**Simulation Case** (IMPLICIT MODELING)

Evaluating a patient with shortness of breath and chest pain

Simulation Learning Goals:

* Perform a focused history
* Perform a focused physical exam
* Create and assessment and plan

Simulation Participants:

* Patient
* Learner (medical student)
* Teacher (attending)
* IP fellow

Learners:

* M4 medical students (10 iterations of explicit modeling, 10 iterations of implicit modeling at each site)

Scene:

Busy Emergency Department

Scenario:

Mr. Williams is a 56-year-old auto mechanic who comes to the emergency room with fatigue, cough and shortness of breath that has gotten progressively worse over the last week. He has diabetes for which he takes metformin but no other medical problems. He drinks about 4 beers per week, smokes 1-2 packs of cigarettes a day for the past 30 years and occasionally smokes cigars. He lives with his wife and 3 teenage girls. Six weeks ago, he saw his primary care doctor and was treated with a Z pack for presumed pneumonia (no chest XR). He feels like he never really improved. Three weeks ago he came to the emergency department and was diagnosed with persistent pneumonia after a chest XR and was given Levaquin.

He has had increased cough and shortness of breath since then. He was attributing this to allergies and started using Flonase, which hasn’t helped. He also notes that he has been more fatigued lately but says this is secondary to recently purchasing the auto shop that he worked for. He woke up this morning unable to catch his breath, so his wife drove him to the emergency room.

The patient was seen by the triage nurse, and vital signs were taken (see below); the staff ordered a CT scan of his chest with contrast to rule out pulmonary embolism. The results are pending. Basic labs are pending.

T 98.6 F HR 108 BP 154/70 RR 28 O2 84% on RA 🡪 94% on 4 L NC

Learner and Attending enter room together and introduce themselves.

**Attending**: *Hi Mr. Williams, I’m the supervising doctor in the emergency department today. XX (learner name) is our medical student today who is going to talk with you and examine you first and then I’ll be in*.

**Attending** (*to student*): *so xx, I’ll be right outside. Please come get me if you need anything at all or if I can help in anways.*

Attending steps out. Learner starts to perform history and physical.

Patient/mannequin responses to questions are based on the above paragraph re: PMHx, social history. Patient is adopted so has no known family history. Patient is in mild to moderate respiratory distress and throughout the encounter, oxygen saturations fall down to 92% on 4 L NC.

Learner should perform focused history and physical exam. \*\*If after 5 minutes, the learner hasn’t started the physical exam yet, the patient should prompt the student by saying: **Patient: “*Hey Doc, when are you gonna listen to my lungs, I’m having trouble breathing here*”** \*\*

The IP fellow should enter the room (with chest tube kit in hand) as soon as the learner starts examining the patient.

**IP fellow to learner (rushed)**: *I’m the interventional pulmonary fellow, Dr. Jones. Is this the patient with the lung mass and probable malignant pleural effusion that needs to be drained because of worsening hypoxemia?*

Student will likely act confused.

**Patient (confused)**: *Malignant? Malignant? What? Do I have cancer? What do you mean increased in size? What is an effusion? What are you talking about? What is the lung mass?*

**IP fellow to learner:** *I’ll step out. Call me to perform the procedure if it’s still desired. (leaves)*

**Patient (getting angry)**: *I want to talk to the supervising doctor now.*

Learner goes to get attending physician. \*\*If Learner hasn’t gone to get the attending within 30 seconds of the patient asking the attending should be cued to enter the room. The attending can come in and say, **Attending: “*I just saw the Interventional Pulmonary fellow in the hallway and heard there was some miscommunication*.”** \*\*

[Attending comes in to the room.]

