Health Case Studies

Health Case Studies

Toward Closing the Healthcare Communication Gap

GLYNDA REES, ROB KRUGER, JANET MORRISON

BCCAMPUS
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About this Resource

These health case studies are open educational resources that align with the open textbooks *Clinical Procedures for Safer Patient Care* and *Anatomy and Physiology: OpenStax*. The image for the textbook cover shows Molecular Borromean rings. This illustration was chosen to depict the interconnectedness of all members of the healthcare team, the patient, and the contexts surrounding the patient on their journey through the healthcare system.

Open educational resources (OER) are defined as “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others.” (Hewlett Foundation).

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The BCcampus Writing Guidelines for Style and Tone and the attached style sheet were referenced during the copy editing and proof reading phases of this project.

How to Use this Resource

Thank you for downloading and considering the *Health Case Studies* open educational resource.

The resource you are looking at right now is not your traditional academic textbook. Almost all academic textbooks are linear and are read from page 1 to the end. *Health Case Studies* is not like that and is designed to be taken apart and each part exploited to support learning.

Health Case Studies is composed of eight separate health case studies. Each case study includes the patient narrative or story that models the best practice (at the time of publishing) in healthcare settings. Use the Overview page in the appendix for a summary of each case including scenario and healthcare roles. The overarching learning objectives outlined in the Introduction are suggestions for educators to expand the case studies and can be threaded into each case to fit the context of the learners and the curriculum. Associated with each case is a set of case specific learning objectives to support learning and facilitate educational strategies and evaluation.

The case studies can be used online in a learning management system, in a classroom discussion, in a printed course pack, or as part of a textbook created by the instructor. This flexibility is intentional and allows the educator to choose how best to convey the concepts presented in each case to the learner.

For example, an educator can use only the narrative to lead a discussion online or in the classroom on how interprofessional practice is modelled. In addition, educators can integrate other healthcare professionals into the case studies as required to enhance learning. Or an educator can take the patient chart and task students with developing an interprofessional care plan based on the information and forms in the chart. Even the text allows for customization. For instance, the date of birth for each patient persona is intentionally marked as “19xx” to allow the instructor to adjust the date as needed.

Because these case studies were primarily developed for an electronic healthcare system, they are based predominantly in an acute healthcare setting. Educators can augment each case study to include primary healthcare settings, outpatient clinics, assisted living environments and other contexts as relevant.

The intended flexibility allows educators to create learning opportunities to match the learning objectives of the curriculum and the needs of the student.

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Prologue

Introduction

The future of healthcare is becoming increasingly complex. Advancements in technology and research, along with an aging population with chronic healthcare concerns require more than one or two professions to address the health status of patients. Educating healthcare professionals for the current and future healthcare system should include common core competencies (Institute of Medicine, 2003). The below overarching objectives are suggestions for educators on how to expand the case studies in this resource, and how they can be used to fit the context of the learners and the curriculum.

> All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.
>
> (Institute of Medicine, 2003, p. 45)

We have identified **five overarching learning objectives** for students using this resource.

1. Interprofessional Collaboration

A partnership between a team of health providers and a client in a participatory, collaborative and coordinated approach to shared decision-making around health and social issues (CIHI, 2010)

- Demonstrate an understanding of the Canadian healthcare delivery system
- Define/describe the roles of healthcare professionals and the contributions they make to the healthcare team
- Develop, promote, and exercise non-judgemental and inclusive practice respecting other cultures, values, and belief systems
- Demonstrate skill in team development and interprofessional practice in healthcare
- Appreciate the significance of standardized data and language to advance knowledge and articulate care provided
- Demonstrate skills in effective communication, professionalism, critical thinking, and ethical decision-making
- Communicate with other healthcare team members in a collaborative, responsive, and responsible manner
- Actively engage self and others, including the client/patient/family, by positively and constructively

addressing disagreements as they arise

2. Patient Centred Care

- Seek out, integrate, and value, as a partner, the input and engagement of the patient/client/family/community in designing and implementing care and services
- Share power and responsibility with patients and caregivers
- Communicate with patients in a shared and fully open manner
- Take into account a patient's individuality, emotional needs, values, and life issues
- Implement strategies for reaching those who do not present for care on their own, including care strategies that support the broader community
- Enhance prevention and health promotion

3. Evidence-Based Practice

- Identify where and how to find the best possible sources of evidence
- Formulate clear clinical questions
- Search for the relevant answers to clinical questions from the best possible sources of evidence, including those that evaluate or appraise the evidence for its validity and usefulness with respect to a particular patient or population
- Determine when and how to integrate these new findings into practice.

4. Quality Improvement

- Measure quality of care in terms of
    - structure, or the inputs into the system, such as patients, staff, and environments;
    - process, or the interactions between clinicians and patients;
    - and outcomes, or evidence about changes in patient's health status in relation to patient and community needs
- Assess current practices and compare them to relevant better practices elsewhere as a means of identifying opportunities for improvement
- Design and test interventions to change the process of care with the objective of improving quality
- Identify errors and hazards in care, and implement basic safety design principles, such as standardization and simplification, and human factors training
- Act as an effective member of an interdisciplinary team, and improve the quality of one's own performance through self-assessment and personal change

5. Informatics

5.1 Information and Knowledge Management

- Identify appropriate patient data to support decision making
- Use standardized data and language (taxonomies) to articulate care provided
- Gather, record, and retrieve relevant data
- Evaluate data from multiple sources to inform practice
- Search, retrieve, manage, and make decisions using electronic data from internal information databases and external online databases and the Internet

5.2 Professional and Regulatory Accountability

- Identify actual and potential informational risks, gaps, and inconsistencies to troubleshoot for missing information
- Provide and document safe care
- Use professional judgement to support clinical assessments, interventions, and evaluation
- Recognize the need for interprofessional clinician input in the provision of patient care
- Follow security protection strategies such as access control, data security, and data encryption to directly address ethical and legal issues related to the use of information technology in practice

5.3 Information and Communication Technologies

- Identify and appropriately use various Information and Communication Technologies (ICTs)
- Use decision support tools to assist judgement and deliver safe quality care
- Demonstrate interprofessional collaboration as part of the provision of patient care
- Enhance education and access to reliable health information for patients

REFERENCES

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Case Study #1: Chronic Obstructive Pulmonary Disease (COPD)

Learning Objectives

Case 1 describes a patient's experience of chronic obstructive pulmonary disease (COPD) with a history of asthma. The interprofessional collaboration is role modelled between nursing, medical radiology, medical laboratory, and healthcare workers in the emergency department.

Note: The story told here is used in case 1 and case 2. The simpler version in case 1 can be used to teach novice students about health case studies. Case 2 reintroduces the patient from case 1 and expands her story with more details for more advanced study.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with respiratory disease
2. Build knowledge related to the patient's experience of respiratory disease
3. Continue to develop comprehensive assessment, monitoring skills, and abilities (e.g., respiratory assessment, diagnostic studies, laboratory data)
4. Develop and justify optimal therapy based on the current understanding of the pathophysiology of COPD and available clinical evidence
5. Recommend interventions based on the risk factors, status, and progression of respiratory disease
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Erin Johns

Erin Johns

Patient: Erin Johns

Date of Birth: 09/09/19xx

PERSONA

Erin Johns is 74 years old. She is widowed with four children, one of whom lives at home with her in their original family home in a small city in northern British Columbia. Two of Erin's children live within a one-hour drive from her, and one lives a three-hour flight away. She also has 10 grandchildren and one great grandchild. Erin communicates with her grandchildren by telephone and Skype using her iPad. Erin describes herself as a non-smoker, but she smoked socially when she was in her early twenties for about five years. She is a retired hairdresser. Erin also has a small hairless Chihuahua named Trixie. Erin spends her time socializing at her local community centre with her friends, and she likes to play Bingo. At home, she enjoys watching Netflix and playing "Solitaire and Scrabble with friends" on her iPad. Erin tends to feel down when she thinks about her lower financial status and her advancing age, and how she is becoming more forgetful and less energetic. She often feels alone but is grateful to have the company of Trixie and the few friends she has left who are still alive. She worries about falling and not being able to alert anyone to come to her rescue. Driving is becoming hard for her, and she finds getting to the clinic and picking up her medications more and more challenging, especially now that she doesn't have her own doctor anymore and she needs to go to the walk-in clinic.

Attribution

At Home

Day: 0

Time: 16h00

Place: At home

“Trixie stop barking!” Erin calls. She gets up from the couch slowly. “I can’t believe how tired I am.”

Taking a few steps towards the back door to let Trixie out, Erin stops at the corner of the kitchen island and puts a hand out to steady herself on the counter.

“Oh my. Can’t catch. My breath. Trixie. Stop barking.”

Remembering it was her late husband who took care of the dog, her eyes tear up slightly.

I miss him so, she thinks.

Moving toward the back door, Erin reaches down and lifts Trixie up onto the washing machine to place the leash on her.

“You stink, Trixie. Your bath will have to wait till I feel better. Not sure what is happening.”

Trixie, finally leashed, is lifted down and out they go through the back door into the cold winter air.

Erin gets down the steps and leans against the house to catch her breath. Meanwhile, Trixie relieves herself against a flower pot.

After about a minute, Erin begins to walk very slowly, with Trixie pulling on the leash. After about five minutes walking, Erin slows to a stop.

Looking back, Erin thinks to herself, “I have only walked about 50 meters. I am not sure I can even walk back to the house.”

Erin takes out her cell phone and calls her son at work.

“Thomas, I don’t feel well. You need to come home.”

“Mom, I’m at work. What’s up?” asks Thomas.

“I can’t. Catch. My. Breath. I think. I need. To go. To the. Hospital.”

“I will be there in 10 minutes, Mom.”

Emergency Room

Day: 0

Time: 18h00

Place: Emergency Room Triage

Sitting back in her chair, Jackie sighs. “Wow, this has been a long shift. I’m exhausted.”

Looking up from the desk, she sees an old green Ford truck stop in front of the Emergency Room. From the passenger door, an elderly lady slowly emerges. Reaching back into the truck, she pulls out a very small dog and slowly places it on the ground.

The older lady makes her way slowly to the doors, with the dog trailing her on a leash. Once she is inside the doors, Jackie notes that the woman displays pursed lip breathing, has a slight blue tinge to her lips and a very slow gait.

Finally making it to the triage desk, the lady leans against the desk and sighs loudly.

Jackie comes out from behind the desk and moves a wheelchair close to Erin for her to sit in.

“Hi, my name is Jackie and I’m the triage nurse today. How can I help you?”

“Thank you. My name. Erin. I feel awful. Can’t catch. My breath.”

Jackie pulls the blood pressure and pulse oximetry machine close to Erin and wraps the cuff around her right arm. She presses a button and the cuff inflates. On Erin’s left index finger she places a pulse oximeter.

After about 30 seconds, the machine beeps and displays the following vital signs:

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 18h00	96	180/90	28	36.5° C	85%

Grabbing a clipboard with an emergency assessment record on it, Jackie fills out the initial vital signs.

Referring to the Triage and Acuity Scale along with the vital signs, Jackie grades Erin's condition as "Triage Level III – Urgent".

A tall middle-aged man in workman's clothes approaches the triage desk. "How is my Mom doing?" asks Thomas.

"I think it would be best if Mrs. Johns stays with us awhile and has a doctor take a look at her. I will make arrangements for a spot for her to stay once we get her admission paperwork done. Can you and your Mom answer a few questions from Denise, the clerk who is just to the left of my desk?"

Denise, the admission clerk, comes over and introduces herself to Erin.

"Good evening. My name is Denise."

"My name is. Erin. This is my son. Thomas," Erin states breathlessly.

"Ok. Thomas, can you wheel your Mom close to my desk so I can input her information into the computer, please? That way we can get her a space in the ER quickly and have a doctor see her as well."

Thomas pushes the wheelchair over to the admissions desk.

"Do you have your Care Card with you?" asks Denise.

Erin hands over her Care Card to Denise, who rapidly inputs the information into the system.

"I see, Mrs. Johns, that you were at a clinic last week. Is this correct?"

Erin nods 'yes'. Thomas explains: "They changed her puffers and said to come back if there was any problem."

Denise nods her head. "Make sure you tell the nurses that."

Denise then asks, "Do you see anyone regularly at the clinic?"

"No. I see whoever is available. They change so often."

Looking up at Thomas, Denise asks, "Can I have your contact information, Thomas, in case we need to contact you?"

Thomas recites his cell phone number and tells Denise that he currently lives with his Mom, due to a complicated divorce that has left him a bit depressed and short of cash.

Denise nods and inputs the contact information into the computer.

"Well, that is all I need right now. I have called for a porter and they will move you to a spot where the doctor can see you."

Denise watches as the porter comes up to both Thomas and Erin and begins pushing the wheelchair through the doors into the back area of the Emergency Ward.

Denise shakes her head slightly and wiggles her nose. She thinks to herself, *That dog needs a bath. Poor thing*.

“Is this where. You are. Going to leave. Me. It’s a hallway!” Erin looks up at the porter pleadingly.

The porter looks at her. “You will need to wait here till there is a better spot for you,” and he walks away.

Erin pulls Trixie closer to her as she sits in the wheelchair. Thomas looks around at the chaos and sees people moving from curtained area to curtained area, all dressed alike in light blue scrubs. No one makes eye contact or even acknowledges them as the new arrivals.

Just as he is thinking this to himself, he feels a presence behind him. Turning around, he sees another nurse dressed in light blue holding a clipboard.

“Are you Mrs. Johns and her son, Thomas?”

Both nod affirmatively.

“My name is Jason. I’ve just come on shift. I see the triage nurse started your chart and that you have been admitted. What I need to do now is listen to your chest and ask you some questions. Is that ok?”

Jason watches both of them nod ‘yes’.

“Ok, then. Thomas, would you mind taking the dog outside so I can assess your mother?”

Thomas reaches down and gently extracts Trixie from Erin.

“Can you come get me after you’re done?” asks Erin.

Thomas: “Mom, I’ll walk Trixie and then put her in the truck. I have some biscuits that I can give her and she should be perfectly fine there.”

Thomas cradles the small dog, who begins to whimper quietly, and strides out through the doors to the emergency exit.

Jason pulls a chair closer to Erin. “I am going to ask you a few questions. This helps us to help you. Do you feel up to answering a few questions?”

“Yes.”

“When did you begin to feel short of breath?”

“About a week. Ago. I went. Clinic. Gave me new puffers. Seemed to help. Today. Walking Trixie. Cold out. Really short of breath. Called Thomas. Brought me here.”

Jason writes the information directly into the second page of the nursing record.

“The clinic notes indicate you have COPD. Is this correct?”

“Yes.”

“Do you have any other conditions?”

“No.” Erin smiles weakly. “Otherwise. Healthy.”

“Ok. That is enough right now. Let’s take your vital signs, and then I’m going to listen to your lungs and heart.”

Jason pulls the vital sign machine close to the wheelchair, attaches the BP cuff and the pulse oximeter, and presses the button.

As the cuff inflates, Jason looks carefully at Erin. He notes that her airway is patent and her breathing is rapid at 28/minute and appears shallow, with some nasal flaring.

The blood pressure cuff dings and the result appears on the screen.

“Ok, Mrs. Johns. Your blood pressure is higher than I would expect. Is this normal for you?”

Erin leans forward and peers closely at the numbers. “I think so. Top number. 150 to. 170. Normally.”

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 19h30	112	190/84	28	–	84% on RA

Jason nods. “Your oxygen saturation is a bit low, so I’m going to put you on a little oxygen. Is that ok with you?”

“Yes.”

Jason reaches over to draw in a cart from the hallway. He pulls out a set of nasal prongs and attaches them to an oxygen tank fitted at the back of the wheelchair. He thinks to himself and then sets the flow at 2 LPM.

“Let’s see if that helps with your shortness of breath. I’m now going to listen to your heart and lungs. I know we are in the hallway and I’ll do my best to not expose you. Are you ok with me examining you?”

“Yes. Not happy. In hallway.”

“I can understand that, but we’re very busy and I have no other place to give you. I hope this will only be for a couple of hours.”

Jason then carefully slips his stethoscope between Erin’s clothes and skin. Closing his eyes, he moves the stethoscope systematically first to the anterior chest then posterior chest. After listening, he quickly examines her abdomen and extremities.

“Ok, Mrs. Johns. I’m done right now. I see your oxygen levels appear to be a bit higher. Are you feeling a little less short of breath?”

“Yes, I feel a bit better.”

“Great! I am going to find the doctor and see what the plan will be for you. If you need any help, just wave your arms.”

Erin nods that she understands. Looking around, she shivers slightly at being sick and so exposed in the hallway. She watches Jason move towards the nursing station where there are two people who look like doctors. She thinks

to herself, “They look so young. How can they be doctors? I’m stuck in a hallway, can’t believe all the money we pay for taxes and this is the best they can do for me. When Thomas comes back, I’ll ask him to take me and Trixie home. This is ridiculous.”

Jason looks at the various people huddled around the nursing station.

He shakes his head slightly and mumbles, “Yeah, shift change for everyone.”

He walks up to Dr. Singh, whom he is most familiar with. As he approaches he hears Dr. Singh announce, “I’ll take the back rooms and the hallway patients. Stan, can you take the triage and trauma? I did that yesterday, and with that patient dying in the trauma room, I still have to sign off the chart and have a discussion with the coroner.”

