

## APPENDIX 1

### *Features of the simulators for each scenario*

#### **Scenario #1: “Aortic Stenosis”**

- Features of simulator:
  - CV – Aortic stenosis murmur
- Instructions:
  - Load “Aortic Stenosis” file on SimMan3G.
  - Load “Aortic Stenosis” **stealth mode** on U/S, remove bowel gas.
  - Place ECG and Diagnostic sheet on gurney.
  - Present case to participant.

#### Brief vignette:

Mr. Ford. 55 y/o male. Has experienced a few episodes of syncope in the past 8 months. Fainted an hour ago while playing baseball. Currently taking Flomax for his enlarged prostate.

Pulse – 88  
BP – 130/85  
RR – 24  
Temperature – 37°  
AVPU – Alert  
Blood sugar – Normal  
Pain score – 0/10  
pO<sub>2</sub> – 96%

#### Findings upon questioning:

- Syncope:
  - “I get lightheaded a lot. I play a lot of ball, and sometimes when I’m running the bases I get real dizzy. I’ve even fainted in the past couple years. I always come around, though.”
- Chest pain:
  - “Yeah, now that you mention it, sometimes when I’m going hard on the field I get chest pain.”
  - Quality: “tight”
  - Location: “just behind my windpipe”
  - Pain score: “2/10”
  - Frequency: “I don’t have it now. It only lasts a few minutes.”

#### **Scenario #2: “Cardiac Tamponade”**

- Features of simulator:
  - CV – faint heart sounds (volume = 0), pulses = 50%
- Instructions:
  - Load “Cardiac Tamponade” file on SimMan3G.
  - Load “Tamponade” **stealth mode** on U/S, remove bowel gas.
  - Place ECG and Diagnostic sheet on gurney.
  - Present case to participant.

#### Brief vignette:

Mr. Jolie. 35 y/o male. Placed on renal dialysis a year ago due to poor diabetes management. Has increasing breathlessness over the past 2 months with a recent pain in his chest. Also experiencing marked SOB within past 24 hours.

Pulse – 95  
BP – 110/72  
RR – 26  
Temperature – 37.2°  
AVPU – Alert  
Blood sugar – Normal (6 mmol/L)  
Pain score – Chest pain: 2/10  
pO<sub>2</sub> – 95%

#### Findings upon questioning:

- Pain:
  - \*Downplay chest pain. It’s not severe.
  - Severity: “1/10”
  - Location: “Right behind my sternum.”
  - Onset: “Started two days ago, slow onset.”
  - Quality: “Tightness”
- SOB:
  - “It just started two months ago, but today it got much worse.”

#### **Scenario #3: “Myocardial Infarction”**

- Features of simulator:
  - CV – 50% pulses
  - Resp – Crackles (volume = 7)
  - Sweat on forehead of SimMan3G.

- Instructions:
  - Load “MI” file on SimMan3G.
  - Load “Acute Lateral Myocardial Infection” **stealth mode** on U/S, remove bowel gas.
  - Spray SimMan3G
  - Place ECG and Diagnostic sheet on gurney.
  - Present case to participant.
  - \*While speaking as the patient—sound breathless.

Brief vignette:

Mr. Hanks. 51 y/o male. Squeezing retrosternal pain for over an hour. Complains of general weakness, nausea, and SOB. Diagnosed with GERD 4 years ago. Currently taking Prilosec. Smoked 1 pack/day for past 30 years. Drinks 16oz. of rum a week.

Pulse – 97  
 BP – 90/60  
 RR – 22  
 Temperature - 36°  
 AVPU – Alert  
 Blood sugar – Normal  
 Pain score – 6/10  
 pO<sub>2</sub> – 95%

Findings upon questioning:

- SOB:
  - \*Patient sounds breathless for all questioning.
  - “I just can’t seem to catch my breath.”
- Diaphoresis:
  - “Yeah, I’m sweating a lot, but I’m not real hot or anything.”
- Pain:
  - Quality: “Feels like an elephant sitting on my chest.”
  - Severity: “5/10”
  - Location: “On the left side of my chest, but it goes up into my left shoulder, too.”
  - Onset: “I was just watching TV, then I got up and all of sudden the pain came on.”
- Risk Factors:
  - “Dad and brother had a heart attack.”
  - “I don’t get a whole lot of exercise.”