**Attending**: *Mr. Williams, I understand, that you asked to see me. (pulls up a chair after patient acknowledges)*

***Patient (angry):*** *Yeah I asked – someone just came in and said I have cancer and I had it three weeks ago when I was here and it’s growing? What is going on?*

**Attending***: Mr. Williams, I see that you are angry and I am very sorry for what just happened. Can we start over?*

**Patient***: (nods head)*

**Attending***: Why don’t we start by having you tell me what you know about what’s going on?*

**Patient:** *I know that I have felt crappy for almost two months. I saw my primary doctor about a month ago and was here in this very emergency room about 3 weeks ago. They did a chest x-ray but no one told me I have cancer – they just said to take antibiotics and see my regular doctor. Today I’m having a really tough time breathing, which is why I came back.*

**Attending***: (Nods, expressing understanding and showing that he’s listening.) What I’m hearing is that you’ve felt ill for about 2 months and have seen your primary doctor and have come to the emergency department. Today you are having a difficult time breathing. Is that correct?*

**Patient***: Yes. And now, some doctor ran in here and said I have a malig-na? something? and I know that word means cancer. I want to know what is going on and why wasn’t I told about this 3 weeks ago?*

**Attending**: *Mr. Williams, first, let me apologize. I’m so sorry for how things have gone this afternoon. Here is what we know, the CT scan that you had done today showed a lot of fluid between your lung and your chest wall, the technical term is a pleural effusion. Regarding the prior chest x-ray, I honestly haven’t seen it myself, but we can review it in a moment. I’m sorry that no one told you these results of the XR during your prior visit.*

**Patient**: *Why is the fluid there? Is it cancer?*

**Attending***: There are many reasons that the fluid can occur and one of those reasons is cancer.*

**Patient***: Do I have cancer? Doc, just give it to me straight I’m scared to death here.*

**Attending***: I know this must be scary for you. Unfortunately, we cannot know if something is cancerous until we see it under the microscope. The first step would be draining this fluid.*

**Patient***: But doc, do you think it is?*

**Attending***: I’m worried that it could be, but like I said, we need to see what it looks like under the microscope.*

**Patient** *(looks upset): I just wish this shortness of breath would go away. Will draining the fluid help my breathing?*

**Attending to patient***: I’m sorry you are having so much trouble breathing. Draining this fluid will help.*

**Patient:** *How?*

**Attending***: Great question! Do you mind if I ask Student Dr. xx and we can all think through this together?*

**Patient***: fine*

**Attending to student***: How will draining the pleural effusion make Mr. Williams feel better?*

**Student***: may say something about hypoxemia, or seem anxious uncomfortable*

**Attending***: Yes, hypoxemia is likely to play a role initially, but what if I told you that after giving supplemental oxygen to the patient, the dyspnea persists? What else could be considered?*

**Student** *(squirms): likely continues talking about hypoxemia*

**Attending***:* *There are two other likely mechanisms by which pleural effusions cause dyspnea. First, the increase in pleural pressure associated with the effusion may compress the lung causing some atelectasis which sends signals to the brain that are processed as dyspnea [this occurs because stretch resceptors are simtulated]. Second, because of the fluid in the pleural space, the chest wall is stretched out, this causes the muscles of breathing to have to work harder and thus people feel short of breath. [Said a different way,there is increased effort or increased work of breathing because the fluid in the pleural space causes the chest wall to be at a higher volume which means the inspiratory muscles are shorter and less effective at generating tension; this is perceived as an increase in the effort or work of breathing.] Mr. Williams, does that all make sense to you? Student Doctor xx does that make sense?*

**Patient**: *Interesting, but can we just take the fluid out now.*

**Attending**: *Yes, of course Mr. Williams, we will ask the IP team to come back in to drain it. This should help with your shortness of breath and give us some answers about what could be causing it. Do you have any other questions for me right now?*

**Patient**: *Not really. I just want to make sure that we are on the right track now and it seems like we are. I’m sure my wife will have questions when she comes in. Thanks, Doc.*

**Attending**: *You’re welcome. Okay, Student x let’s step out and get the IP team?*

**Student:** *Okay.*

Outside the Room: