up, the first dose will have been started (IV infusion with 0.2micron millipore filter). The hospital pharmacist will call at this point to note the significantly high dose of weight-based N-acetylcysteine being requested by the treating team for an 18 month old child.

Medical Error Detection + Correction Point #2

- **N-acetylcysteine infusion should be discontinued**
- **Patient re-assessment reveals vital signs and physical exam as above, without significant changes**
- **Continued consultation with poison control center to determine further treatment**
- **Close monitoring for complications of N-acetylcysteine dosing error (hyponatremia, seizures)**
- **Error disclosure and followup**
 - **objective disclosure of error to family**
 - **activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting)**
 - **critical incident debriefing**

15 minutes The first Tylenol level from about 1 hour after ingestion is reported back at 55mg/L; liver function tests, coagulation studies, and all other labs (including aspirin / acetaminophen levels) are normal.

- **Discussion of acetaminophen toxicity**
 - acute vs. chronic intoxication
 - pediatric vs. adult
 - diagnostic procedure
 - serum acetaminophen level / nomogram
 - liver function tests, coagulation studies
 - therapeutic interventions
 - gastric lavage
 - activated charcoal
 - oral N-acetylcysteine
 - intravenous N-acetylcysteine
 - supportive measures
- **Formal transition of care + disposition of patient to ICU**

OPTIONAL: At this point, an unidentified concurrent overdose of the mother's tricyclic antidepressants pathophysiology may present with rapidly progressive seizure activity, ventricular arrhythmias, and hemodynamic instability.

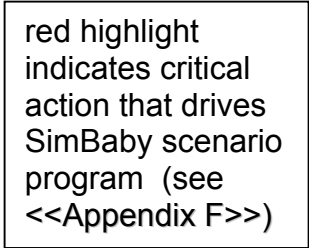
- **Patient assessment reveals a seizing, then post-ictal patient, progressive tachycardia with myocardial irritability / arrhythmias, hypotension and hypoxia**

Physical examination:

Chest:	symmetric breath sounds
Heart:	tachycardia
Neuro:	unresponsive, pupils dilated to 6mm; non-focal
Skin:	dry
- **Consider differential of seizure-inducing cardiotoxic ingestions**
 - alcohols
 - anti-arrhythmics (class I; quinidine)
 - anti-cholinergics (diphenhydramine)
 - antidepressants (monoamine oxidase inhibitors, tricyclics)
 - cholinergics (organophosphates)
 - dopaminergics (phenothiazines)
 - hypoglycemics
 - opioids (dextromethorphan, meperidine, tramadol)
 - salicylates
 - stimulants (cocaine, amphetamines)
 - other (camphor, ginkgo, isoniazid, lithium, methylxanthines, propoxyphene, strychnine)

- **Consider differential of other etiologies of seizures**
 - **infectious (meningoencephalitis)**
 - **metabolic (hypo-calcemia / glycemia / natremia)**
 - **neoplastic**
 - **neurologic (primary, acquired)**
 - **non-accidental injury**
 - **vascular (CVA)**
- **Diagnostic evaluation**
 - **electrocardiogram (EKG)**
 - **selected toxicologic assays (e.g. cocaine, lithium)**
 - [head computed tomogram (CT)]**
 - [lumbar puncture (LP)]**
- **Toxicologic ACLS as indicated**
 - **airway management (endotracheal intubation)**
 - **ventilatory support (mechanical ventilation)**
 - **circulatory support (IV access and fluids, lidocaine / dopamine infusions, defibrillation / cardioversion)**
 - **gastric decontamination (activated charcoal administration after airway protection; ? gastric lavage)**
 - **seizure management (benzodiazepines, barbiturates; avoidance of phenytoin)**
 - **toxicologic expert consultation**
- **Recognize and **adequately manage TCA OD** (airway, fluids, sodium bicarbonate; check arterial blood gases (ABGs))**
- **Formal transition of care with report of patient presentation, resuscitative events, and treatment**

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



B. Scenario Distracters – None

C. Trends Needed – none for acetaminophen ingestion; *optional tricyclic antidepressant ingestion and toxicity component will require hemodynamic deterioration with ventricular arrhythmias and respiratory compromise (in SimBaby case).*

3.11 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 father
- B. Tips to direct actors: as above
- C. Scenario programming: see <<Appendix F>>

3.12 Debriefing Points

- A. Authority Gradient / Cultural Change
 - i. Surmounting of authority gradients as patient advocate
 - ii. Cross-checking of medication orders
- B. Critical Event Response
 - i. Acetaminophen overdose management
 - ii. N-acetylcysteine dosing error management
 - iii. *Tricyclic antidepressant overdose management (optional)*
 - iv. *Gastric decontamination (optional)*
- C. Practice-Based Learning + Improvement
 - i. Analyze own practice for needed improvement in pediatric toxicology management skills
 - 1. Simulation exercise to acquire and develop management skills for the acutely intoxicated pediatric patient
 - 2. Simulation exercise to experience and manage difficult communication issues surrounding patient safety and medical error disclosure
 - ii. Use of information technology
 - 1. Web video + online references to assist with management of intoxicated patients
 - 2. Simulation environment with audiovisual recording to review clinical management and teamwork skills
- D. Interpersonal + Communication Skills
 - i. Listening skills (within team for information sharing and for conflict resolution)
 - ii. Error disclosure
 - 1. objective disclosure of error; institutional policy + procedure
 - 2. activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting)
 - 3. critical incident debriefing

3.13 Performance Measurement Instruments

- A. Global Competency Rating Scale (see <<Appendix A>>)
- B. Investigative probe: Incorrect medication order is detected by treatment team, with resultant error correction
- C. BARS (see <<Appendix B>>)

3.14 Pilot Testing and Revisions

- A. Numbers of participants- 3-5 learners (1-2 leaders)
- B. Performance expectations, anticipated management mistakes
 - failure to detect N-acetylcysteine dosing error
 - failure to closely monitor for N-acetylcysteine dosing error complications
 - failure to continue consultation with poison control center to manage underlying acetaminophen overdose
 - failure to properly transfer and transition care
 - failure to recognize and manage tricyclic overdose (optional)*

3.15 Authors and their Affiliations

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 - Frank Overly, MD; RIHMSC, Rhode Island Hospital, Providence RI

3.16 Additional Debriefing Materials

Print Materials

-Acetaminophen overdose (pediatric)-

American Academy of Pediatrics Committee on Drugs. Acetaminophen toxicity in children. *Pediatrics* 2001; 108(4): 1020-4.

Anker A. Acetaminophen. In: Ford MD, Delaney KA, Ling LJ et al. (eds) *Clinical Toxicology*. Philadelphia, PA: W.B.Saunders, 2001, p.265-73.

James LP, Wells E, Beard RH et al. Predictors of outcome after acetaminophen poisoning in children and adolescents. *J Pediatr* 2002; 140(5): 522-6.

-N-acetylcysteine overdose-

Bailey B, Blais R, Letarte A. Status epilepticus after a massive intravenous N-acetylcysteine overdose leading to intracranial hypertension and death. *Ann Emerg Med* 2004; 44(4): 401-6.

-Medical error disclosure-

Cantor MD. Telling patients the truth: a systems approach to disclosing adverse events. *Qual Saf Health Care* 2002; 11; 7-8.

Gallagher TH, Waterman AD, Ebers AG et al. Patients' and physicians' attitudes regarding the disclosure of medical errors. *JAMA* 2002; 289(8):1001-7.

Liang BA. A system of medical error disclosure. *Qual Saf Health Care* 2002; 11; 64-8.

Online Materials

Defendi GL, Tucker J. Toxicity, acetaminophen. In eMedicine Specialties > Pediatrics: Cardiac Disease and Critical Care Medicine > Toxicology. Hennes H, Windle ML, Tucker JR et al. (eds), eMedicine Web site. Updated Dec 9, 2008.

<http://www.emedicine.com/ped/topic7.htm> (Accessed July 8, 2009)

Soghoian S, Doty CI, Maffei FA, et al. Toxicity, tricyclic antidepressant. In eMedicine Specialties > Pediatrics: Cardiac Disease and Critical Care Medicine > Toxicology. Mullins ME, Windle ML, Tucker JR, et al. (eds), eMedicine Web site. Updated November 19, 2008.

<http://www.emedicine.com/ped/topic2714.htm> (Accessed July 8, 2009)

Appendix A Module 3 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							
	<input type="checkbox"/> Patient report and acceptance from EMS / ED provider							
	<input type="checkbox"/> Patient assessment							
	<input type="checkbox"/> Application of monitoring equipment (cardiac monitor, pulse oximetry)							
	<input type="checkbox"/> Check vascular access							
	Medical Error Detection + Correction Point #1							
	<input type="checkbox"/> N-acetylcysteine infusion should be discontinued							
	<input type="checkbox"/> SIM facilitator nurse will be resistant to changing N-acetylcysteine dose and will require evidence-based support (e.g. Web references, drug package inserts, pharmacist review) to change the medication order							
	<input type="checkbox"/> Continued consultation with poison control center to determine further treatment							
	<input type="checkbox"/> Close monitoring for complications of N-acetylcysteine dosing error (hyponatremia, seizure)							
<input type="checkbox"/> Error disclosure and followup - objective disclosure of error to family - activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting) - critical incident debriefing								

Medical Error Detection + Correction Point #2								
<input type="checkbox"/> N-acetylcysteine infusion should be discontinued								
<input type="checkbox"/> Continued consultation with poison control center to determine further treatment								
<input type="checkbox"/> Close monitoring for complications of N-acetylcysteine dosing error (hyponatremia, seizure)								
<input type="checkbox"/> Error disclosure and followup - objective disclosure of error to family - activation of resources tasked with error investigation (supervisor / administrator; anonymous reporting) - critical incident debriefing								
<input type="checkbox"/> Discussion of acetaminophen toxicity								
<input type="checkbox"/> Formal transition of care + disposition of patient to ICU								
<i>Optional</i>								
<input type="checkbox"/> Consider differential of seizure-inducing cardiotoxic ingestions (see scenario script)								
<input type="checkbox"/> Consider differential of other etiologies of seizures (see scenario script)								
<input type="checkbox"/> Diagnostic evaluation - electrocardiogram (EKG) - selected toxicologic assays (e.g. cocaine, lithium) [head computed tomogram (CT)] [lumbar puncture (LP)]								

	<input type="checkbox"/> <i>Toxicologic ACLS as indicated</i> - airway management (endotracheal intubation) - ventilatory support (mechanical ventilation) - circulatory support (IV access + fluids, lidocaine / dopamine infusions, defibrillation / cardioversion) - gastric decontamination (activated charcoal administration after airway protection; ? gastric lavage) - seizure management (benzodiazepines, barbiturates; avoidance of phenytoin) - toxicologic expert consultation								
	<input type="checkbox"/> <i>Recognize TCA OD and administer sodium bicarbonate; check arterial blood gases</i>								
	<input type="checkbox"/> <i>Formal transition of care with report of patient presentation, resuscitative events, treatment</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 - acetaminophen overdose - N-acetylcysteine dosing error - <i>tricyclic antidepressant overdose (optional)</i>	Rapid recognition of disease process with appropriate management actions							
4	DIFFERENTIAL DIAGNOSIS - see scenario script	Proper consideration of alternate diagnoses and precipitants Avoidance of premature diagnostic closure							

5	<p>PRESENTATION SKILLS / INTERPERSONAL RELATIONS</p> <ul style="list-style-type: none"> <input type="checkbox"/> Authority gradient <input type="checkbox"/> Conflict resolution <input type="checkbox"/> Transition of care <input type="checkbox"/> Error disclosure 	<p>Safe medication ordering + error reduction during patient care Respectful interaction with staff Succinct and complete verbal presentation to accepting personnel Objective disclosure of error to patient / family</p>	
6	<p>SCENARIO SYNTHESIS / COGNITION</p>	<p>Recognition of potentially 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> <ul style="list-style-type: none"> <input type="checkbox"/> Incorrect medication order is detected by treatment team and corrected 		

Appendix B Module 3 BARS Teamwork Behavioral Ratings

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

Appendix C Module 3 Scenario Setup Checklist

key: solid text - minimum requirements

light text - optional

A. Environment Emergency Department (pediatric / general)

- bed: Emergency Department stretcher
 - actor roles: Parent (mother)
ED attending physician
Pharmacist (expert)
Toxicology consultant (expert)
 - personnel: Manikin operator / Audiovisual technician
Facilitator x 1-2
Actor x 2-3
 - patient medical forms (included in package)
-

B. Advanced medical simulation pediatric manikin

- gender: male
 - clothing: age-appropriate clothing
 - moulage / props: 22g IV right arm

 - programming: Laerdal SimBaby scenario (included in package)
other manikin systems will require on-site programming
-

C. Medical equipment

- pediatric patient assessment equipment
 - blood pressure cuff
 - cardiac monitor / defibrillator (incl. electrodes, defib gel, recorder paper)
 - EKG machine
 - pulse oximeter
 - stethoscope

- standard pediatric 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 (pediatric)

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)

-medications (pediatric concentrations)

- general medications
 - adenosine
 - amiodarone
 - atropine
 - dextrose (D5 / D10 / D25)
 - dopamine infusion
 - epinephrine
 - lidocaine
 - sodium bicarbonate
- toxicology medications
 - activated charcoal (mixed in with chocolate milk)
 - N-acetylcysteine (oral formulation)
 - N-acetylcysteine (parenteral formulation)
- rapid sequence induction / intubation medications (institution-specific)
 - e.g. etomidate / midazolam / ketamine
 - e.g. succinylcholine / vecuronium

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

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

- laboratory values
-

E. For optional tricyclic antidepressant (TCA) overdose section:

- general medications*
 - adenosine*
 - amiodarone*
 - atropine*
 - dextrose (D5 / D10 / D25)*
 - dopamine infusion*
 - epinephrine*
 - lidocaine*
 - sodium bicarbonate*
- EKG: widened QRS (> 0.25 second)*
- CXR: intubated*

Appendix D Module 3 Patient Chartwork



EMERGENCY DEPARTMENT RECORD

CENSUS NO.

PATIENT NAME: **TIERSEN, Samuel**
 DATE OF BIRTH: **18 months old**
 MEDICAL RECORD NO.: **1778434**

TIME IN:
 TIME OUT:
 ADMIT:

Triage Assessment: **Tylenol ingestion** SENT IN BY PVT MD? **Y** / N

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

PULSE OX 98% (RA)	TEMP 97.8 F	PULSE 110	RESP 20	BP /	INITIAL	TIME 98	LAST DT DATE / 62	ALLERGIES: SB
-----------------------------	-----------------------	---------------------	-------------------	------	---------	-------------------	-----------------------------	-------------------------

PAIN SCORE **none**
~~swallowed a full bottle of acetaminophen suspension at home.~~
~~looking well, playing with mother~~

Medications: **none**
immunizations up-to-date

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

LMP

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

REGISTRATION CLERK NAME: TRIAGE RN SIGNATURE: **SB**

TIME

TIME CRITICAL CARE TIME: _____
 RESIDENT'S HX REVIEWED

Diagnosis:

ADMIT TO: PHYSICIAN 1 PHYSICIAN 2



EMERGENCY DEPARTMENT FLOW SHEET

CENSUS NO. _____

PATIENT NAME: **TIERSEN, Samuel**
 DATE OF BIRTH: **18 months old**
 MEDICAL RECORD NO.: **1778434**

SHEET ____ OF ____

Vital Signs:

TIME	TEMP	PULSE	RESP	BP	PULSE OX	INITIAL

IVs:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	SIGNATURE

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	SIGNATURE

Assessment: nursing

TIME	

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

EMERGENCY DEPARTMENT ORDER SHEET

CENSUS NO. _____

PATIENT NAME: **TIERSEN, Samuel**
 DATE OF BIRTH: **18 months old**
 MEDICAL RECORD NO.: **1778434**

SHEET ____ OF ____

Tests:

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

Imaging Tests:

XRAY: C-SPINE CHEST PELVIS TLS EXTREMITY _____

CT SCAN _____

ULTRASOUND _____

MRI _____

IVs:

AMOUNT + TYPE	ADDED MEDICATIONS	CATH	SITE	RATE	TIME	SIGNATURE

Medications:

NAME	DOSE	ROUTE	SITE	RATE	TIME	MD SIGNATURE
Mucomyst / N-AC						
First infusion	3mL/kg (39mL)	of Mucomyst 20%			to make 200mL of	
	200mL of dextrose 5%					
		solution, administered over 40 minutes				
Second infusion	10mL/kg (130mL)	of Mucomyst 20%			to make 500mL of	
	dextrose 5% solution,					
		administered over 4 hours				
Third infusion:	20mL/kg (260mL)	of Mucomyst 20%			to make 1000mL of	
		dextrose 5% solution, administered over 16 hours				
		Finlay MD				

Appendix E Module 3 Patient Laboratory Values

Module 3 Complete Blood Count

White Blood Cell (6.0-17.0) K/uL: 10.5

Hemoglobin (10.5-13.5) G/DL: 12.2

Hematocrit (33.0-39.0) %: 36.7

Platelet (150-300) K/uL: 245

Module 3 Chemistry Panel

Na+ (133-146) MEQ/L: 142

K+ (3.4-4.7) MEQ/L: 4.1

Cl- (98-107) MEQ/L: 104

CO2 (16-24) MEQ/L: 19

BUN (5-18) MG/DL: 15

Creat (0.3-0.7) MG/DL: 0.6

Glu (60-100) MG/DL: 88

Serum toxicology screen: pending

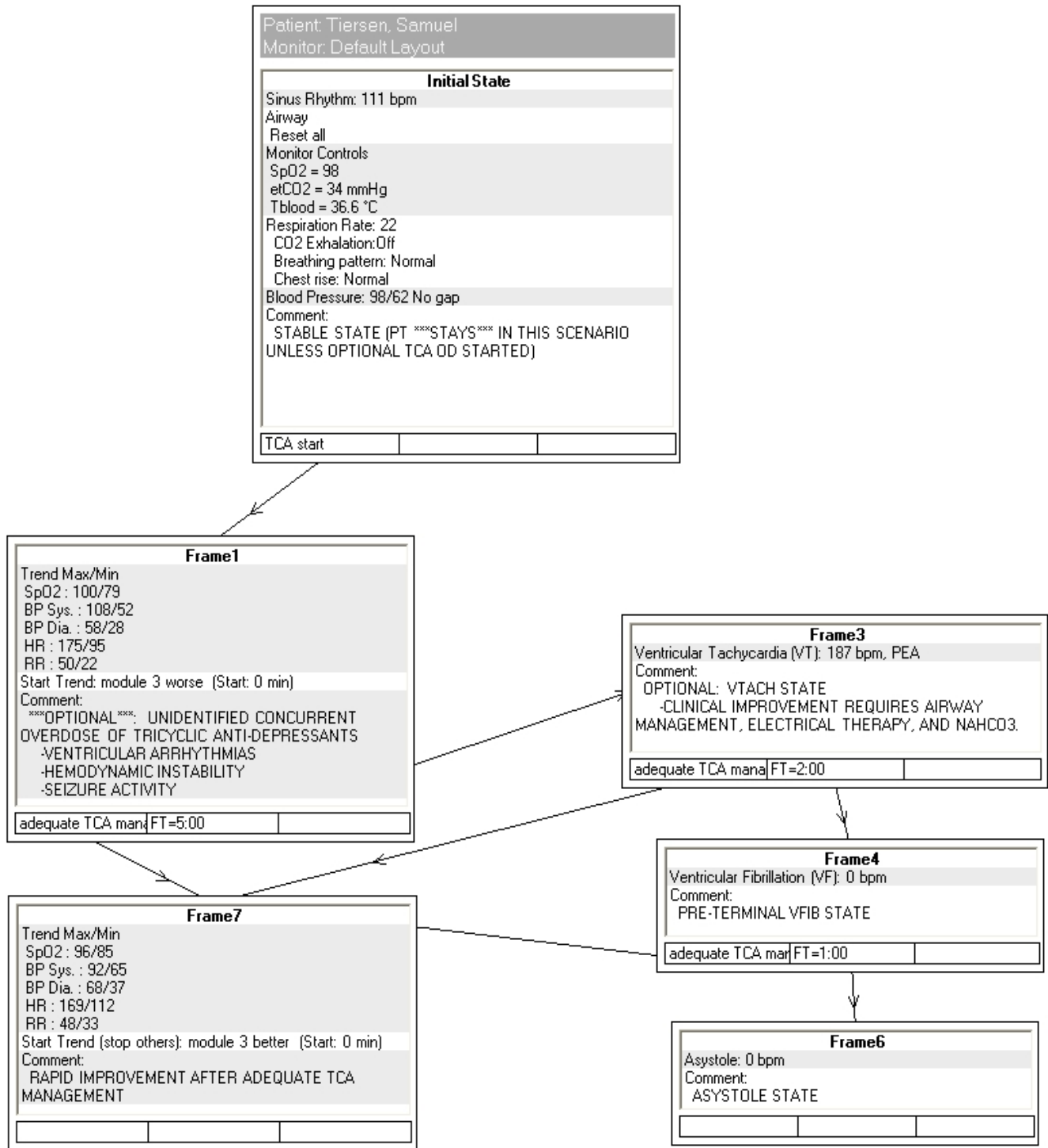
Serum APAP level (<10) MG/L: 55

Module 3 Urinalysis

Urinalysis: normal

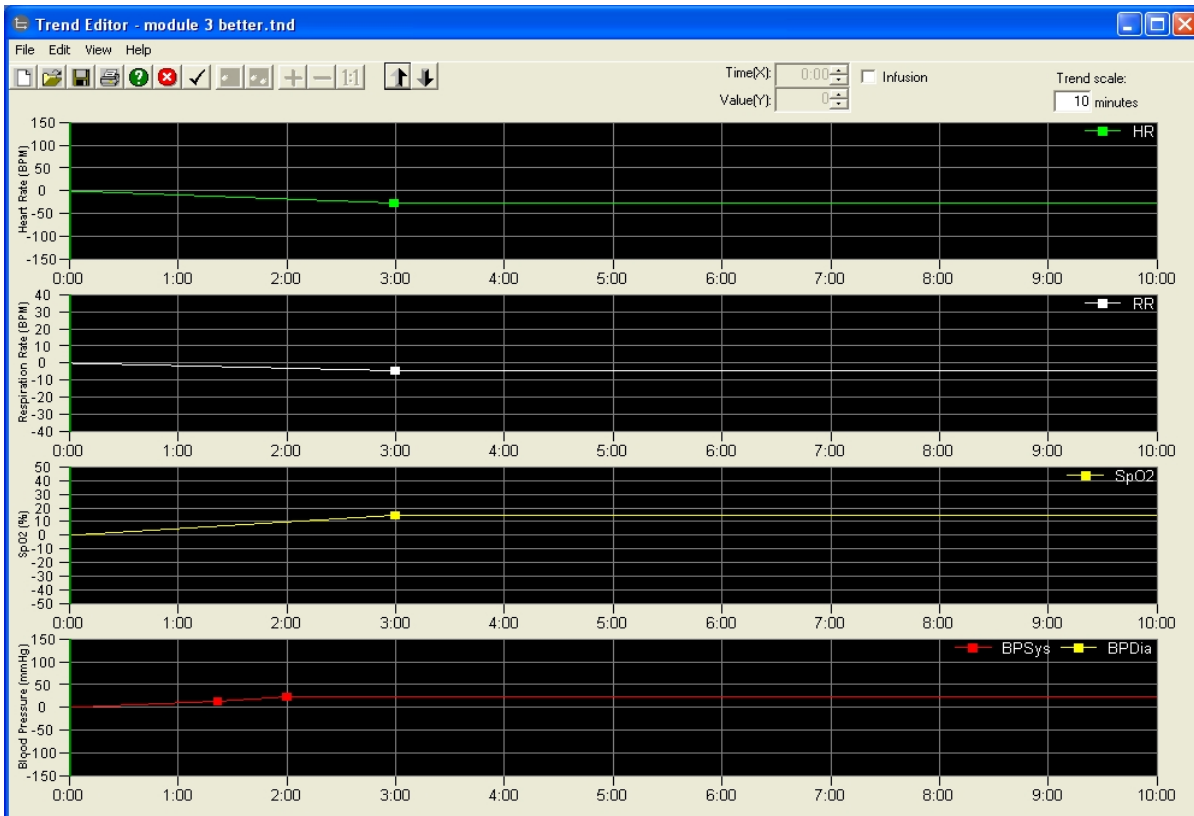
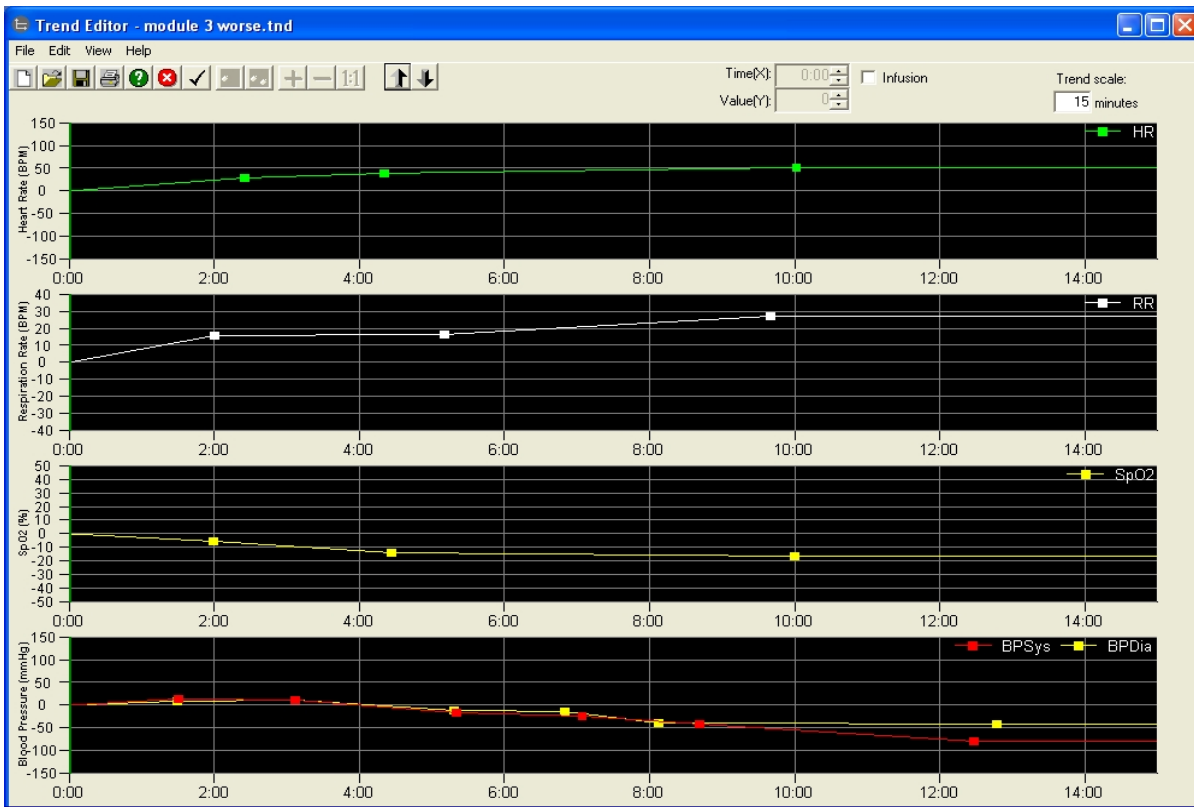
Urine toxicology screen: pending

Appendix F Module 3 SimBaby v1.2 Scenario Programming



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Module 3 SimBaby v1.2 Scenario Trends



Screenshot images used with permission from Laerdal Medical Corp.