#### Scenario #4: “Right Pleural Effusion”

- Features of simulator:
  - Resp – diminished right lung sounds (volume = 2).
- Instructions:
  - Load “Pleural Effusion” file on SimMan3G.
  - Load “Right Pleural Effusion” **stealth mode** on U/S, remove bowel gas.
  - Place ECG and Diagnostic sheet on gurney.
  - Present case to participant.

Brief vignette:

Mr. Hawn. 52 y/o male. Heavy smoker: 45 pack year history. Complaining of SOB and pleuritic chest pain.

Pulse – 84  
 BP – 129/86  
 RR – 20  
 Temperature – 37.9°  
 AVPU – Alert  
 Blood sugar – Normal  
 Pain score – 3/10  
 spO<sub>2</sub> – 91%

Findings upon questioning:

- SOB:
  - “I just can’t seem to catch my breath, doc.”
  - Onset: “Came on slow. Started 2 weeks ago.”
  - Coughing: “Yeah, I’ve been coughing a little more in the past couple weeks.”
  - On exertion: “Yeah it gets a lot worse when I try and move around.”
- Pain:
  - “It’s in my right side, and hurts when I breathe in.”

#### Scenario #5: “Pulmonary Embolism”

- Features of simulator:
  - CV – 50% pulses
  - Resp – Right lower lobe pleural rub (volume = 3).
- Instructions:
  - Load “PE” file on SimMan3G.
  - Load “Pulmonary Hypertension” **stealth mode** on U/S, remove bowel gas.

- Place ECG and Diagnostic sheet on gurney.
- Present case to participant.
- \*While speaking as patient—breathing should be labored.

Brief vignette:

Mr. Eastwood. 72 y/o male. Presents with 3 day history of worsening chest pain and breathlessness. Has been taking Altace for the past six years to manage hypertension. Just discharged home post-hip surgery.

Pulse – 105  
 BP – 90/70  
 RR – 28  
 Temperature – 36°  
 AVPU – Alert  
 Blood sugar – Normal  
 Pain score – 3/10  
 pO<sub>2</sub> – 90%

Findings upon questioning:

- SOB:
  - \*Breathing should sound labored.
  - Onset: “Came on slow. Started 3 days ago.”
  - Exertion: “Haven’t had a chance to move around much with my hip.”
- Pain:
  - Location: “I feel it more when I breathe in. It’s a sharp pain, and I feel likes it’s in my lungs.”
- Hip Surgery:
  - “Had it a week ago on my right hip.”

**Scenario #6: “Dilated Cardiomyopathy”**

- Features of simulator:
  - CV – Systolic murmur over tricuspid (volume = 4).
  - Resp – Crackles in lower lobes (volume = 7).
- Instructions:
  - Load “DCM” file on SimMan3G.
  - Load “Dilated Cardiomyopathy with Sever Biventricular Dysfunction” **stealth mode** on U/S, remove bowel gas.
  - Place ECG and Diagnostic sheet on gurney.
  - Present case to participant.

Brief vignette:

Mr. Pitt. 43 y/o male. Viral illness past 2 weeks. Fatigue, SOB, mild orthopnea, palpitations. No significant past medical Hx or medications. Drinks 6 beers/week. Non-smoker.

Pulse – 130  
 BP – 90/50  
 RR – 20  
 Temperature – 37.4°  
 AVPU – Alert  
 Blood sugar – 7.8  
 Pain score – 0  
 pO<sub>2</sub> – 90%

Findings upon questioning:

- SOB:
  - “I just can’t seem to catch my breath.”
  - Onset: “I’m not really sure... I’d say it started a couple weeks ago, and it’s just been constant.”

**APPENDIX 2**

*Scenario development*

The scenarios were initially developed by the lead investigator using JAMAevidence, *The Rational Clinical Examination*,<sup>14</sup> and *Family Practice Notebook Online*.<sup>15</sup> The compiled scenarios were then reviewed in detail and revised by two emergency medicine physicians experienced in simulation.

During the performance of history and physical examinations, the simulated patient’s answers were composed of scripted responses, which would be given for specific questions. If the SimMan was asked an unforeseen question by a participant, the answer was simply “No” or “I don’t know.”

*Technical specifications*

A wireless Laerdal SimMan 3G (model #212-01101; Laerdal Medical Canada; Toronto, ON) was used as the clinical simulator. Patients’ speech was simulated through the built-in, wireless microphone via an actor in an adjacent room.

The CAE Vimedix (CAE Healthcare; Saint-Laurent, QC) PoCUS simulator was used as the bedside ultrasound simulator. All scenarios corresponded to CAE-programmed pathology cases and were used in stealth mode (i.e., diagnostic labels were removed).