Stan looks up at his peer. “Ok, but if it gets really busy, we’ll need to call someone in or you will need to help.”

Dr. Singh sighs. “If you need help, I will stay.”

Dr. Singh moves off to check the computer for emergency admissions and to start planning his shift.

Jason moves up beside him. “Can I interrupt?”

“Sure thing, Jason. What’s up?

Trying to keep to SBAR, Jason says, “I just came on shift as well. New patient, Mrs. Johns, 72 years old, in Hallway B. Exacerbation of COPD, maybe pneumonia, no other medical history, quite short of breath with low sats. I placed her on 2 LPM prongs with some relief and better sats. Breath sounds are quite quiet to the lower fields and she has a slight wheeze in the upper fields. She’s stable right now but I need some orders, please.”

“Ok, Jason. I agree that she’s stable right now, but with a big potential to deteriorate. I will follow the COPD protocol and write orders for a chest X-ray, some labs, puffers, spirometry, and an ABG. Let’s hold off on antibiotics till we have a firmer picture of pneumonia. I don’t want to overreact and prescribe something she doesn’t need right now. With her diagnosis and potentially frequent antibiotic use, we could set her up for a superbug. How does that sound?”

“I agree, and thank you. I’ll get the RT for the ABG and see if Medrad can do the X-ray portably.”

Dr. Singh pulls out a doctor’s order sheet. Jason places a sticker with Erin Johns’s identification on the top right corner.

Jason takes the orders from Dr. Singh and goes over to the unit clerk, Sheila.

Sheila looks at him with raised eyebrows. “I just got here, so please don’t tell me this is a long order set! My commute was terrible and daycare was late opening up. I already feel behind before I’ve even started.”

Jason smiles. “Aww, Sheila. I hate when my day starts like that. I once had to bring little Jim in to work when my daycare was late as well. Cathy picked him up a half hour into the shift. The orders are really short, as you would expect from Dr. Singh. Just what you need, no extras. Since you are settling in, do you want me to enter them into the computer?”

“That would be awesome!! I see Dr. Greg’s admitted a patient to 7B and the order set for that patient is seven pages. I would rather get started on that set, if you don’t mind.”

“No problem.” Jason moves away from the nursing station and signs on to a computer located just a few feet from Erin.

He types in all the information and generates the requisitions for the orders Dr. Singh wrote: CBC, lytes, BUN, creatinine, spirometry, and a portable chest X-ray, and medications as per COPD protocol.

Jason quietly moves towards Erin and notes that she is sleeping in the chair.

“Wow, I wonder when she last had a good sleep.”Jason gently touches her arm to wake her and updates her on her tests. He tells her that Dr. Singh will come by in a little bit, after the tests are done, to check on her.

Erin nods and then closes her eyes.

Place: Medical Laboratory

Alexa has just started her shift. Smiling inwardly, she thinks, *This is my third shift by myself after orientation. Can’t believe it. School does a good job of preparing you for the job, but nothing can prepare you for the work. It’s so busy. My feet already hurt.*

Straightening her scrub top, she leans over and double-checks her cart to make sure she has enough supplies to last the majority of the shift.

The lab supervisor approaches her. “Emergency is really busy right now. Would you mind going down there first before heading to the rest of the hospital? Sheila, the clerk down there, says there are about 20 lab reqs waiting.”

“Ok, I haven’t been there since I was a student.”

“No worries. James is already down there and he can help you out. He thoroughly enjoys the atmosphere of the Emergency.”

Alexa pushes her cart out of the lab area and heads to the elevator that goes to Emergency. She pushes the button for the Emergency floor and watches the buttons slowly creep towards that floor. Exiting, she pushes her cart up to the emergency staff doors, and taking a deep breath she pushes the button. As soon as the doors open, she sways back from the noise and the smells and the overwhelming sense of chaos.

“Oh my. Yep, school did not prepare me for this. Wow.”

Navigating her cart through the Emergency Department, she thinks to herself, *It’s just like driving in rush hour in a foreign country. There are rules but no one sticks to the lines.*

She quickly finds herself at the nursing station and moves towards the desk area where all the requisitions are waiting. She notes that James has taken all the stat ones, as there is not one in the pile. Looking through requisitions, she notes that they are all pretty similar and all the reqs have close to the same time on them.

“Ok, let’s start with this one,” she says as she places Erin Johns’s req on the top of her board. Looking at the req, she pulls out the appropriate lab tubes and labels them with Erin Johns’ stickers.

That done, she looks up. A frown creases her forehead, and she mumbles, “Hallway B. Where the heck is that?”

Jason, walking by, hears Alexa mumble and stops. “Hi, I’m Jason and Hallway B is my assignment. Who are you looking for?”

Alexa, looking somewhat sheepish, says, “I didn’t think anyone would hear me mumble in this noise.”

“It’s not so noisy and you do get used to it.”

“I’m looking for Erin Johns.”

“Erin is my patient. Let’s walk over here and down this corridor. I’ll introduce you. I haven’t seen you before. Are you new?”

“Yes, this is my third shift by myself after orientation. I’ve mainly been in the lab department or on the medical floors. I was in Emergency for some of my final preceptorship.”

“Excellent. This is a great place to work. Busy, but the people are knowledgeable and quite caring.”

As they move down the hallway, Alexa sees an elderly lady, still in her normal clothes and with a light blanket wrapped around her shoulders, sleeping in a wheelchair.

“Is that…?”

“Yes. That is Erin Johns.”

Jason moves confidently up to Erin and lightly touches her on the arm. Alexa notes that Erin’s eyes open quickly and they appear sharp and not withdrawn, like some of the patients she has seen.

“Mrs. Johns, this is Alexa, one of our lab technicians. She’s here to take some blood from you. Is that ok?

Erin nods ‘yes’.

Alexa moves her cart closer. Looking at the req and then at Mrs. Johns, she says, “Can you tell me your name?”

“Erin Johns.”

“Your birthday?”

“06/06/19xx.”

“Excellent, thank you.” Alexa checks the identification band on Erin’s right wrist against the information on the requisition. Satisfied, she gathers the tubes, double-checks them, and picks up the venipuncture equipment and tourniquet. Following the World Health Organization guidelines, Alexa prepares to take the required blood specimens.

Alexa first asks Erin to roll her sleeve up a bit more. Carefully putting the tourniquet around Erin's right upper arm, Alexa then swabs her inner antecubital space.

"Ok, this will pinch a bit."

Carefully sliding the needle under the skin, Alexa quickly finds the vein and pushes the first of three tubes into the vacutainer.

Once all the tubes are full, Alexa shakes them slowly and carefully to mix the blood and the anticoagulant. After that, she carefully places the tubes in the holder in the front of her cart.

"I'm all done, Mrs. Johns. I hope you feel better soon."

Alexa moves away and heads towards the nursing station. She looks down at the next req on her list and notes that it's not a hallway but a number. Looking around, she quickly finds number 12 and heads towards the next patient.

Place: Medical Radiography

Gurpreet checks the list of patients requisitions that need to be done. Looking at the list, she sees there are a number of emergency patients and floor patients. No requisitions are marked as stat.

"Ok, looks like we need a porter."

Glen looks across the lobby from where he is sitting. "What's that, Gurpreet? Do you need me?"

"Sorry, Glen, didn't see you there. Yes, can you go pick up Mrs. Erin Johns from Hallway B in Emergency, please?"

"Yes, no problem."

Glen pulls himself out of the chair and strides through the double doors of the Radiology Department. Looking quickly up and down the hallway, Glen makes his way down the back stairs to the Emergency Department.

Glen has been working in the hospital for about 15 years and knows every short cut there is. Taking the stairs two at a time, he arrives at a little used doorway into Hallway B of the Emergency Department.

Walking up to the nursing station at the far end of the hallway, he looks at Sheila, the unit clerk. "Hi ya, Sheila."

"Oh, hi Glen. What can I do for you?"

"Oi, how about dinner?"

"That's not what I meant!" Sheila smiles at her boyfriend and winks at him.

"I'm here to escort Mrs. Erin Johns to the Radiology Department for a picture."

Sheila looks at her assignment list and finds that Jason is the nurse. "Ok, Jason is caring for her. And there he is talking with Mrs. Johns."

“Thanks. See you after work?”

“I’m done at seven. Come down here when you’re finished. We can share a bus seat home.”

Glen smiles and walks towards Erin and Jason.

“Hi, my name is Glen and I’ve been asked to escort Mrs. Johns here to the X-ray Department.”

Jason frowns. “Can’t that be done portably?”

Glen shakes his head. “Not my call. Gurpreet asked me to escort her to the department.”

Jason leans down and explains to Erin that she needs a chest X-ray to help them figure out why she is short of breath.

Erin, looking a bit more tired, says, “I’ve had quite a few of those. I’d be glad to get out of this hallway. It’s so noisy.”

Glen grabs the back of the wheelchair, quickly turns her around and points the chair out the door. Striding to the elevator, Glen recaps for Erin the weather outside, the hockey game, and recent city events. Erin sits in her chair and pretends to listen.

Glen and Erin roll through the doors of the Radiology Department to see Gurpreet standing at the desk.

“Here is Mrs. Erin Johns, from Hallway B in the Emergency Department.”

“Thank you, Glen. Can you place her in Room 2, please? I’ll be right behind you.”

Time: 11h30

Place: Emergency Room, Hallway B

“When will I get my results?”

Glen looks at Erin. “I’m not the one to ask, I’ll let Sheila know you are back, so the doctor and Jason can look at your picture.”

“Thank you.”

Glen walks quickly away to the nursing station to inform Sheila that the chest X-ray is completed.

Erin looks up and down the hallway and sees less activity and some empty stretcher bays.

I do hope I can get a bed to lie down in, she thinks to herself. *My backside is getting sore*.

Without realizing it, Erin closes her eyes. Suddenly she feels a touch on her hand. Startled, she gives a little shout.

“Oh oh oh, it’s ok. My name is Matt. I had no intention of scaring you. Wow. Really sorry, Mrs. Johns.”

“It’s ok. I didn’t realize I had fallen asleep.”

“I’m a respiratory therapist and a couple of tests have been ordered for you. One is spirometry, which I think you have had before, from the results in your chart, and the second one is a blood gas.”

“Spirometry is the blowing test, right?”

“Yes, that’s the one. Shall we do that one first?”

“Ok.”

Matt opens a small plastic bag to retrieve a freshly sterilized kit tube with a gauge on it. He quickly describes what he wants Erin to do.

“Mrs. Johns, I’m going to ask you to take a deep breath and then blow it out as hard as you can through this tube. We’re going to do this three times to make sure we get an accurate measurement.”

Erin sits a bit straighter in her wheelchair and nods. “I’ll try my best.”

Matt hands Erin the device. “Good. Ok, take a deep breath, then blow through the tube.”

Erin does as instructed, three times. After each time, Jason records the results on the requisition for spirometry.

“Ok, that is now done. You did a great job, Mrs. Johns.”

Erin nods her head and smiles slightly.

“Next, I need to do an Arterial Blood Gas or ABG, so I must draw a small sample of blood from your wrist. This is a bit more uncomfortable than having your lab work done.”

Erin looks up questioningly. “Is it necessary? I had a blood gas done before and it really hurt!”

“I’ll try my best to not hurt you, but it is uncomfortable. Which hand do you use the most?”

“I am right-handed.”

Matt gently grabs Erin’s left hand and bends her elbow 90 degrees. He then performs the Allen test.

“Ok, ok, everything looks good, Mrs. Johns.”

Matt then rubs an alcohol swab vigorously across Mrs. Johns’ wrist. Then he waves his hand back and forth to disperse the smell.

“I need you to relax and stay still while I do this, ok?”

Erin nods nervously.

Matt, holding the syringe at a 45 degree angle, slips the needle under Erin’s skin. Quickly the syringe fills with red fluid. Matt then withdraws the syringe and holds a gauze over the site.

“That wasn’t too bad. You are very good at this.”

“I’ve had a bit of practice, Mrs. Johns.” While holding pressure on her left wrist, Matt deftly removes the needle from the sample and caps the syringe. After a couple of minutes, he asks Erin to hold pressure but not to peek and not to let go until he comes back.

Taking the sample, Matt goes to the back area of the Emergency Department and runs the sample through the blood gas machine. The machine quickly prints out the result.

Matt goes back to Erin.

“Ok, let’s look under the gauze.”

Matt see no bleeding but notes a small bruise at the puncture site. He places a small gauze over the site and wraps a small dressing right around Erin’s wrist.

“Please leave this dressing on. We can take it off later tonight, but I want to make sure you don’t get left with a big bruise.”

Erin nods.

Matt steps away to find Jason and show him the results from spirometry and the blood gas.

Matt finds Jason at the computer in the nursing station.

“Hi, Jason. I have the results from spirometry and blood gases for Mrs. Johns.”

Jason looks up, smiles and says, “Ok, anything special?”

“Spirometry shows a decrease in vital capacity from what was taken at the clinic a couple of months ago. That’s not surprising, given that she’s back here. The ABG shows a rise in CO_2 and just normal PaO_2 on 2 LPM oxygen. She’s a bit compromised right now. I took a listen to her chest a little while ago. She sounds typically COPD-like, with nothing I didn’t expect.”

“Ok. Are the results on the clipboard?”

“Yes, and I hope you don’t mind I wrote the ABG in the chart as well.”

“You are awesome. I’ll go find Dr. Singh when I’m done here and see what he would like to do, but my guess is she is staying the night.”

Thirty minutes later, Jason says: “Dr. Singh, here are the spirometry results and ABG on Erin Johns.”

“Thanks.”

Dr. Singh reviews the results and comes to the same conclusions as Matt and Jason. “Let’s look at her chest X-ray.”

Dr. Singh pulls up the X-ray film onto the computer and both lean in to view the black and white picture. Jason

looks at the picture and then at Dr. Singh, thinking to himself that it looks like a normal X-ray, except the lungs look a bit long.

Dr. Singh sighs. “Ok, the X-ray shows a bit of infiltrates at the bases and your typical COPD hyper-inflation. Nothing that I would consider abnormal itself, but when we consider the ABG and the spirometry all together, I’d like to keep her overnight to see if she is going to get better or going to get worse. If it’s pneumonia, she will get worse overnight and the next day. If it’s just the cool weather we’re having and nothing infective, she should get a bit better with some care and attention. What do you think?”

“Matt and I were having the same discussion. I’m pretty sure I can find a bay for her to stay. Question is, will she want to stay?”

“I’ll go talk to her.”

“Hello, Mrs. Johns. My name is Dr. Amir Singh. I am one of the many people here taking care of you.”

“Not sure about taking care of me. First I’ve seen of you.”

Dr. Singh smiles. “So true. I’ve been more in the shadows than caring for you directly like Jason here. Both Jason and I have reviewed your tests and we believe you should stay overnight with us. I don’t think it’s serious, and if you are able to get a reasonable sleep and a few more puffs of the meds I’ve ordered, along with some oxygen, you may look better in the morning.”

“I’m feeling better. Not perfect. Can I have a bed? Can my dog visit me? Will someone call my son?”

Dr. Singh smiles. “Yes to all. I’ll call your son and let him know, and Jason here will find you one of our finest beds in the Emergency.”

“Thank you.”

Dr. Singh then nods to both Erin and Jason and walks over to where a nurse is gesturing for him at Bed 3.

Jason bends down to be eye level with Erin and says, “Give me a couple of minutes and I’ll find you a more private location.”

Erin nods and smiles. She grabs Jason’s hand and pats it kindly, like all the old ladies do with Jason.

After a discussion with the charge nurse and getting housekeeping to clean an area from a recent discharge, Jason moves Erin into the last stretcher bed furthest from the nursing station and the doors, the most private location they have and a coveted location for staff to take their breaks.

“This should be a lot better for you. You need to let me know if you need to use the washroom, as I’ll get another oxygen tank on wheels for you to use when you are up.”

“Thank you. What about my son and Trixie?”

“Dr. Singh and I updated Thomas. He’s not going to come in tonight but will in the morning. He says not to worry

about Trixie. Thomas said he was going to give her a bath and a meal and they were going to chill with some Netflix."

"Oh, she really needs a bath. Been feeling awful not to be able to do even that small task. Trixie likes to watch Mad Men. That Mr. Draper is such a scamp!"

"Ok, Mrs. Johns. If you need anything, please push the call button."

Day: 1

Time: 07h00

Dr. Notley is reviewing the list of patients to see this morning when he is approached by the charge nurse with a list of overnight patients that potentially could be sent home if everything is well.

"Can you look at these patients first? Let me know which ones can be sent home."

Dr. Notley notes the first patient is Erin Johns, exacerbation of COPD, on 2 LPM nasal prongs, ABG shows higher than normal CO_2 and drop in PaO_2 with maybe something on the CXR.

Dr. Notley walks quickly down the hall to the last stretcher in the row of twenty. Seeing the curtain partially open, he announces himself. "Good morning. I'm Dr. Notley."

Jackie, the nurse taking care of Erin, waves him in.

"Hello, Jackie. How are you doing?"

"Doing good right now. Mrs. Johns is doing quite well. I was at the triage desk yesterday when she came in. She didn't look very happy nor well. This morning, I've taken her O_2 off and her sats have stayed 90-91% on room air. No cyanosis noted and her breath sounds have no wheezes and she is not coughing anything up."

"Excellent. How are you feeling, Mrs. Johns?"

Erin looks at Dr. Notley and thinks to herself that he looks exactly how a doctor should look, with nice grey hair, pressed lab coat, and a stethoscope around his neck. Dr. Welby's brother. "I'm much better. I feel a bit short of breath but not worse than usual. I can go to the washroom without stopping for breath. The food here is terrible and I would love something better."

"Ok, good appetite and able to move around. Not sure we're doing anything for you now, Mrs. Johns. I'd like to send you home with follow-up in the clinic tomorrow and the next day. I want to make sure that you are well followed and that this does not happen to you again."

"Will you make the appointments? Can someone phone my son to pick me up?"

"That won't be necessary, Mom. Trixie and I are already here."

Dr. Notley nods and asks Thomas to come closer. He then goes on to explain what probably happened, with the

cold weather, stress and not taking her puffers regularly, leading to her coming to the Emergency. He then goes on to explain the importance of the medications and the follow-up appointments.

Thomas shakes his head and reaches out for his mother's hand. "Thank you, doctor. I'll make sure she gets to the appointments. Are there any new prescriptions for her?"

"I'm going to send you home with the puffers she is using here, and I'm going to send a note to the clinic with our recommendations for meds for Mrs. Johns. That's why it's important to go to the clinic tomorrow."

Mother and son both promise to go to the clinic.

Thomas moves Trixie from inside his coat onto Erin's lap. The little dog excitedly jumps around and then curls up in the covers on Erin's lap.

"Cute dog, Mrs. Johns," Dr. Notley exclaims as he walks away to finish the discharge list and begin the paperwork to discharge Mrs. Johns.

Jackie then explains that they will have to wait until the paperwork is done for discharge and the clinic appointment. "Do you have any questions?"

Both shake their heads 'no'.

"Ok, I'll come back in a few minutes with your meds and the paperwork to sign for your discharge."

Case Study #2: Pneumonia

Learning Objectives

Case 2 describes a patient's experience of COPD exacerbation due to community acquired pneumonia. The patient in this case study has a complicated health history. The interprofessional collaboration is role modelled between nursing, medical radiology, medical laboratory, and health care workers in the emergency department.

Learners reviewing this case can consider how pneumonia affects COPD. Additionally this case offers opportunity for discussion on supporting families both in the Emergency Department and acute medicine areas. The interprofessional collaboration is ideal and offers opportunities for further discussion on why the collaboration works so well and what barriers would prevent ideal collaboration.

Note: The story told here is used in case 1 and case 2. The simpler version in case 1 can be used to teach novice students about health case studies. Case 2 reintroduces the patient from case 1 and expands her story with more details for more advanced study.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with respiratory disease
2. Build knowledge related to the patient's experience of respiratory insufficiency, including COPD and pneumonia
3. Continue to develop comprehensive assessment and monitoring skills and abilities (e.g., relevant abnormal physical assessment findings, ABGs, lab, and diagnostic data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with pneumonia (e.g., CAP guidelines)
5. Recommend interventions based on the risk factors, status, and progression of pneumonia (e.g., antibiotic therapy, oxygen therapy)
6. Define the roles of health care professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Erin Johns

Erin Johns

Patient: Erin Johns

Date of Birth: 09/09/19xx

PERSONA

Erin Johns is 74 years old. She is widowed with four children, one of whom lives at home with her in their original family home in a small city in northern British Columbia. Two of Erin's children live within a one-hour drive from her, and one lives a three-hour flight away. She also has 10 grandchildren and one great grandchild. Erin communicates with her grandchildren by telephone and Skype using her iPad. Erin describes herself as a non-smoker, but she smoked socially when she was in her early twenties for about five years. She is a retired hairdresser. Erin also has a small hairless Chihuahua named Trixie. Erin spends her time socializing at her local community centre with her friends, and she likes to play Bingo. At home, she enjoys watching Netflix and playing "Solitaire and Scrabble with friends" on her iPad. Erin tends to feel down when she thinks about her lower financial status and her advancing age, and how she is becoming more forgetful and less energetic. She often feels alone but is grateful to have the company of Trixie and the few friends she has left who are still alive. She worries about falling and not being able to alert anyone to come to her rescue. Driving is becoming hard for her, and she finds getting to the clinic and picking up her medications more and more challenging, especially now that she doesn't have her own doctor anymore and she needs to go to the walk-in clinic.

Attribution

At Home

Day: 0

Time: 16h00

Place: At home

“Trixie stop barking,” Erin calls. She gets up from the couch slowly. “I can’t believe how tired I am.”

Taking a few steps towards the back door to let Trixie out, Erin stops at the corner of the kitchen island and puts a hand out to steady herself on the counter.

“Oh my. Can’t catch. My breath. Trixie. Stop barking.”

Remembering it was her late husband who took care of the dog, her eyes tear up slightly.

“I miss him so,” she thinks.

Moving toward the back door, Erin reaches down and lifts Trixie up onto the washing machine to place the leash on her.

“You stink, Trixie. Your bath will have to wait till I feel better. Not sure what is happening.”

Trixie, finally leashed, is lifted down and out they go through the back door into the cold winter air.

Erin gets down the steps and leans against the house to catch her breath. Meanwhile, Trixie relieves herself against a flower pot.

After about a minute, Erin begins to walk very slowly, with Trixie pulling on the leash. After about five minutes walking, Erin slows to a stop.

Looking back, Erin thinks to herself, “I have only walked about 50 meters. I am not sure I can even walk back to the house.”

Erin takes out her cell phone and calls her son at work.

“Thomas, I don’t feel well. You need to come home.”

“Mom, I’m at work. What’s up?” Thomas asks.

“I can’t. Catch. My. Breath. I think. I need. To go. To the. Hospital.”

“I will be there in ten minutes Mom.”

Day 0: Emergency Room

Day: 0

Time: 18h00

Place: Emergency Room Triage

Sitting back in her chair, Jackie sighs. “Wow, this has been a long shift. I’m exhausted.”

Looking up from the desk, she sees an old green Ford truck stop in front of the Emergency Room. From the passenger door, an elderly lady slowly emerges. Reaching back into the truck, she pulls out a very small dog and slowly places it on the ground.

The older lady makes her way slowly to the doors, with the dog trailing her on a leash. Once she is inside the doors, Jackie notes that the woman displays pursed lip breathing, has a slight blue tinge to her lips and a very slow gait.

Finally making it to the triage desk, the lady leans against the desk and sighs loudly.

Jackie comes out from behind the desk and moves a wheelchair close to Erin for her to sit in.

“Hi, my name is Jackie and I’m the triage nurse today. How can I help you?”

“Thank you. My name. Erin. I feel awful. Can’t catch. My breath.”

Jackie pulls the blood pressure and pulse oximetry machine close to Erin and wraps the cuff around her right arm. She presses a button and the cuff inflates. On Erin’s left index finger she places a pulse oximeter.

After about 30 seconds, the machine beeps and displays the following vital signs:

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 18h00	96	180/90	28	36.5° C	85%

Grabbing a clipboard with an emergency assessment record on it, Jackie fills out the initial vital signs.

Referring to the Triage and Acuity Scale along with the vital signs, Jackie grades Erin's condition as "Triage Level III – Urgent".

A tall middle-aged man in workman's clothes approaches the triage desk. "How is my Mom doing?" asks Thomas.

"I think it would be best if Mrs. Johns stays with us awhile and has a doctor take a look at her. I will make arrangements for a spot for her to stay once we get her admission paperwork done. Can you and your Mom answer a few questions from Denise, the clerk who is just to the left of my desk?"

Denise, the admission clerk, comes over and introduces herself to Erin.

"Good evening. My name is Denise."

"My name is. Erin. This is my son. Thomas," Erin states breathlessly.

"Ok. Thomas, can you wheel your Mom close to my desk so I can input her information into the computer, please? That way we can get her a space in the ER quickly and have a doctor see her as well."

Thomas pushes the wheelchair over to the admissions desk.

"Do you have your Care Card with you?" asks Denise.

Erin hands over her Care Card to Denise, who rapidly inputs the information into the system.

"I see, Mrs. Johns, that you were at a clinic last week. Is this correct?"

Erin nods 'yes'. Thomas explains: "They changed her puffers and said to come back if there was any problem."

Denise nods her head. "Make sure you tell the nurses that."

Denise then asks, "Do you see anyone regularly at the clinic?"

"No. I see whoever is available. They change so often."

Looking up at Thomas, Denise asks, "Can I have your contact information, Thomas, in case we need to contact you?"

Thomas recites his cell phone number and tells Denise that he currently lives with his Mom, due to a complicated divorce that has left him a bit depressed and short of cash.

Denise nods and inputs the contact information into the computer.

"Well, that is all I need right now. I have called for a porter and they will move you to a spot where the doctor can see you."

Denise watches as the porter comes up to both Thomas and Erin and begins pushing the wheelchair through the doors into the back area of the Emergency Ward.

Denise shakes her head slightly and wiggles her nose. She thinks to herself, "That dog needs a bath. Poor thing."

“Is this where. You are. Going to leave. Me. It’s a hallway!” Erin looks up at the porter pleadingly.

The porter looks at her. “You will need to wait here till there is a better spot for you,” and he walks away.

Erin pulls Trixie closer to her as she sits in the wheelchair. Thomas looks around at the chaos and sees people moving from curtained area to curtained area, all dressed alike in light blue scrubs. No one makes eye contact or even acknowledges them as the new arrivals.

Just as he is thinking this to himself, he feels a presence behind him. Turning around, he sees another nurse dressed in light blue holding a clipboard.

“Are you Mrs. Johns and her son, Thomas?”

Both nod affirmatively.

“My name is Jason. I’ve just come on shift. I see the triage nurse started your chart and that you have been admitted. What I need to do now is listen to your chest and ask you some questions. Is that ok?”

Jason watches both of them nod ‘yes’.

“Ok, then. Thomas, would you mind taking the dog outside so I can assess your mother?”

Thomas reaches down and gently extracts Trixie from Erin.

“Can you come get me after you’re done?” asks Erin.

Thomas: “Mom, I’ll walk Trixie and then put her in the truck. I have some biscuits that I can give her and she should be perfectly fine there.”

Thomas cradles the small dog, who begins to whimper quietly, and strides out through the doors to the emergency exit.

Jason pulls a chair closer to Erin. “I am going to ask you a few questions. This helps us to help you. Do you feel up to answering a few questions?”

“Yes.”

“When did you begin to feel short of breath?”

“About a week. Ago. I went. Clinic. Gave me new puffers. Seemed to help. Today. Walking Trixie. Cold out. Really short of breath. Called Thomas. Brought me here.”

Jason writes the information directly into the second page of the nursing record.

“The clinic notes indicate you have COPD. Is this correct?”

“Yes.”

“Do you have any other conditions?”

“No.” Erin smiles weakly. “Otherwise. Healthy.”

“Ok. That is enough right now. Let’s take your vital signs, and then I’m going to listen to your lungs and heart.”

Jason pulls the vital sign machine close to the wheelchair, attaches the BP cuff and the pulse oximeter, and presses the button.

As the cuff inflates, Jason looks carefully at Erin. He notes that her airway is patent and her breathing is rapid at 28/minute and appears shallow, with some nasal flaring.

The blood pressure cuff dings and the result appears on the screen.

“Ok Mrs. Johns, your blood pressure is higher than I would expect. Is this normal for you?”

Erin leans forward and peers closely at the numbers, “I think so. Top number. 150 to. 170. Normally.”

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 20h00	92	170/90	26	36.4° C	84%

Jason nods. “Your oxygen saturation is a bit low, so I am going to put you on a little oxygen. Is that ok with you?”

“Yes.”

Jason reaches over to draw in a cart from the hallway. He pulls out a set of nasal prongs and attaches them to an oxygen tank fitted at the back of the wheelchair. He thinks to himself and then sets the flow at 2 LPM.

“Let’s see if that helps with your shortness of breath. I’m now going to listen to your heart and lungs. I know we are in the hallway and I’ll do my best to not expose you. Are you ok with me examining you?”

“Yes. Not happy. In hallway.”

“I can understand that, but we’re very busy and I have no other place to give you. I hope this will only be for a couple of hours.”

Jason then carefully slips his stethoscope between Erin’s clothes and skin. Closing his eyes, he moves the stethoscope systematically first to the anterior chest then posterior chest. After listening, he quickly examines her abdomen and extremities.

“Ok, Mrs. Johns. I’m done right now. I see your oxygen levels appear to be a bit higher. Are you feeling a little less short of breath?”

“Yes, I feel a bit better.”

“Great! I am going to find the doctor and see what the plan will be for you. If you need any help, just wave your arms.”

Erin nods that she understands. Looking around, she shivers slightly at being sick and so exposed in the hallway. She watches Jason move towards the nursing station where there are two people who look like doctors. She thinks

to herself, “They look so young. How can they be doctors? I’m stuck in a hallway, can’t believe all the money we pay for taxes and this is the best they can do for me. When Thomas comes back, I’ll ask him to take me and Trixie home. This is ridiculous.”

Jason looks at the various people huddled around the nursing station.

He shakes his head slightly and mumbles, “Yeah, shift change for everyone.”

He walks up to Dr. Singh, whom he is most familiar with. As he approaches he hears Dr. Singh announce, “I’ll take the back rooms and the hallway patients. Stan, can you take the triage and trauma? I did that yesterday, and with that patient dying in the trauma room, I still have to sign off the chart and have a discussion with the coroner.”

Stan looks up at his peer. “Ok, but if it gets really busy, we’ll need to call someone in or you will need to help.”

Dr. Singh sighs. “If you need help, I will stay.”

Dr. Singh moves off to check the computer for emergency admissions and to start planning his shift.

Jason moves up beside him. “Can I interrupt?”

“Sure thing, Jason. What’s up?

Trying to keep to SBAR, Jason says, “I just came on shift as well. New patient, Mrs. Johns, 72 years old, in Hallway B. Exacerbation of COPD, maybe pneumonia, no other medical history, quite short of breath with low sats. I placed her on 2 LPM prongs with some relief and better sats. Breath sounds are quite quiet to the lower fields and she has a slight wheeze in the upper fields. She’s stable right now but I need some orders, please.”

“Ok, Jason. I agree that she’s stable right now, but with a big potential to deteriorate. I will follow the COPD protocol and write orders for a chest X-ray, some labs, puffers, spirometry, and an ABG. Let’s hold off on antibiotics till we have a firmer picture of pneumonia. I don’t want to overreact and prescribe something she doesn’t need right now. With her diagnosis and potentially frequent antibiotic use, we could set her up for a superbug. How does that sound?”

“I agree, and thank you. I’ll get the RT for the ABG and see if Medrad can do the X-ray portably.”

Dr. Singh pulls out a doctor’s order sheet. Jason places a sticker with Erin Johns’s identification on the top right corner.

Jason takes the orders from Dr. Singh and goes over to the unit clerk, Sheila.

Sheila looks at him with raised eyebrows. “I just got here, so please don’t tell me this is a long order set! My commute was terrible and daycare was late opening up. I already feel behind before I’ve even started.”

Jason smiles. “Aww, Sheila. I hate when my day starts like that. I once had to bring little Jim in to work when my daycare was late as well. Cathy picked him up a half hour into the shift. The orders are really short, as you would expect from Dr. Singh. Just what you need, no extras. Since you are settling in, do you want me to enter them into the computer?”

“That would be awesome!! I see Dr. Greg’s admitted a patient to 7B and the order set for that patient is seven pages. I would rather get started on that set, if you don’t mind.”

“No problem.” Jason moves away from the nursing station and signs on to a computer located just a few feet from Erin.

He types in all the information and generates the requisitions for the orders Dr. Singh wrote: CBC, lytes, BUN, creatinine, spirometry, and a portable chest X-ray, and medications as per COPD protocol.

Jason quietly moves towards Erin and notes that she is sleeping in the chair.

“Wow, I wonder when she last had a good sleep.”Jason gently touches her arm to wake her and updates her on her tests. He tells her that Dr. Singh will come by in a little bit, after the tests are done, to check on her.

Erin nods and then closes her eyes.

Place: Medical Laboratory

Alexa has just started her shift. Smiling inwardly, she thinks, “This is my third shift by myself after orientation. Can’t believe it. School does a good job of preparing you for the job, but nothing can prepare you for the work. It’s so busy. My feet already hurt.”

Straightening her scrub top, she leans over and double-checks her cart to make sure she has enough supplies to last the majority of the shift.

The lab supervisor approaches her. “Emergency is really busy right now. Would you mind going down there first before heading to the rest of the hospital? Sheila, the clerk down there, says there are about 20 lab reqs waiting.”

“Ok, I haven’t been there since I was a student.”

“No worries. James is already down there and he can help you out. He thoroughly enjoys the atmosphere of the Emergency.”

Alexa pushes her cart out of the lab area and heads to the elevator that goes to Emergency. She pushes the button for the Emergency floor and watches the buttons slowly creep towards that floor. Exiting, she pushes her cart up to the emergency staff doors, and taking a deep breath she pushes the button. As soon as the doors open, she sways back from the noise and the smells and the overwhelming sense of chaos.

“Oh my. Yep, school did not prepare me for this. Wow.”

Navigating her cart through the Emergency Department, she thinks to herself, “It’s just like driving in rush hour in a foreign country. There are rules but no one sticks to the lines.”

She quickly finds herself at the nursing station and moves towards the desk area where all the reqs are waiting. She notes that James has taken all the stat ones, as there is not one in the pile. Looking through reqs, she notes that they are all pretty similar and all the reqs have close to the same time on them.

“Ok, let’s start with this one,” she says as she places Erin Johns’s req on the top of her board. Looking at the req, she pulls out the appropriate lab tubes and labels them with Erin Johns’ stickers.

That done, she looks up. A frown creases her forehead, and she mumbles, “Hallway B. Where the heck is that?”

Jason, walking by, hears Alexa mumble and stops. “Hi, I’m Jason and Hallway B is my assignment. Who are you looking for?”

Alexa, looking somewhat sheepish, says, “I didn’t think anyone would hear me mumble in this noise.”

“It’s not so noisy and you do get used to it.”

“I’m looking for Erin Johns.”

“Erin is my patient. Let’s walk over here and down this corridor. I’ll introduce you. I haven’t seen you before. Are you new?”

“Yes, this is my third shift by myself after orientation. I’ve mainly been in the lab department or on the medical floors. I was in Emergency for some of my final preceptorship.”

“Excellent. This is a great place to work. Busy, but the people are knowledgeable and quite caring.”

As they move down the hallway, Alexa sees an elderly lady, still in her normal clothes and with a light blanket wrapped around her shoulders, sleeping in a wheelchair.

“Is that…?”

“Yes. That is Erin Johns.”

Jason moves confidently up to Erin and lightly touches her on the arm. Alexa notes that Erin’s eyes open quickly and they appear sharp and not withdrawn, like some of the patients she has seen.

“Mrs. Johns, this is Alexa, one of our lab technicians. She’s here to take some blood from you. Is that ok?

Erin nods ‘yes’.

Alexa moves her cart closer. Looking at the req and then at Mrs. Johns, she says, “Can you tell me your name?”

“Erin Johns.”

“Your birthday?”

“06/06/19xx.”

“Excellent, thank you.” Alexa checks the identification band on Erin’s right wrist against the information on the requisition. Satisfied, she gathers the tubes, double-checks them, and picks up the venipuncture equipment and tourniquet. Following the World Health Organization guidelines, Alexa prepares to take the required blood specimens.

Alexa first asks Erin to roll her sleeve up a bit more. Carefully putting the tourniquet around Erin's right upper arm, Alexa then swabs her inner antecubital space.

"Ok, this will pinch a bit."

Carefully sliding the needle under the skin, Alexa quickly finds the vein and pushes the first of three tubes into the vacutainer.

Once all the tubes are full, Alexa shakes them slowly and carefully to mix the blood and the anticoagulant. After that, she carefully places the tubes in the holder in the front of her cart.

"I'm all done, Mrs. Johns. I hope you feel better soon."

Alexa moves away and heads towards the nursing station. She looks down at the next req on her list and notes that it's not a hallway but a number. Looking around, she quickly finds number 12 and heads towards the next patient.

Place: Medical Radiography

Gurpreet checks the list of patients requisitions that need to be done. Looking at the list, she sees there are a number of emergency patients and floor patients. No reqs are marked as stat.

"Ok, looks like we need a porter."

Glen looks across the lobby from where he is sitting. "What's that, Gurpreet? Do you need me?"

"Sorry, Glen, didn't see you there. Yes, can you go pick up Mrs. Erin Johns from Hallway B in Emergency, please?"

"Yes, no problem."

Glen pulls himself out of the chair and strides through the double doors of the Radiology Department. Looking quickly up and down the hallway, Glen makes his way down the back stairs to the Emergency Department.

Glen has been working in the hospital for about 15 years and knows every short cut there is. Taking the stairs two at a time, he arrives at a little used doorway into Hallway B of the Emergency Department.

Walking up to the nursing station at the far end of the hallway, he looks at Sheila, the unit clerk. "Hi ya, Sheila."

"Oh, hi Glen. What can I do for you?"

"Oi, how about dinner?"

"That's not what I meant!" Sheila smiles at her boyfriend and winks at him.

"I'm here to escort Mrs. Erin Johns to the Radiology Department for a picture."

Sheila looks at her assignment list and finds that Jason is the nurse. "Ok, Jason is caring for her. And there he is talking with Mrs. Johns."

“Thanks. See you after work?”

“I’m done at seven. Come down here when you’re finished. We can share a bus seat home.”

Glen smiles and walks towards Erin and Jason.

“Hi, my name is Glen and I’ve been asked to escort Mrs. Johns here to the X-ray Department.”

Jason frowns. “Can’t that be done portably?”

Glen shakes his head. “Not my call. Gurpreet asked me to escort her to the department.”

Jason leans down and explains to Erin that she needs a chest X-ray to help them figure out why she is short of breath.

Erin, looking a bit more tired, says, “I’ve had quite a few of those. I’d be glad to get out of this hallway. It’s so noisy.”

Glen grabs the back of the wheelchair, quickly turns her around and points the chair out the door. Striding to the elevator, Glen recaps for Erin the weather outside, the hockey game, and recent city events. Erin sits in her chair and pretends to listen.

Glen and Erin roll through the doors of the Radiology Department to see Gurpreet standing at the desk.

“Here is Mrs. Erin Johns, from Hallway B in the Emergency Department.”

“Thank you, Glen. Can you place her in Room 2, please? I’ll be right behind you.”

Time: 11h30

Place: Emergency, Hallway B

“When will I get my results?”

Glen looks at Erin. “I’m not the one to ask, I’ll let Sheila know you are back, so the doctor and Jason can look at your picture.”

“Thank you.”

Glen walks quickly away to the nursing station to inform Sheila that the chest X-ray is completed.

Erin looks up and down the hallway and sees less activity and some empty stretcher bays.

“I do hope I can get a bed to lie down in,” she thinks to herself. “My backside is getting sore.”

Without realizing it, Erin closes her eyes. Suddenly she feels a touch on her hand. Startled, she gives a little shout.

“Oh oh oh, it’s ok. My name is Matt. I had no intention of scaring you. Wow. Really sorry, Mrs. Johns.”

“It’s ok. I didn’t realize I had fallen asleep.”

“I’m a respiratory therapist and a couple of tests have been ordered for you. One is spirometry, which I think you have had before, from the results in your chart, and the second one is a blood gas.”

“Spirometry is the blowing test, right?”

“Yes, that’s the one. Shall we do that one first?”

“Ok.”

Matt opens a small plastic bag to retrieve a freshly sterilized kit tube with a gauge on it. He quickly describes what he wants Erin to do.

“Mrs. Johns, I’m going to ask you to take a deep breath and then blow it out as hard as you can through this tube. We’re going to do this three times to make sure we get an accurate measurement.”

Erin sits a bit straighter in her wheelchair and nods. “I’ll try my best.”

Matt hands Erin the device. “Good. Ok, take a deep breath, then blow through the tube.”

Erin does as instructed, three times. After each time, Jason records the results on the requisition for spirometry.

“Ok, that is now done. You did a great job, Mrs. Johns.”

Erin nods her head and smiles slightly.

“Next, I need to do an Arterial Blood Gas or ABG, so I must draw a small sample of blood from your wrist. This is a bit more uncomfortable than having your lab work done.”

Erin looks up questioningly. “Is it necessary? I had a blood gas done before and it really hurt!”

“I’ll try my best to not hurt you, but it is uncomfortable. Which hand do you use the most?”

“I am right-handed.”

Matt gently grabs Erin’s left hand and bends her elbow 90 degrees. He then performs the Allen test.

“Ok, ok, everything looks good, Mrs. Johns.”

Matt then rubs an alcohol swab vigorously across Mrs. Johns’ wrist. Then he waves his hand back and forth to disperse the smell.

“I need you to relax and stay still while I do this, ok?”

Erin nods nervously.

Matt, holding the syringe at a 45 degree angle, slips the needle under Erin’s skin. Quickly the syringe fills with red fluid. Matt then withdraws the syringe and holds a gauze over the site.

“That wasn’t too bad. You are very good at this.”

“I’ve had a bit of practice, Mrs. Johns.” While holding pressure on her left wrist, Matt deftly removes the needle from the sample and caps the syringe. After a couple of minutes, he asks Erin to hold pressure but not to peek and not to let go until he comes back.

Taking the sample, Matt goes to the back area of the Emergency Department and runs the sample through the blood gas machine. The machine quickly prints out the result.

Matt goes back to Erin.

“Ok, let’s look under the gauze.”

Matt see no bleeding but notes a small bruise at the puncture site. He places a small gauze over the site and wraps a small dressing right around Erin’s wrist.

“Please leave this dressing on. We can take it off later tonight, but I want to make sure you don’t get left with a big bruise.”

Erin nods.

Matt steps away to find Jason and show him the results from spirometry and the arterial blood gas.

Day: 0	**pH**	**O_2**	**CO_2**	**HCO_3**
Time: 23h00	7.45	80	50	35

Matt finds Jason at the computer in the nursing station.

“Hi Jason, I have the results from spirometry and blood gases for Mrs. Johns.”

Jason, looks up, smiles and says, “Ok, anything special?”

“Spirometry shows a decrease in vital capacity from what was taken at the clinic a couple of months ago, with her FEV1 / FVC ratio < 0.7. That’s not surprising, given that she is back here. The ABG shows a rise in CO_2 and just normal PaO_2 on 2 LPM oxygen. She is a bit compromised right now. I took a listen to her chest a little while ago. She sounds typically COPD-like with nothing I didn’t expect.”

“Ok. Are the results on the clipboard?”

“Yes, and I hope you don’t mind that I entered the ABG in her chart as well.”

“You are awesome, I will go find Dr. Singh when I am done here and see what he would like to do, but my guess is she is staying the night.”

Day 1: Emergency Room

Day: 1

Time: 02h00

Place: Emergency Room

Jason decides to take another set of vital signs:

Day: 1	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 02h00	86	160/90	22	36.5°C	90%

Time: 02h30

“Dr. Singh, here are the spirometry results and ABG on Erin Johns.”

“Thanks.” Dr. Singh reviews the results and comes to the same conclusions as Matt and Jason. “Let’s look at her chest X-ray.”

Dr. Singh pulls up the X-ray film onto the computer and both lean in to view the black and white picture. Jason looks at the picture and then at Dr. Singh, thinking to himself that it looks like a normal X-ray except that the lungs look a bit long.

Dr. Singh, sighs, “Okay, the X-ray shows a small amount of infiltrates at the bases and your typical COPD hyperinflation. Nothing that I would consider abnormal itself, but when we consider the ABG and the spirometry all together, I would like to keep her overnight to see if she is going to get better or going to get worse. If it’s pneumonia, she will get worse overnight and the next day. If it’s just the cool weather we are having and nothing infective, she should get a bit better with some care and attention. What do you think?”

“Matt and I were having the same discussion. I am pretty sure I can find a bay for her to stay in. Question is, will she want to stay?”

“I’ll go talk to her.”

“Hello, Mrs. Johns, my name is Dr. Amir Singh. I am one of the many people here taking care of you.”

“Not sure about taking care of me. First I’ve seen of you.”

Dr. Singh smiles. “So true, I have been more in the shadows than caring for you directly like Jason here. Both Jason and I have reviewed your tests and we believe you should stay overnight with us. I don’t think it’s serious, and if you are able to get a reasonable sleep, a few more puffs of the meds I have ordered along with some oxygen, you may feel better in the morning.”

“I am feeling better. Not perfect. Can I have a bed? Can my dog visit me? Will someone call my son?”

Dr. Singh smiles. “Yes to all. I will call your son and let him know, and Jason here will find you one of our finest beds in Emergency.”

“Thank you.”

Dr. Singh then nods to both Erin and Jason and walks over to where a nurse is gesturing for him at Bed 3.

Jason bends down to be at eye level with Erin and says, “Give me a couple of minutes and I will find you a more private location.”

Erin nods and smiles. She grabs Jason’s hand and pats it kindly, like so many older ladies do with Jason.

After a discussion with the charge nurse and getting housekeeping to clean an area from a recent discharge, Jason is able to move Erin into the last stretcher bed farthest from the nursing station and the doors. It’s the most private location they have and a coveted location for staff to take their breaks.

“This should be a lot better for you. You need to let me know if you need to use the washroom as I will get another oxygen tank on wheels for you to use when you are up.”

“Thank you. What about my son and Trixie?”

“Dr. Singh and I updated Thomas. He is not going to come in tonight but will in the morning. He says not to worry about Trixie. Thomas said he was going to give her a bath and a meal and they were going to chill with some movies.”

“Oh she really needs a bath. Been feeling awful not to be able to do even that small task. Trixie likes to watch *Mad Men*. That Mr. Draper is such a scamp!”

“Ok, Mrs. Johns. One more set of vitals and then you can sleep. If you need anything please push the call button.”

Day: 1	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O2 Saturation**
Time: 02h00	86	160/90	22	36.5°C	90%

Day: 1

Time: 07h00

Place: Emergency Room

Dr. Notley is reviewing the list of patients to see this morning when he is approached by the charge nurse with a list of overnight patients that potentially could be sent home if everything is well.

“Can you look at these patients first? Let me know which ones can be sent home. Mrs. Erin Johns in the far room appears to be a little worse. We may need to find her a bed.”

Dr. Notley nods “I’ll see Mrs. Johns quickly and then take a look at the potential discharges. I trust your judgement so starting drawing up the paperwork on those patients so that when I agree we can move them quickly.”

Dr. Notley pulls up Erin Johns’s electronic record: Exacerbation of COPD, on 2 LPM nasal prongs, ABG shows higher than normal CO_2 and drop in PaO_2 with maybe something on the CXR.

Dr. Notley walks quickly down the hall to the last stretcher in the row of 20. Seeing the curtain partially open, he announces himself, “Good morning, I’m Dr. Notley.”

Jackie, the nurse taking care of Erin, waves him in.

“Hello Jackie, how are you doing?”

“Doing good, thanks. Right now, Mrs. Johns is not doing as well as expected. I was at the triage desk yesterday when she came in. This morning, I have increased her O_2 to 5 LPM and I’m asking the RT to come by and assess her for face mask or Optiflow. I am not sure which option is best.

Her sats have stayed 90–91% on 5 LPM, work of breathing appears increased, and her breath sounds have expiratory wheezes in upper fields with coarse crackles in lower fields.”

“That is a bit disappointing. How are you feeling Mrs. Johns?”

Erin looks at Dr. Notley and thinks to herself, *He looks exactly how a doctor should look, nice grey hair, pressed lab coat and a stethoscope around his neck.*

“I feel tired. Can’t catch breath. Can’t get out. Of bed. Had to use. Bedside commode. What is happening. To me?”

“Well, Mrs. Johns, that is a very good question. We anticipated that you would get better with additional puffers and a good night’s sleep. Obviously that has not happened. I am going to listen to your chest and then order some tests to help find out why you’re not feeling yourself. I expect that we’re going to have to start you on antibiotics and admit you to the medical floor for additional treatment.”

“I don’t want to stay here.”

“Mrs Johns, I would like you to stay. I know it’s challenging being away from family…”

“My dog, Trixie.”

“Yes our pets are family. You have a long term condition called COPD. I suspect that you also have pneumonia as well. If you go home, you will likely get worse.”

“You mean die!?”

“Yes, that could happen. I don’t ask my patients to stay without a good reason. Do you trust me?”

Mrs. Johns looks down and twists the white wrinkled bed sheet in her hands, “You do look. Like a good doctor. Ok. I trust you.”

“Thank you. I am going to listen to your chest now and then write some orders for tests, and talk with the medical team to get you a bed as soon as possible. Your stay may not be long with us if we can get the right treatment.” Dr. Notley lifts his stethoscope off his neck, places the ear pieces in his ears and gently places the bell on Erin’s chest. He listens methodically, anteriorly and posteriorly.

“Thank you Mrs. Johns. Jackie and I are going to step out now and see a couple of other patients but we will be back.”

Jackie and Dr. Notley step through the curtain and make their way to an alcove to have a more private discussion.

“What do you think Dr. Notley?”

“I agree with you Jackie, Mrs. Johns looks a lot worse. Her chest sounds very congested and wheezy. O_2 requirements are going up. I expect she has community acquired pneumonia. I would like to order another CXR, CBC, ABG, and a sputum sample. I’ll see if the lab has the gram stain on the earlier sputum sample which may help guide us. I will also order some antibiotics but will check with pharmacy to make sure I order the correct one. I will admit her and let the medical admit team know they have a new patient. Anything else you need?”

“That sounds good. I will have the RT get the ABG now so we can get the right O_2 therapy.”

“Excellent. Your other two patients are on my discharge list. How are they doing?”

“Both are excellent. No complaints and both are already dressed and have called for a ride. They both need scripts for the meds that were ordered last night. Once you have seen them, I will move them to the waiting room so we can get the areas clean and ready for a couple of the hallway patients that need a spot.”

“Okay. Let me quickly see them. I’ll write the scripts and discharge orders so you can move them. Thank you.”

Dr. Notley heads over to Beds 18 and 19 to talk to the patients ready for discharge. Jackie waits for a bit in case he needs something and then moves off to the nursing station to page the RT.

Time: 07h30

Jackie sees Alexa come into the unit and quickly walks over to her.

“Hi Alexa, do you have a minute to check a patient with me and draw an ABG?”

“Oh, hi Jackie. Just give me a minute to finish running this blood gas and gather some stuff. I can meet you at the bedside. Which patient?”

“It’s Mrs. Johns in the back room.”

Alexa nods and rapidly walks over to the ABG machine to run the blood gas. Jackie turns and goes to Mrs. Johns’s stretcher.

“Mrs. Johns, Alexa, a respiratory therapist will be here shortly to assess you and draw a blood gas which will help us help you.”

“Ok. Had one. Yesterday. I think”

“Yes that is correct, and here is Alexa.”

Alexa places her hand lightly on Erin’s wrist to feel for a pulse and introduces herself. “Hi Mrs. Johns, I am Alexa, a respiratory therapist. I am going to listen to your chest, poke your wrist here for a blood test, and depending on the result, make some adjustments to your oxygen therapy before you head upstairs to the ward. Are you okay with that plan?”

“Yes.”

“You appear quite short of breath so I won’t ask you to move around a whole lot.”

Alexa checks the oxygen flow, the position of the nasal prongs, and listens to Erin’s chest. Taking her right wrist, Alexa performs the Allen test.

“Everything looks good. I am going to go ahead and do the test now.”

Alexa efficiently obtains the ABG. Erin does not even flinch and is just lying back in her bed breathing rapidly.

“You did great Mrs. Johns. I am going to have Jackie hold your wrist for a few more minutes while I go and run this sample through a special machine.”

Jackie comes over and holds Erin’s wrist firmly to prevent bruising. Alexa moves off quickly to the blood gas machine.

A few minutes later Alexa comes back. She takes a look at Erin’s wrist and puts a light pressure dressing on it. She then shows Jackie the ABG results.

Day: 1	**pH**	**O_2**	**CO_2**	**HCO_3**	**SaO_2**
Time: 08h30	7.3	65	52	27	89

“Thanks Alexa, the CO_2 is about normal for Mrs. Johns with the COPD but the oxygen levels are much lower which is a bit concerning.”

“I agree, I think I will place her on Optiflow right now, and when she goes up to the floor ask whoever is covering

up there to take another look. I think we can follow just with monitoring her on the pulse oximeter and not require another blood gas until maybe tomorrow."

"Sounds good to me."

Jackie leans down and explains the plan to Erin who weakly nods her head.

Alexa moves off quickly to gather the Optiflow equipment and returns a couple minutes later. She sets up the humidifier and places the high flow nasal prongs in Erin's nose. Making some adjustments to the flow, Alexa leans in. "How does that feel Mrs. Johns?"

"It's a bit better. Thanks" Looking up at the SaO_2 displayed on the screen, both Jackie and Alexa can see the number increase to 93%.

Alexa listens to Erin's breath sounds and finds no real changes.

"Ok Jackie, I think she is fine right now. Dr. Notley ordered a CXR and I think we should do it portably. I will call the department to ask them to do so. I think the transport to x-ray and back may be too much activity at this time."

"I agree. I can call them if you wish?"

"No, I've got this. You probably have other things to do this morning." Alexa indicates the two patients that need to be moved to the waiting room and have their discharge forms completed.

"Yeah. It is pretty busy but not too bad. Almost feels slow given how it was the last couple of days."

Alexa smiles and moves towards the nursing station to call the X-ray department. Jackie walks over to the two patients waiting in chairs for their paperwork to be completed so they can leave.

Alexa Calls X-ray Department

"Hi, this is Alexa. I am the RT in the Emergency department. I think you have a req for a CXR for Mrs. Erin Johns?"

"Just a minute, let me check."

Alexa hums a Drake tune to herself as she waits. Smiling to herself, she remembers his concert from last week.

"Yes, we have the req for Mrs. Johns. I was about to call for a porter for her as we are ready to take her picture."

"We would prefer that it is done portably. I have just placed her on high flow and she is really short of breath. I am concerned that if we move her that she may deteriorate or worse."

"Now we don't want 'or worse.' I will mark that she is unstable and will ask the tech to perform the X-ray portably."

"Awesome. Thank you!"

Alexa hangs up the phone and moves off to find Jackie to let her know.

Place: Medical Radiography

Serge looks at Emily, the unit coordinator for X-ray and frowns. “She can’t come to the department?”

“Yes, that’s correct. The RT says she is unstable and is concerned that she won’t do well being moved about.”

“Okay, I hope there is someone to help me out down there.”

“I am sure there is, Serge. Your back will be fine. You might want to think about a different sport to do on your days off. I saw the YouTube video of your rugby game that you posted. That game is violent. You took some pretty good hits.”

Serge smiles. “Yeah. My partner says the same thing, yet he comes to every game and cheers us on. I think he gets a kick out of seeing me being flattened on the field!”

Emily laughs. “I also like to see you flattened. Your expression after being run over is one of pure confusion, as in ‘How could this happen to me?’”

Serge laughs. “Okay, I can only take so much ribbing here. I’m off to Emergency. Sharon and Preeti are the only ones in the department right now. They are in the back helping out in Room 2 with a chest tube insertion. You can page me if anything comes in. They will probably be busy for another 30 minutes or so.”

Emily nods her head and goes back to the computer.

Serge heads quickly out the doors and takes the back stairs to the Emergency Department. In the alcove by the back stairs in Emergency is the portable X-ray machine. He grabs an unexposed plate and places it in the cassette bin on the back of the machine. He then checks the charge and pre-sets a chest technique of 85 kvp and 5 mAs before unplugging the machine. He navigates the X-ray machine to Erin’s stretcher. Looking at the requisition for the reason for the exam, he thinks to himself, “SOB. Not much of a history.” Driving the X-ray machine to the end of the bed, he pulls out the X-ray tube to point towards his client.

“Good morning, Mrs. Johns.” While reaching to read her name band, he continues, “My name is Serge and I am going to take a picture of your chest today.” Serge notes the large nasal prong Optiflow and then looks at the SaO_2 on the screen and sees the number in the low 90s. *Ok, that is not bad, but not great*, he thinks. *I can see why they asked for a portable.*

Erin weakly opens her eyes to see a very large man with a jet black beard holding what looks to be a rectangular metal board. *Looks more like a lumberjack than anything else*, she notes. *What is he going to do to me?*

Erin turns her head a bit more towards Serge. “What?”

Serge smiles broadly “Mrs. Johns, I am going to take an X-ray of your chest. Dr. Notley has requested this test to help us help you.”

“Ok, that makes a bit more sense. I am feeling. Very tired so. What do you need. Me to do?”

“Oh nothing. You just relax there in bed. Who is your nurse today?”

“Jackie.”

“You are kidding right? Nurse Jackie? Like the TV show?”

Just then Jackie comes up behind Serge and rests a hand lightly on his elbow. “That’s right, just like the TV show. Do you want my autograph?”

Serge quickly turns around. “I was just kidding!” Jackie looks at him sternly for about 10 seconds then breaks into a smile. “You cannot believe how often I hear that comment. I wish that damn show never was on TV.”

Serge visibly relaxes. “Can you help me position Mrs. Johns so we can get the best picture possible?”

“Would be happy to do so. Thanks for doing this portable. I am not sure that she would have tolerated going to the department.”

“We are a bit short-staffed today so it’s a bit of a stretch for us, but yes, I can see why you asked.”

Turning his attention back to Mrs. Johns, he says to her, “We are going to get you sitting up straight in your stretcher. Looks like you’re high up enough on the bed that we don’t need to boost you.”

Serge and Jackie position Erin into high fowlers and place the X-ray plate behind her back. “This is a hard board, but it won’t be for too long.” From the side of the stretcher, Serge reaches around Mrs. Johns to make sure there is enough of the Imaging Plate (IP) on both sides of her and above her shoulders. “Try your best to hold still.” Serge walks back to the portable X-ray machine to adjust his pre-set technique to 90 kVp @ 3.2 mAs to hopefully compensate for her SOB. *That should give a faster exposure*, he thinks. Meanwhile, Mrs. Johns wiggles from the discomfort of the plate, and the IP slips down from where Serge had placed it. He does not notice.

“Okay Mrs. Johns, I’m going to take that X-ray now. Hold still.” Serge reaches for the lead apron hanging on the portable machine. He opens the collimation wide and adjusts the tube head to match his IP. Speaking very loudly, he calls out, “X-ray, Bed 3!” On cue, Jackie and all the other personnel scatter. Turning back towards Mrs. Johns, he says, “Breathe in. Mrs. Johns, take a breath in!” Serge watches her chest fall and rise, and takes the X-ray on what he hopes is inspiration. “X-ray clear!” He pulls Mrs. Johns forward on his own, and slips out his plate. “I’ll sit you back a little. Let me know when…” He starts to bring her head down until she nods.

“Thanks Mrs. Johns. I am all done now. Dr. Notley should have the result in a few minutes. Thanks, Nurse Jackie.”

Jackie scowls at Serge and lightly punches him in the arm. “Be careful now. I saw that YouTube video of you playing rugby. I could see me cheering-on the opposing team.”

Serge rolls his eyes. “Who hasn’t seen that video? It’s going to haunt me for a long time.”

“No longer than the Nurse Jackie show for me.”

Serge smiles and backs the portable X-ray machine away from the bedside and navigates it back to the alcove. He plugs it in and readies it for the next use.

Opening the back stairwell door, he take the stairs two at a time back to the department.

Place: Medical Laboratory

Alexa, who was the lab tech on duty yesterday, checks the list of patients she was just handed by the unit coordinator. *Wow, I got Emergency again*, she notes to herself. *This is either going to be a good day or not.* Looking through the list, she sees the familiar name of Erin Johns. “I wonder how she is doing? I think I will go see her first.”

Alexa pushes her white cart to the elevator and makes her way to the Emergency Department. Checking in at the nurses station she confirms that Erin Johns is still in Emergency and that she is in the back area.

Alexa proceeds to Erin’s bedside and looks behind the curtain to see the elderly woman sleeping. Moving towards her, she touches Erin’s hand only to see her startled.

“What now? Who are you? Where am I?”

“It’s okay Mrs. Johns. My name is Alexa and you are in the hospital. Dr. Notley ordered some lab tests for you and I am here to draw them.”

“Oh, you are the girl from yesterday.”

“That is correct.”

“You were so gentle; what do I need to do?”

“Just relax, Mrs. Johns. I need to check your ID band and ask you some quick questions.”

Alexa checks the ID band against the requisition and the blood tube labels and sees that everything is correct.

“Can you tell me your birth date?”

Erin recites her birth date easily to Alexa.

“Excellent. Can you tell me your middle name?”

“That must be a trick question. I don’t have a middle name.”

“Yes. I need to confirm that you are who you are and not someone else. This makes sure that the test is done on the right person.”

Erin nods her head. Alexa wraps a tourniquet around Erin’s right upper arm. She assesses the brachial vein and sees it stand out after a few seconds. Nodding to herself, she reaches back into her cart and gathers the correct tubes. “This is going to feel like a pinch. Are you ready?” Erin just nods. Alexa quickly inserts the needle into the vein and fills each of the tubes. Releasing the tourniquet she places a cotton swab on Erin’s puncture wound. “Please hold here, Mrs. Johns. I just need to label your tubes.” After labeling the tubes, Alexa checks the site and sees no further bleeding. Alexa places a small round band-aid on the site. “All good. You okay?”

“Yes I am fine for being locked up in this place.”

Alexa nods and turns to cart and leaves Mrs. Johns.

Time: 09h30

Dr. Notley approaches Jackie. “Okay, the medical team has accepted Erin Johns. Can you get her ready to go to the 7th floor? She will be under Dr. Honicutt’s team.”

“She is pretty well ready to go. I need to fill out her transfer assessment information and gather any belongings. She has been asking when she can get out of this noisy place.”

Dr. Notley smiles and turns to the unit coordinator. “Can you ask for a porter to help Jackie take Erin Johns to the floor please?”

“Glen will be back from Diagnostics shortly and he knows to check with Jackie next about the transfer.”

“Excellent. Okay, I am off to the triage desk to see who will fill that stretcher.”

“Thanks.” Looking at the unit coordinator, Jackie asks, “Can you hand me up one of those transfer assessment forms please?”

“Sure thing.”

Jackie takes the form handed to her, reviews the notes and Erin’s chart, and fills it out quickly, remembering to include the son Thomas’ cell phone number and Erin’s concern about her dog, Trixie. “I will have to include that she wants her dog to visit as well. Not sure about the policy up on the 7th floor with dogs. Anyway they will figure it out. Oh, almost forgot—better find Alexa the RT so she can get the O2 tank.”

Jackie walks back to Erin’s stretcher to find Alexa already with a portable tank and setting it up.

“I was just going to page you to see if you knew about the transfer.”

“A little bird by the name of Glen let me know that this may be happening. I will go up with Glen and transfer my notes over to the floor RT so they are aware to check in on Mrs. Johns often.”

Jackie smiles. “Glen always seems to know when things are happening. He’s the one who showed me the video with Serge taking that hit.”

“Mrs. Johns, in a few minutes, Glen and Alexa are going to take you up to the 7th floor. You will be in a semi-private room, meaning that you will have one other person with you. I will phone your son so he is aware of your move.”

“Can my dog visit?”

“I am not sure; you will need to ask the nurses up there.”

Erin looks a bit disappointed and sinks back into her pillow.

Just then Glen comes around the corner “All ready to go?”

“Yes, here is the transfer assessment, and Alexa will report to the floor RT. Let them know all the latest results are in the system. Here is her bag of meds. I have started the antibiotic, and it’s infusing on the pump.”

“Okay, sounds good. Leave her to us, she is in good hands.”

“Take care Mrs. Johns.” Jackie watches as Glen pushes the stretcher out of the Emergency Room towards the patient elevator. She notes to herself, “She does not look happy but does look slightly better with some oxygen on. Ok, I wonder who will be taking her place?”

Jackie turns around and heads to the nursing station to find out who will be filling the stretcher.

Day 1: Medical Ward

Day: 1

Time: 10h30

Place: Medical Ward (Seventh Floor)

As the elevator doors open, Erin is greeted with a view that overlooks the city. Erin sighs, “Oh, I so wish I could be out there rather than here. I wonder if my room will have this view.” Glen grunts as he pushes the stretcher over the gap between the elevator and the door. Alexa follows him as he weaves past visitors and other professionals waiting for the elevators.

At the nurses’ station, Glen announces that Erin is the patient from Emergency. Tracie, a new BSN graduate, stands up from the computer screen. This is just her tenth shift on the seventh floor. “Hi Glen. Mrs Johns is going to be my patient. I have prepared Room 712 for her and she will be next to the window, in Bed 1.”

“Awesome. Okay Mrs. Johns, let’s get you into your room.”

Glen, with Alexa and Tracie following him, pushes the stretcher part-way down the hall to Room 712. Sliding it easily past the patient in Bed 2 he maneuvers the stretcher right beside the bed and locks the wheels. Alexa and Tracie go to the other side of the bed and all three assist Erin to move across to her new bed.

“Oh my. I can’t. Catch my. Breath. Help. Me.”

Alexa steps towards the bed and moves the oxygen tubing from the portable tank to the wall outlet. “Mrs. Johns, I want you to try to take some deep breaths through your nose and blow out through your mouth. Slightly close your lips together like you are whistling.”

Erin takes a deep breath in through her nose and breathes out through her partially closed mouth.

“Very good, Mrs. Johns. Keep going. Another breath. Excellent.” Alexa watches the SpO_2 monitor move from 88% to 93% with Erin taking slow deep breaths.

“How do you feel now?”

“Really tired but I can. Catch my breath now. Thank you.” Erin reaches her hand out and gently touches Alexa’s hand. Alexa smiles back and pats Erin’s hand a couple of times.

“Mrs. Johns, my name is Tracie and I will be the nurse caring for you. I am going to step outside and review your chart so I can plan your care and then I will be back in a few minutes. Do you need anything right now?”

“No, but can my dog visit me here?”

“Yes, we do allow pets during the evening visiting hours as long as your roommate in the bed beside you is okay with your dog coming in. I will check with him and see if there are any patients with allergies to pets on the unit.”

“Very good, thank you.”

Tracie and Alexa step outside the room, followed by Glen pulling the stretcher out, only banging the wall lightly as he pulls it around the corner of Bed 2.

Alexa speaks. “Okay Tracie? I have placed Mrs. Johns on opti-flow and her Sats are pretty good when she does not exert herself. Orders are to keep Sats above 93%. I will talk with the RT covering this floor so they can come by and see her frequently.”

Tracie flips through the papers from Emergency including the transfer form. “Looks good. I do have one question though. Why did you ask her to breathe through closed lips like whistling?”

“That is called pursed lip breathing. Some patients with COPD do it naturally. It helps keep the alveoli open and prevents them from collapsing and making her oxygenation worse.”

“Oh, I sort of remember that from school. I will have to look that up. Thank you.”

“Okay, if you need anything, please call the floor RT and they will come and help out.”

“Will do.” Tracie moves back to the desk to review the chart, lab work and other tests. She notes that the antibiotics have started and the next dose according to the transfer form is in four hours.

“Ok, everything looks fine right now. I need to start the admission assessment.”

Tracie gathers the vital sign machine and her stethoscope and heads to Erin’s room.

“Hi Mrs. Johns, I would like to have a closer look at you and take your vital signs. Is that ok?”

“Yes, I have nothing else to do. I am feeling better.”

Tracie attaches the blood pressure cuff to Erin’s arm, places the pulse oximeter on her finger and then inserts the temperature probe under her tongue. While the machine is humming, she looks critically at Erin and thinks to herself: *It looks like she is breathing a bit faster than normal, chest expansion seems symmetrical, she has a bit of nasal flaring.*

The vital signs machine beeps and Tracie records all the vitals onto the admission assessment.

Day: 1	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 18h00	96	180/90	28	36.5° C	85% on Optiflow

“Mrs. Johns, I need to lift up your gown a bit and listen to your heart and lungs.”

Erin sighs and pulls her gown out from under her. Tracie systematically listens to Erin’s heart and lungs, and records her findings along with the respiratory rate onto the admission assessment form.

“Thank you Mrs. Johns. I am almost done. Can you tell me your birth date, day of the week, and who is prime minister?”

Erin answers each of the questions and tells Tracie she knows she is in the hospital. Tracie goes on to fully assess Erin and record her findings on the admission assessment form.

“Ok, thank you. I’m all done right now. Do you need anything?”

“When is lunch?”

“It should be coming up anytime now. I think I heard the lunch cart in the hallway so you should be getting it soon.”

“Thank you. I don’t need anything right now.”

Day 2: Medical Ward

Day: 2

Time: 07h00

Place: Medical Ward

Tracie walks into the nursing station and heads to her usual chair. She moves the assignment book towards her and see that she has the same assignment as yesterday. *That's ok*, she thinks. *At least I know the patients*. She looks up at the patient board and sees that there have been only two admissions since yesterday and one discharge. "Looks like it could be a busy discharge and admissions day."

Jim comes down and pulls his chair close to Tracie's "Hi Tracie, how's it going?"

"So far so good, how was your night?"

"Night was quiet. Mrs. Johns required some adjustments in her Optiflow which the RTs took care of. Mr Alex had a bit of sundowner syndrome and was quite restless, but otherwise the night was pretty quiet."

"Great. Ok, let's do the report so you can get home."

"Yeah, I have to get out of here quick. I'm taking the kids on a field trip later in the afternoon. Twenty-six Grade 2 kids. I can't believe I volunteered to chaperone after a night shift."

Tracie laughs, "Lucky you."

Jim then walks Tracie through the night and updates her on changes to her patients. After reporting, Jim heads out, while Tracie quickly looks through the charts to plan her morning.

Tracie notes she has a lot of 08h00 medications so decides to prepare these meds and then do her patient checks at the same time.

Tracie makes her rounds and drops off all her medications. With that done, she notes to herself, *Everyone seems all right now, having breakfast. I didn't see any issues off the top. I'll give everyone a few minutes and then do vitals, assessments and discharges.*

Tracie sits down to check the RT's note on Erin Johns when Erin's call bell rings. She gets up from her chair and walks down the hallway to her room.

"Hi, Mrs. Johns. How can I help?"

"I can't catch my. Breath. I took. My oxygen off. Just to eat. Put it. Back on. I am. Short of breath."

"I want you to take some deep breaths. In through your nose and out through your mouth. Remember to close your lips slightly as you breathe out. I'm going to get the vitals machine and be right back."

Tracie grabs a vital signs machine from the hallway charger and brings it into Erin's room to take her vital signs.

"Ok, let's start checking you out." Tracie wraps the blood pressure cuff around Erin's left arm, pulse ox on the right forefinger, and temperature probe under the tongue. About 30 seconds later she notes that the blood pressure is up a bit and oxygen saturation is down. Temperature is unchanged with the same low grade fever. Respiratory rate is up as well and heart rate is above 110. *This is not going in the right direction,* she thinks. *I may need the RT to come see her.*

Day: 2	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 07h30	112	165/90	22	36.5°C	83% on RA

"Ok, Mrs. Johns, let's listen to your heart and lungs."

Tracie systematically auscultates, thinking, *Not any change from what I remember from yesterday.*

"How are you feeling now?"

"A bit better. Not great."

"I'm going to ask the RT to come and see you right away."

"Oh my. Am I dying?"

"Gosh, no, Mrs. Johns. The respiratory therapist is here to help both you and me. They manage your oxygen and help you with breathing."

"Oh. Good."

"I will be right back." Tracie moves quickly out to the main hallway to the nursing station. She then asks for the RT to be paged and to come to Erin John's room.

The unit coordinator looks up. "What should I tell them?"

"Mrs. Johns is quite short of breath and has low sats on Optiflow. I'm not sure what to do next."

"Done. If they have any further questions, I'll transfer their call to the phone outside the room."

"Thank you."

Tracie heads back to Erin's room.

Tracie has the vitals machine do another cycle of vital signs but not the temperature. She reads the machine, thinking, *Heart rate is down to slightly less than 100. Respiratory rate is still up and sats have only improved slightly.* Tracie records all this information and her assessment into Erin's chart. Just then Alexa, the RT, enters the room.

Day: 2	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O2 Saturation
Time: 07h45	98	165/90	22	–	85% on Optiflow

"Hi… Tracie?"

"Yes, you remembered. So you must also remember Mrs. Johns."

"Yes I do, so her sats have not improved? You asked her to deep breath like yesterday?"

"Yes. She has improved slightly but not very much with the deep breathing."

"Ok, let's take a look. Hi, Mrs. Johns do you remember me?"

"Yes, you were. In Emergency?"

"That is right. I understand you are a bit short of breath?"

"Yes. A bit more. Than just a. Little."

"Ok, I'm going to listen to your chest and then I may have to take some blood from your wrist again."

Erin just nods. Alexa methodically assesses Erin's respiratory system.

"Ok, Mrs. Johns, your breath sounds don't seem much different they did in Emergency, but obviously you are not feeling your best. I think I am going to have to change your oxygen treatment to a face mask. Have you had a face mask before?"

"No."

"It's a mask that covers both your mouth and nose. It allows me to give you a bit more oxygen than the system you are currently on. I am going to get the equipment to do so and we will see how you do with the new oxygen treatment and whether you need another needle poke in your wrist."

Alexa steps out to the storeroom and selects a high flow mask with humidifier. Back in Erin's room she sets the equipment up and turns the flow meter up as high as it goes. Looking at the humidifier bottle, Alexa notes a good amount of bubbling.

"Mrs. Johns, I'm going to take away those nasal prongs and place a mask on your face."

Alexa then confidently changes the therapy and places the high flow mask on Erin.

“Now take some deep breaths slowly, and blow out through your mouth. How does that feel now?”

“A bit better. Thank you.”

Turning to Tracie, Alexa states: “I have placed her on .65Fi02 high flow face mask. Can you do another set of vitals for me?” Tracie hits start on the vitals machine.

Both health professionals and Erin look at the numbers as they appear on the screen.

Day: 2	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O2 Saturation
Time: 08h05	98	165/90	22	–	092% on High Flow FM

“Ok, Mrs. Johns, your oxygen level is better and your other vitals look the same as they did when I first came on shift. Are you feeling better?”

“Yes thank you.”

Alexa looks at both Erin and Tracie. “I have another patient to see next door but before I leave I will come back and see how Mrs. Johns is doing.”

Tracie nods and follows Alexa out of the room. “What do you think is going on? Why did her saturations drop, Alexa?”

“Her pneumonia might be progressing a bit. Sometimes that happens even with antibiotics. Antibiotics take about three days to really work well. In the meantime if she could stand it, we should see if Physio can see her and maybe get her moving, which will help with chest expansion. One of the worse things to do is to just lie about. Is she due for a CXR?”

“Yes, I saw that she will be getting one around 2 PM this afternoon. Can she go down with that mask on?”

“No problem. I will make sure there is a full tank available. Tony is the RT in Emergency and he also covers X-ray if need be. I will let him know in case there is an issue while she is down there.”

“Ok, I will talk with the doctor about a physio order and let him know you have adjusted her O_2.

“Thanks. I will look in on her after I see my other patients on this floor. If her sats stay up where they are, I don’t believe she needs a blood gas.”

“Awesome. Ok, see you later.”

Time: 09h00

“Hi Dr. Hunicutt, I’m Tracie. One of my patients, Erin Johns, is under your care.”

“Aw, yes the older lady with COPD and pneumonia. How was her night?”

“Night was pretty good, needed some adjustment on her Optiflow but otherwise slept well. My concern is what

happened this morning. She became quite short of breath and anxious. I called the RT and we made some adjustments and moved her to high flow face mask at .65. Sats responded and she improved to 93% and has stayed there for the past hour. Appears quite relaxed now. No other changes in breath sounds or temperature. Very little sputum production."

"Very good. Let's go and see her now and see if I need to make any further adjustments."

Both Tracie and Dr. Hunicutt walk down the hall to Erin's room. As they enter, they see Erin sitting in bed with a green oxygen mask on, flicking through the TV channels.

"You have a lot more channels than I do at home, but nothing is on. This darn mask blocks some of my view as well. How much longer do I keep the mask on?"

"Hi, Mrs. Johns, my name is Dr. Hunicutt, and I am the doctor helping to care for you. I see you are less short of breath right now. Would you mind if I listen to your chest?"

"Sure, but I am feeling a bit tired of all the people looking at my chest."

"I understand Mrs. Johns, but this is one way we can assess how well you are doing and if we need to change treatments."

Dr. Hunicutt takes his stethoscope out and systematically listens to Erin's heart and lungs. Then he proceeds to examine the rest of Erin.

"Very good. Thank you, Mrs. Johns."

"If it was very good, I wouldn't be here."

"My apologies. It is ok. Your lungs are not the healthiest due to your COPD, and by listening to your chest I can see that you do have lots of consolidation in both lower lobes." Dr. Hunicutt points to where he heard the bronchial breath sounds.

Erin looks down at her chest to see where Dr. Hunicutt is pointing. "Oh my, that is about half of each lung."

"That is about right. Not all is lost. I believe you are on the right antibiotics. We are still waiting for the sputum test to tell me that, and you will also get a chest X-ray today to confirm that the pneumonia is not spreading more. Tracie, is there something more you would like to do for Mrs. Johns?"

"I would like to have Physio come and see her and get her moving a bit more."

"I think that is a very good idea. I will write the order. They may not come today, but that doesn't mean Mrs. Johns cannot sit in a chair or stand at the bedside. I don't want her doing too much, but she does need to move a bit more."

"We can do the chair. What about bathroom?"

"Commode at bedside until she is below 50% oxygen. Anything else?"

“Alexa the RT said she would wait to do another blood gas as her sats are ok right now.”

“I agree. But I will write an order for another blood gas tomorrow morning to see how we stand with CO_2 and PaO_2. I want to ensure that her COPD is not getting worse as well. At this point, our other option is BiPAP which I’m pretty sure Mrs. Johns will not be happy with, so let’s see if we can manage her without going to intensive care.”

“Thank you. I think that will do. Mrs. Johns, do you have any questions?”

Erin, looks back at them from the TV. “Can my dog visit?”

Dr. Hunicutt looks at Tracie who shrugs her shoulders “Yes I think that will be ok as long as it’s well behaved and ok with your roommate to have her in this room.”

“Trixie is very well behaved and a small dog. She will be so pleased to see me.”

Both Dr. Hunicutt and Tracie smile, nod at Erin and leave the room.

Outside the room, Dr. Hunicutt asks if anything else needs to be done. Tracie points at a couple of other rooms where she has patients and explains that two patients need discharge orders, and two others need lab work looked at, as pharmacy is stating that antibiotic coverage may not be appropriate. Dr. Hunicutt nods his head and gives her the thumbs up sign as he heads to the chart rack to begin the process of discharge and looking at labs.

Tracie begins the process of recording the interaction with Dr. Hunicutt and Erin.

Over the course of the day, Tracie was able to get Erin up twice to the bedside commode and twice to a chair for 30 minutes each time. Erin’s saturation stayed stable along with her other vitals signs.

When the shift changed rolled around, Tracie was very happy to see Jim come into the unit. “Wow, I did not think I would see you tonight.”

“Me neither. They called me for overtime during my chaperoning of a school trip.”

“Man, you must be exhausted.”

“Yeah but no more than usual. Got some shut-eye before coming in. Anyway, how was your day?”

Tracie gives an overall report of two discharges and two new admissions. She updates Jim on changes to Erin’s oxygen levels and her increased orders for activity.

“Awesome. Thanks. Will I see you in the AM?”

“I believe you will. I’m doing four days in a row. I traded my night shifts so I could attend a play with my husband. We have had so little time together with him finishing his PhD, and my shift work. He promised not to talk research, and take me out on a real date if I would change my night shifts.”

“Wow, I am so jealous. Well, have a good sleep and we will see you in the morning.”

“Good night.”

Day 3: Medical Ward

Day: 3

Time: 07h00

Place: Medical Ward

Tracie walks slowly up the walkway behind a patient in a walker entering the hospital. She remarks to herself, *Wow. My third day-shift. I didn't think I would miss the changeover time to nights.* "Here, let me get the door for you," Tracie says as she opens the door for an elderly patient who then asks directions to the Ultrasound Department. Tracie points him in the direction of the Diagnostics Department and explains that he can follow the blue line right to the check-in desk.

Tracie turns in the opposite direction and enters the elevator that takes her to the seventh floor. The doors open, and she is greeted with the familiar disinfectant smells. Walking quickly to the staff room, she shrugs out of her coat and puts on her duty clogs. Looking in the mirror, she moves errant hair strands behind her ears and runs her hands over her uniform. "I guess I am ready. Let's go see if anything has changed overnight."

Walking out of the staff room to the main nursing station, Tracie finds Jim finishing off his night's charting.

Jim looks up. "Wow, I am glad to see you."

"Ok, that answers my first question. I have the same assignment as yesterday?"

Jim smiles. "Yes you do. I asked specifically to keep you with the same group of patients as you know them and it will provide some consistency."

"Are you ready to hand over to me?"

"Just give me a minute to finish this last note and chart my meds that I just gave to Room 5. It has been very busy and I have not really had a chance to sit down all night."

"Ok, I am going to grab a glass of water. I'll be right back."

A few minutes later, Tracie sits down beside an obviously exhausted Jim to get the handover report.

“Where to start? Let’s start with Mrs. Erin Johns if that is ok?”

“Sure. I am hoping she had a quiet night.”

“Yes, she had a better night than her roommate and some of the other patients on the floor. Last night we needed to adjust her oxygen up as her sats went to 90% and even dropped further with movement. The RTs saw her a number of times, but elected to not do an ABG at this time.” Jim points at the vital signs flow sheet. “Her heart rate, temp, and BP are up slightly from what you recorded yesterday. Ins and outs are even balance. She was a bit happier at visiting time when her son and dog visited, but then became quite tearful when they left. She is due for lab work this morning, a CXR and potentially an ABG, especially if you can’t decrease her oxygen.”

“If I remember correctly, the Physio will also assess her. Is she still on IV antibiotics?”

“Yes, it’s only day two and we have no results from the sputum sample in the system. We could be changing them tomorrow if we get the culture/sensitivities then. Her next antibiotic is due at 10 and she has some other meds at 08h00.”

“Great, who is next?”

Jim then goes through the rest of the patient assignment.

Leaning back in his chair, Jim rubs his hand through his closely cropped hair. “That’s it for me. I’m going to change into my gear and cycle home in time to take the kids to school. Any questions?”

“Nope. Have a good sleep.”

“See you tonight. I’m scheduled to come in.”

“Awesome.”

Jim walks quickly to the staff room and disappears through the door. Meanwhile, Tracie takes a quick look through her patient charts to plan her priorities for the day.

“Bed 5 is ready for discharge, so should be ok for the next little bit. Beds 6 and 7 had a rough night. I will see them and then be off to check on Mrs. Johns.”

Sighing a little as she stands, Tracie heads off to Bed 6.

Time: 08h15

“Good morning Mrs. Johns, how are you doing?”

Tracie looks towards Erin and sees a very sleepy elderly woman. *Wow, she looks like she has aged even more since yesterday.*

Erin looks up and attempts to say something but it comes out as “Argg argg.” Her voice muffled by the mask and the sound of the bubbling from the humidifier.

Tracie furrows her brow. *Hmmm. I wonder. That does not sound right.*

She pulls the vital sign machine up to the bedside and hooks Erin up. Immediately she notes that Erin's oxygen saturation is down again to 90%, then thinks to herself, *Ok, I am going to have to call the RT. May need to adjust her FiO_2.* About a minute later the machine beeps and the vitals are displayed on the small screen. Tracie records them on the vital sign flow sheet.

Day: 3	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O2 Saturation
Time: 08h00	96	170/90	22	36.5°C	90% on FM

"Mrs. Johns, I am going to listen to your lungs and heart."

Erin nods her head, "So tired."

Tracie places the stethoscope in her ears and the bell against the Erin's chest. She quickly moves the bell around on Erin's chest in a systematic manner. Standing up straight, and stretching her arms out after leaning over the bed, she thinks, *There seems to be a bit more coarse sounds mid to lower field bilaterally. A few wheezes on expiration. Heart sounds are normal*.

"Mrs. Johns, I am going to give you some Ventolin and ask the RT to come and see you to make sure you are on the right oxygen setting."

Erin looks up and just nods.

Tracie heads over to the nursing station and asks the unit coordinator to page the RT for her.

A few minutes later, the RT, Herman calls back.

"Hey, this is Herman, I am the RT covering the floors today."

"Thank you for calling back so quickly. Did you get report on Mrs. Erin Johns?"

"She the lady on the seventh floor with pneumonia and COPD, and on high flow face mask?"

"Yes, that is Mrs. Johns. This morning when I assessed her she complained of being tired. Sats are around 90%, RR is up slightly along with HR and BP. Breath sounds are a bit coarser in the lower fields with wheezes on expiration in the upper. I have just started her on some Ventolin. I am not sure about adjusting her FiO_2 further or whether her COPD is getting worse which is causing her to feel tired. There is an order for an ABG if there is a change in patient's condition. I would like you to come and see her."

"Sounds like I should pop up there. I am seeing a patient on the fourth floor right now and titrating his oxygen. Can you wait about 10 minutes?"

"I can. I am pretty sure Mrs. Johns will be ok as well. I will recheck her saturations after the Ventolin treatment."

"That's an excellent idea, I will be up as soon as I can."

"Thanks." Tracie hangs up the phone. Pushing back the errant hair strands behind her ears, she stands up and

heads down the hallway again to Mrs. Johns's room. Entering the room she finds a very tall, fit woman leaning over the bedside of Mrs. Johns.

"Can I help you?" Tracie asks.

"Hi, my name is Gladys. I am a Physio student doing a preceptorship, and Mrs. Johns's name is on our list of patients to see today. I thought I would come by and see Mrs. Johns to see what physio she needs and then plan a time to come back to do physio with her."

"Oh, ok. Sorry, I didn't see your name tag. My name is Tracie, and I am the nurse caring for her. I don't think this morning is a good time. Mrs. Johns's oxygen saturations are down a bit and her breath sounds are a bit coarser than yesterday. Last night she required an increase in her FiO_2. She has been complaining of feeling tired and she seems a bit sleepier than normal."

Gladys looks down at Erin who is propped up with a few pillows at 45 degrees.

"Tracie, would you have a few minutes to help me reposition Mrs. Johns? I think I can help improve her saturations with better position for expansion and maybe lead her to do some deep breathing exercises and coughing exercises to help move her secretions out."

"I can help."

"Ok, I am just going to get a bolster, can you find a couple more pillows for me?"

"Yes, I think so. There is always a shortage of pillows. Most are like placemats, and patients are always hoarding them as one is never fluffy enough."

Gladys smiles and moves out the door to the storeroom to find a bolster.

A few minutes later, both Gladys and Tracie are standing together at the end of the bed looking at Erin.

"Ok Gladys, what are we going to do?"

"I would like to position Mrs. Johns more upright in bed with her arms resting on pillows on the overbed table. I am not familiar with these beds but I believe we can move the foot of the bed so Mrs. Johns is in more of a sitting position."

"Sounds good. Let's get started."

Both Gladys and Tracie work together to move Erin into a chair-like position while in bed. They place the bolster at Erin's back to ensure correct body alignment. After positioning Erin, both step back to admire their work.

"I'm going to check Mrs. Johns's vitals again to see if this movement helped. I'll go get the machine to do that."

"I am going to see if I can get her to deep-breathe and cough. Maybe moving or clearing those secretions will help."

Gladys moves closer to Erin. “Ok, Mrs. Johns, I want you to take a deep breath”. Erin takes a weak breath in through her mouth. “That’s great. And now breathe out.” Erin coughs weakly.

“That is very good Mrs. Johns. I want you to take a slow deep breath to the count of three then breathe out to the count of three.” Gladys demonstrates what she is asking. “Do you understand?”

Erin nods her head. “Ok, breathe in, 1, 2, 3. Hold. Breathe out 1, 2, 3. Very good.” Erin begins coughing and making frantic motions with her hands to remove the 0_2 mask. Gladys removes the mask and hands a tissue to Erin. Erin coughs a moderate size amount of green sputum into the tissue.

“Oh my. I am so sorry. I can’t believe I coughed that up. Yuck.”

“Mrs. Johns, this is what we want you to do. Let’s do the breathing and coughing exercises some more, and see if we can clear your lungs a bit.” Gladys then leads Erin through five more deep breathing and coughing exercises. At the end of each deep breath, Erin coughs out more greenish/yellow sputum.

At the end of the fifth attempt, Tracie walks into the room with the vital sign machine. “Sorry, I had to answer Bed 6’s call bell. Did I miss anything?” Tracie walks to Erin and attaches the machine to her arm and finger.

Gladys smiles, “Do we need a sputum sample? Mrs. Johns has coughed out quite a bit of stuff.”

“No, I don’t think so. One was sent from Emergency that we are still waiting on. If she is coughing now we can always have you come back and assist us to get another specimen.”

The vital sign machine beeps and displays the vital signs on the screen. Saturations are up quite a bit and HR and BP are back to normal for Erin. Temperature is still low grade fever. Tracie records the vital signs.

Day: 3	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O2 Saturation**
Time: 09h00	86	150/85	18	36.5°C	95% on FM

“Wow, great improvement Mrs. Johns. Getting you up in bed and breathing better has certainly helped.” Erin smiles weakly.

Tracie stares at Erin for a moment longer and thinks, *She looks more alert, eyes are open, better eye contact, overall she looks much better than when I first came on shift*.

The RT, Herman, arrives in the room and looks at Mrs. Johns, Gladys ,and Tracie. “Hi, I’m Herman. You paged me earlier to come and see Mrs. Johns.”

“Hi, Herman, I’m Tracie and this is Gladys. She’s a physiotherapist.”

“Happy to meet you all. So, what can I help with for Mrs. Johns here?” Herman moves closer to Erin, checks her mask then works his way back to the humidifier and checks the flow meter on the wall. He nods his head, thinking, *Exactly like I was told. No real changes in therapy*.

Tracie then gives a quick report including changes overnight and what happened thus far this morning.

Herman rubs his chin. “Ok, she is improved with physio but is still on high flow. We know she is a CO_2 retainer which may explain her being sleepy this morning, and she has not had an ABG since being in Emergency. Doctor orders give me some leeway on taking an ABG. I would like to do an ABG and see where we are and if there are really any changes since Emergency. From her saturations here it looks like we could drop her FiO_2 a bit. So let’s do this: I will drop her FiO_2 a bit to bring her sats to 93% and then go gather the stuff for an ABG radial stab. We will let her rest for a few more minutes and then I will do a gas.” Herman adjusts the FiO_2 while keeping an eye on the saturations displayed on the vital sign machine. He makes a couple of more adjustments and sees the sats stabilize at 93%. He gives the FiO_2 to Tracie who records it in the nurses’ notes and flow sheet.

Herman leans closer to Erin. “How does that feel with the oxygen decreased a little?”

“I feel a little better than earlier. I am still short of breath.”

“Ok, that may not change very quickly. I am going to listen to your lungs. Is that ok?”

Erin nods her head. “Sure, why not? Everyone else has had a listen.”

Herman pulls his stethoscope out and systematically auscultates Mrs John’s chest. “Not too bad. A bit decreased to the bases with coarse sounds and no wheezes.”

Tracie smiles at Gladys. “That does sound better than what I heard this morning.”

Herman says, “Ok, she seems ok right now. I am going to get my stuff to do the ABG and will be back in about 10 minutes.”

Both Tracie and Gladys nod. Tracie moves to Erin. “Do you need anything right now?”

“Can you hand me the TV remote so I can watch *The View*?” Tracie finds the remote on the bedside table and hands it to Erin.

Gladys pats her hand “I will come back in about 30 minutes and see if you need to be repositioned or if you feel strong enough to get into a chair.”

Erin waves a hand at both of them, dismissing them as she stares up at the TV.

Tracie and Gladys move out of the room.

“Thank you Gladys for your help. You did a great job in there.”

“Thanks Tracie. It was really nice to see that I made a difference. I’m going to talk with my preceptor about what I did and see another patient. I will come back in about 30 minutes to see how Mrs. Johns is doing.”

“Awesome. Let me know if you need my help. I am going to see my other patients and hand out my 10am meds and antibiotics.”

Time: 10h00

Herman comes up to the desk and sees Tracie charting. “Hi Tracie, I’ve done the ABG on Mrs. Johns and have

sent it to the lab. We should be getting the results in about 30 minutes or less. I'm going to see a patient on the tenth floor. I will check the system for the results and I may come back and make additional changes to her FiO_2."

"Thank you Herman. I really appreciate your help."

Time: 11h00

Tracie logs into the clinical system in the hallway outside Erin's room. "Ok, let's find the ABG result. Wow, that ABG result looks much better, O_2 and sats better, CO_2 is high but looks normal for her. Nice. Looks like Herman can bring her FiO_2 down." Next, Tracie checks to see if the culture and sensitivity is back. "C/S is still pending. Gram stain shows gram positive cocci. Ok, not sure what that means. I will have to ask Dr. Hunicutt."

Tracie signs off the system, turns around and runs directly into Herman, "Oh, I am so sorry."

"No problem. Did you see the ABG result?"

"Yes, it looks better than even in Emergency."

"Yes it is, but you have to remember she is on a higher amount of O_2."

"Yeah, I never considered that. Good point."

"I am going to go in and adjust her FiO_2 down a bit more. If she continues to improve we can probably move her later today or tomorrow to Optiflow again."

"Excellent. I will come in with you and do a focus assessment."

"Sure, no problem."

Both Herman and Tracie enter Erin's room to find her watching the TV intently.

Erin looks at them both, noticeably sighs, and asks herself silently, *What do these two want? I am trying to watch my show.*

"Hi, Mrs. Johns. Herman here is going to make some adjustments to your oxygen level. And with the test we did earlier, we may be able to move you to a more comfortable type of mask."

Tracie moves the vital sign machine to Erin's bedside and attaches it to her left arm and right finger.

Herman checks the pulse ox saturation and then begins to adjust the FiO_2. He thinks, *It's now below the toxic level of oxygen, which should help.*

The oxygen saturation stays stable. Tracie listens to Erin's chest and finds that the air entry is decreased to her bases, with a few crackles, and no wheezes noted. Vital signs are unchanged from the morning.

"You are looking pretty good, Mrs. Johns."

"If I was really doing that well, you would ask me to leave."

“Not quite asking you to leave; probably in another few days. Dr. Hunicutt will come by today to update you.”

“Ok Tracie, I have decreased the FiO_2 below .50 and she looks to be holding her saturations really well at 93%. I will come by towards the end of the shift and if things are good, move to Optiflow.”

“Thanks Herman.”

Just then Gladys enters the room. “Hi Tracie. Hi Mrs. Johns, how are you doing?”

“They say I am better.”

“Good, would you like to sit in a chair or move to a different position?”

“Chair would be much better.”

Gladys then directs both Tracie and Herman to assist her to move Erin to a bedside chair. Erin transfers easily.

“Oh, that is so much better on my behind.”

“Yes, we need to be careful that you do not get any bed sores. Plus, moving around helps your lungs out. Tomorrow I will come by and get you walking the hallways.”

“Great, not looking forward to that.”

Gladys and Tracie smile. Tracie leans forward and adjusts the blanket on Erin. “All good. Need anything right now?”

“No, is lunch coming soon?”

“Yes, it should be here in the next half hour.”

“Ok, then I am good.”

Gladys and Erin leave the room together. Tracie heads to the nursing station to complete her charting, and Gladys heads off to find her preceptor.

Time: 19h00-shift change

“Hi Jim, how are you this lovely evening?”

“Hi Tracie, I am doing well. I had a great sleep.”

“Awesome. You have the same patients as last night.”

“Cool. Should be a quick report.”

Tracie then describes the status of each of the patients. Coming to Erin’s chart, Tracie explains, “Mrs. Johns is doing much better, up in a chair today. Deep breathing exercises and cleared a lot of sputum. FiO_2 less than .5. Gram stain came back gram positive, but Dr. Hunicutt says not too helpful for adjusting her antibiotics. C&S

should be available tomorrow. The RT did not want to move quite yet to Optiflow and they may do so tomorrow. She is still comfortable on the mask, and the humidity may help clear secretions." Tracie then goes through the rest of the assessment.

"Looks good, thanks Tracie. I guess tomorrow is your last day shift?"

"Yes, see you in the morning."

Day 4: Medical Ward

Day: 4

Time: 10h30

Place: Medical Ward

“Hi Tracie, I’m here to review a couple of patients for discharge.”

“Hi Dr. Hunicutt, I would also like to talk about Mrs. Erin Johns.”

“Oh the lady with pneumonia and COPD. She is doing better, yes?”

“Much better it seems, her C&S results are in along with the rest of her morning lab work. I have her assessment here to review. The RT has moved her to Optiflow again and Physio is seeing her daily, and ambulating her in the hallway starting today.”

“That sounds good. Big improvement. Ok, the discharges I will get to. Let’s look together at the C&S results.”

Dr. Hunicutt pulls up the lab results for Erin and immediately goes to the C&S.

“Ok Tracie, what antibiotic is Mrs. Johns on?”

Tracie pulls up the MAR. “She is on ceftriaxone 1 gram IV q 24 hours, and azithromycin 500mg IV q 24 hours.”

“Excellent. That is the recommended coverage. Now let’s look at her C&S.”

On the computer screen, Tracie sees a list of about 10 antibiotics with either R or S beside each. For the antibiotics that Erin is on, she sees an S beside each one. “The antibiotics Mrs. Johns is on are appropriate for her as the bacteria is sensitive to them,” says Tracie.

“Correct,” states the doctor. “And since Mrs. Johns is doing well and you are mobilizing her, I would like to get rid of her IV to make that job easier.”

“How are you going to do that? I know azithromycin comes in PO form, but ceftriaxone is only IV.”

“Take a look at the list and see if there is another antibiotic that you recognize that can be given PO.”

Tracie considers the list again, thinking, *No, gentamycin is IV, cefotaxime is IV… Oh wait, here is levofloxacin.* She speaks up, "Ok, Dr. Hunicutt, I think levofloxacin can be given PO."

"That's correct, and since the two antibiotics are different classes and work slightly differently, we are cross-covering Mrs. Johns so she should continue to get better."

"I think she will be happy to have the IV capped."

"Most patients are. So I am going to write the orders for levofloxacin 750mg PO q 24 hours and azithromycin 250mg PO daily. Has she had her antibiotics today?"

"Yes. She should be just finishing now on the IV pump."

"Great. I will state to start these with breakfast tomorrow. Now let's go see her and then I'll see the discharge patients and write their orders."

Both Dr. Hunicutt and Tracie get up and move towards Erin's room. As they get closer to the room they can hear the occasional bark. Coming into the room they see a small hairless dog sitting on Erin's lap and Erin's son sitting on the edge of the bed. Erin is playing tug of war with a face cloth and the dog.

Tracie looks at the whole scene and shakes her head, thinking, *That is one ugly dog but wow, Mrs. Johns seems really happy today.*

"Hi Mrs. Johns, do you remember me?"

Erin slowly looks up from her game of tug of war with Trixie to consider the man standing before her. "You are my doctor, I believe?"

"That is correct, at least for the time that you are in the hospital. I don't have an office, but the whole hospital could be considered my office. Tracie and I have reviewed your chart and your treatment regimen and we will be making some adjustments to your IV. With your improvement and walking, it looks like we can cap your IV and start you on oral antibiotics."

Erin looks at both of them. "I've had oral antibiotics before and they upset my stomach."

"Well, if your stomach is not upset now with the IV antibiotics, I don't expect you will be upset with the oral ones, because it's the same medication. Let's try it and see."

"Oh, so I get rid of this?" Erin indicates the IV in her left arm.

Tracie, shakes her head. "Mrs. Johns, I will remove the tubing, but we will leave the rest in your arm in case something changes. I am sure you don't want another IV started. I will wrap it up with a dressing, and it will be less bothersome without the tubing attached."

Erin's son looks up at Dr. Hunicutt. "When can she come home?"

"That's a good question. I would like to do another chest X-ray today. Your mom needs a couple of more days of

antibiotics and to be completely off any oxygen therapy for 24 hours. Once that is met, I would be pleased to see her go home with you."

"How long will that be?"

"Oral antibiotics start tomorrow so the earliest for home would be three days from now maybe two if your mom tolerates no oxygen starting tomorrow. I don't think we need to rush. She is getting great care here."

"True, but I need some help at home too."

"That may be, but your mom is pretty sick. When she goes home she will not be up to helping out very much and you will need to take care of her a bit longer."

Thomas looks down at his feet and seems resigned to what Dr. Hunicutt says.

Dr. Hunicutt looks at both of them. "Any questions?"

When neither of them makes eye contact or speaks, the doctor adds, "All right then, I will order the chest X-ray and let Tracie cap off your IV. I will see you tomorrow."

Dr. Hunicutt leaves.

Tracie goes outside and grabs supplies to cap off Erin's IV. Just as she is finishing, Gladys comes in and says, "Ready for a walk Mrs. Johns?"

"No, but Trixie is. Can we take her?"

"Oh, we're not going outside. Let's just walk up and down the hall a bit. We need to build up your stamina."

Thomas reaches out and picks up Trixie. "I'll take her outside. I have to go to work anyway. Trixie is staying with the next door neighbors so she will be ok. I will see you tomorrow, mom."

Gladys and Tracie reposition Erin and get her standing. Tracie follows behind with the oxygen tank as Gladys encourages Erin to walk.

Erin looks around the hallway as she leaves her room, and says, "I can't believe I need two people to help me walk. This getting old really is not what I expected."

"You are doing well. Let's keep going."

Tracie and Gladys navigate Erin to the lounge and back to her room. Just as they get her back, Glen, the X-ray porter comes in with a wheelchair. "Hey, it's picture time. Ready to smile, Mrs. Johns?"

Erin looks up at Glen and thinks, *He does look familiar. He is striking, maybe another doctor?* She answers him, "I sort of remember you."

Glen smiles "I am the lovely gentleman who will escort you to the Radiology Department. Gurpreet is awaiting your presence to take a picture."

“Oh right, I remember you. You drive a wheelchair like a race car.”

Tracie and Glen laugh. Gladys helps Glen get Erin into the wheel chair. Glen hangs the oxygen tank on the back of the chair. “All right, let’s see if we can set a record to the department.”

“Oh, no—you take it slow, you whipper-snapper. I am just feeling fine and don’t need to crash into anything.”

“I’m a safe driver.” Glen maneuvers the wheelchair out into the hallway and to the elevators. They take the elevator to the second floor which opens directly facing the doors of the Radiology Department.

Glen pushes Erin in and around to X-ray Room 2. “Hey Gurpreet, Mrs. Johns is here.” Her chest X-ray is completed after which Glen wheels Erin to the elevator and back to the seventh floor.

Tracie sees Glen and Erin coming down the hallway and meets them in Erin’s room. Tracie helps Erin from the wheelchair to a chair at the bedside and covers her with a blanket. “Do you need anything right now?“

“No. I am a bit tired but should be good.”

Glen and Tracie leave Erin to herself.

Discharge

Day: 6

Time: 10h00

Place: Medical Ward

Jim, the RN, walks with Dr. Hunicutt to Erin's room.

"Hi, Mrs. Johns. This is Dr. Hunicutt and he has some great news for you."

"Mrs. Johns, you have been off oxygen for 24 hours, and your X-ray from a couple of days ago was improved from when you were first admitted, so I think you are ready to go home."

"Thank the gods."

"Now, this does not mean resuming normal activities yet. You are still going to be tired and I will want you to take the antibiotics for another week to ensure that we have fully cleared up your pneumonia. If you stop taking them, you will be back here, and much worse off."

"Ok, take the antibiotics and take it easy—got it."

Nurse Jim calls Erin's son and provides discharge instructions to both Erin and her son.

Case Study #3: Unstable Angina (UA)

Learning Objectives

Case 3 describes a patient's experience with unstable angina and potential myocardial infarction (MI). The interprofessional collaboration is between physician, medical laboratory and medical radiology health professionals.

Learners reviewing this case can consider the pathophysiology of heart disease and how ethnicity, employment, and family may play a role in this common disease process. Interprofessional collaboration is ideal in this case and presents opportunities for discussion on what makes the interactions presented ideal.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with acute coronary syndrome
2. Build knowledge related to the patient's experience of chest pain (including the experience of chest pain and sudden critical illness)
3. Continue to develop comprehensive assessment and monitoring skills and abilities (i.e., chest pain assessment, risk analysis, ECG changes, laboratory data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with chest pain (e.g., chest pain guidelines)
5. Recommend interventions based on the risk factors, status, and progression of cardiac disease
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Harj Singh

Harj Singh

Patient: Harj Singh

Date of Birth: 03/03/19xx

PERSONA

Harj Sing is a 59 year old male. He lives with his wife in a small town in the interior of British Columbia. He is a short haul truck driver and owns his own vehicle. He finds the long hours, slow business, and his truck, which constantly gives him mechanical trouble, stressful.

His wife, Priya Singh, is 56 years old; she manages the books for their trucking business. She is constantly worrying about the stress she sees in Harj despite his denial of feeling stressed or worried about their financial situation.

They have two adult children, one boy and one girl, who live locally. They have four grandchildren.

Harj smokes one pack if cigarettes per day and is trying to quit. He drinks moderately, his favorite drink being Crown Royal.

He leads a fairly sedentary lifestyle and is carrying extra weight. He loves fries and soda, and frequently gives into this weakness whenever he passes by fast food vendors.

Harj does not have a primary care physician. Instead, he uses the local walk-in clinic to manage his hypertension and other medical concerns. His surgical history includes an appendectomy as a child. He takes hydrochlorothiazide for hypertension and over-the-counter antacids to manage his heartburn.

Attribution

Harj Singh: Photo by AFRINIC is in the public domain.

At Home

Day: 0

Time: 8:30pm

Place: At home

Priya looks out the window to see her husband Harj working on the truck again.

“He’s always out there doing something to that thing. I swear it hasn’t worked well for any of the time we’ve owned it,” she mutters.

Cleaning up the kitchen just before dinner, she glances at the half full bottle of Crown Royal. “He’s drinking way too much again. I know he’ll be grumpy and sad at the dinner table.”

Again Priya looks out the window and sees Harj taking a smoke break from working under the hood of the truck. “He’s also smoking way too much. We probably could make ends meet better if he didn’t smoke and drink so much.”

She moves to the stove and stirs some aloo gobi, then turns the heat off on the stove. “Ok, it’s done. Now it’s time to see if he will come in to eat or if he says he’s too busy.”

She turns around to find Harj staring at her. “You talking to yourself or are the kids here for dinner, too?”

“No, Harj. Just thinking out loud. Are you going to stop and have something to eat?”

“Yes, I think I’m almost done. It’s the fuel pump this time. That’s the last time I’m buying gas from your brother-in-law. The price was right, but I’m thinking the quality wasn’t.”

“It may not have been Gurr’s fault. The truck is old, and have you ever replaced the fuel filter?”

“No.” Harj steps closer to the kitchen island and, lifting his large abdomen on top of the island, reaches for the cupboard with the small glasses. He pours himself a half glass of Crown Royal. “I remember when we only used these glasses for the kids when they were growing up. Now that they’re gone, I use them for my drink. Do you want one, Priya?”

Priya shakes her head. “Maybe you should move to even smaller glasses or drink less.”

“Not again and not today. I’ve been up before dawn, driving all over the bloody county, and now its 7:30 at night. I deserve a drink for how hard I’ve been working.”

“Well, I just looked at the books. All that driving doesn’t mean we are making money. We’re going to have to cut some expenses: maybe your drinking and smoking.”

Harj shakes his head. “This is the only enjoyment and stress reliever I have. I’ll look for more jobs so we’re not driving empty any time this week.”

Harj sits at the head of the table with a view out the patio doors to his beloved truck. *Not quite a semi, but not one of those UPS vans, either,* he thinks.

“I just have to attach the electrics and I should be done for the night and ready to go tomorrow early,” he tells Priya.

Priya brings dinner to the table and ladles the steamy and fragrant potatoes and vegetables into Harj’s bowl. She gives him one piece of naan but watches in disgust as he reaches and takes hers. He looks at her and shrugs his shoulders. “What? I’m hungry.”

“You haven’t even eaten it and you are taking more. I remember when I could put my arms around your waist.”

Harj looks down at his quite large abdomen and smiles at Priya. “Probably the only thing I own that is fully paid for.”

Priya smiles at his joke and sits at the table.

The two share stories of their day and what the kids have been up to. “It’s really different without the kids here, Priya. The last one moved out over a year ago, but it still seems strange. It’s too quiet.”

Priya nods. “Yes, I know what you mean. They’ll be here on the weekend. You need to take some time off to visit when they come. Last time you worked the whole weekend through and never saw them. That isn’t good for you or the kids.”

Harj stops eating and just looks at his food. Priya hears a quiet, “I know.”

Harj quickly finishes his meal, pushes himself away from the table and begins the motion to bring a cigarette out of his pocket. “No, Harj. We agreed no smoking in the house.”

Harj grimaces at her and walks out the patio doors to the truck, lighting his cigarette as he goes.

Pryia cleans up the kitchen and makes Harj a lunch for tomorrow. She sees him come in. “All done?”

“Not quite. About five minutes more. Got brutal heartburn. Your cooking is killing me. Where are the antacid tablets?”

“By your bedside, like always.”

Harj goes to the bedroom and takes four tablets. Then he walks quickly out to the truck.

Completing the last of the connections, he says to himself, “Finally done. Let’s start this up to double-check.” Slamming the hood down, Harj moves around to the driver side of the cab and lifts himself inside, grunting numerous times. The truck starts up on the first try. Harj revs the engine a couple of times and looks at the dashboard to confirm everything is sound. Turning the key off, he steps out of the cab, locks it, and heads to the house.

After washing up, Harj plops down in the lazy boy chair and lets out a long sigh. Flicking through the channels, he finds the Punjabi Hockey Night in Canada broadcast. Smiling, he says to himself, *These guys are hilarious. Much better than the CBC version.*

About 20 minutes later, Priya comes out of her sewing room to find Harj leaning forward. “Everything ok?”

“Yeah, yeah, fine.”

Priya moves closer to Harj and sees the top of his bald head glistening with sweat. She notes that he is rubbing his left shoulder and upper arm. “Did you hurt you arm working on the truck?”

“What, what? No, no. I’m fine.”

“You don’t look fine. In fact, you look pale for a brown guy.” Priya leans closer to see if he heard her little joke.

“Ok, ok. Your dinner is killing my guts. It’s just sitting right here.” Harj moves his arm from his left shoulder to indicate his whole chest is sore.

“Not my dinner. You love that meal. Something else is wrong.”

“No, it’s your dinner.”

Priya moves around to look Harj right in the eyes and get a better read on him. Looking closer, she can see he is in a lot of discomfort.

“Ok, Harj, you are not doing well. I think you’re having heart problems.”

“No.”

“Yes. At the mosque, they told us the signs of a heart attack. You must remember that. Chest pain, arm and jaw pain, indigestion that does not go away, shortness of breath.”

“I am not having a heart attack. Leave me alone.”

“No, I’m not leaving you alone. I’m going to call an ambulance.”

“No, you’re not. We can’t afford that.”

“Your life is worth a small bill. Preeti’s dad used an ambulance when he broke his hip. It was about $80.”

“No ambulance. That’s final.”

“Well, then you are going in my car and going to have to put up with me driving. I will take you to the hospital.”

Harj looks down at his feet. “Ok.”

Now Priya knows for certain he is not feeling well. *He hates my driving. For him to be willing to go with me really means something is wrong*, she thinks.

“I’m going to grab your coat and wallet along with my purse. Meet me at the front door.”

Priya gathers everything up, including her cell phone so she can call the kids to let them know their dad is going to the hospital.

Moving to the front door, Priya notices that Harj is out of breath just getting out of his chair and walking to the front door.

Opening the door, she holds Harj’s right arm and feels him lean on her, thinking, *Looks like he can barely walk now, as well. Better not slip or we are both going to have broken hips.*

Priya gets him in the front seat of the car and runs back to the house to lock the door.

Sliding into the driver’s seat, she starts her small Corolla and carefully moves out of the driveway and onto the main street.

“Ok, the hospital is about 20 minutes away.”

“The way you drive, woman, it’s about 30 minutes.”

“No, I’m going to drive a little over the speed limit. Might make it there in 15, even.”

Harj leans back in his seat and shakes his head.

Emergency Room

Day: 0

Time: 22h30

Place: Emergency Room

Nurse Jackie, on the triage desk tonight, let's out a long sigh, and says to herself, "Been a quiet evening so far." Jackie has her back to the waiting room and is updating the census when she hears, "Excuse me, can you help my husband? I think he's having a heart attack!"

Jackie immediately turns around and looks at the two people standing at the triage desk. She sees two middle-aged East Asian individuals: one, a woman who looks about to burst into tears and a man, quite overweight, hair a bit messed up, and rubbing his left shoulder.

"Can you say that again? Your husband is having chest pain?"

Priya, looking a bit exasperated and tired at the same time, says, "Yes, he thinks it's nothing but indigestion, but since dinner he has been rubbing his shoulder and complaining of not feeling well. He took some Tums but that didn't help. He blames my cooking, but we've been married for over 25 years. If my cooking was a problem, he would be slimmer."

Jackie looks at both of them again and nods. She quickly comes out from the triage desk and grabs a nearby wheelchair. "Mr…?"

"My name is Harj Singh and I don't need a wheelchair."

"Please have a seat, Mr. Singh, and let's humour your wife and me. It looks to me like you're having some difficulty breathing. You are rubbing your arm and upper chest, and you look a bit paler than I would expect."

Harj plops down into the wheelchair with a huff, looking quite unhappy with the whole situation. Priya reaches down and squeezes his hand.

Jackie squats down to talk directly to Harj and Priya. "We take chest pain very seriously, so a lot of things are going to happen real quick. I am going to take you back in behind my desk to a special room. We're going to take your blood pressure and other vitals and have a doctor look quickly at you. We'll probably give you some

medications to see if we can relieve the pain in your arm and chest. Your wife can stay with you, as we'll need to understand more of how this started. But then I'll ask her to step away to the admitting desk to give them some information. Are you ready?"

Harj and Priya now both look quite scared, but nod affirmative.

Jackie moves behind the wheelchair, rapidly pushes it to the acute side of the Emergency Room, and enters Trauma Room 1. As she enters the trauma room, she nods to two other emergency nurses who come over. "Hey, Jackie, anything we can do to help?"

"Yes, can you let Dr. Smythe know that we have a patient with chest pain in Trauma 1. Can you also get me ASA and some nitrospray. I'll also need someone to start an IV on Mr. Singh."

One of the nurses moves quickly over to the unit coordinator to page Dr. Smythe and the other nurse, Carrie, assists Jackie to get Mr. Singh onto the trauma room stretcher.

"Ok, Mr. Singh. Carrie here is going to help you remove your shirt. She is also going to start an IV in your left arm, in case we need to give you some fluids. I am going to take your vital signs."

Jackie wraps the blood pressure cuff around Harj's right arm, places an SpO_2 probe on his left forefinger, and puts a temperature probe under his tongue. Carrie grabs the monitor leads and places five leads on Harj's chest. She turns the monitor on.

Looking at the vital sign machine, Jackie records the vital signs onto the Emergency Record.

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O2 Saturation**
Time: 22:00	96	180/90	28	36.5°C	95%

Looking up at the monitor, she notes that Harj is in normal sinus tachy with some ST depression noted on leads II and III.

"Now that is done, are you having pain in your chest?"

Harj nods 'yes'.

"Have you had this type of pain before?"

Priya looks anxiously at her husband. Harj, looking down at his belly, says, "Yes, but only for a short time. When I sat down it went away."

Priya looks horrified. "You never told me! What am I to do with you?"

"It's ok, Mrs. Singh. This is quite usual. Denial is quite common. Mr. Singh, if you were to rate your pain on a scale of 1 to 10, with 1 being barely able to feel any discomfort and 10 being the worse pain you have ever felt, what would you say your pain is right now?"

"It's about 5 out of 10."

“Right, I am going to give you an aspirin and spray some medication under your tongue. It tastes terrible and may give you a bit of a headache as well. Do you have any drug allergies? What medications are you currently taking?”

Priya looks at Jackie. “He is on HCTZ. Sorry, I can’t say the whole name. One tablet in the morning for high blood pressure.”

Jackie looks at them both. “Do you take any Viagra or Cialis?”

Both Harj and Priya look at each other and shake their heads ‘no’.

“The reason I asked is that those drugs can cause a very low blood pressure with the medication I am going to spray under your tongue.”

Jackie hands Harj a small med cup with a tiny blue 81 mg ASA in the bottom of the cup.

“I want you to chew this aspirin. It will taste awful, so here is a cup of water to rinse and swallow after.”

Harj takes the ASA and chews the medication, making a sour looking face, and drinks all the water from the cup in one swallow.

“Ok, I am going to now spray some medication under your tongue. Please open your mouth and put the tip of your tongue on the roof of your mouth.”

Harj does as he is told and Jackie sprays nitro twice under his tongue. “Let’s give that a couple of minutes to see if that helps your chest pain.”

“Jackie, the IV is in Mr. Singh’s left ACF. I have NS running at 25 cc/hour on the pump right now. Are you ok?”

“Thanks, Carrie. I should be fine. Mr. Singh doesn’t look critical right now. I will call if we need help. Can you cover the triage desk for a little bit while we get Mr. Singh settled?”

“Yes, no problem. I’ve done that before. I’ll call you if I need help. Then maybe we can switch?”

“Sure thing. Thanks.” Jackie reaches over and pushes the NIBP button again to see how Harj’s blood pressure is after the nitro sprays. She then enters the number in the emergency record.

“Good evening, I’m Dr. Smythe. Can you give me an update here, Jackie?”

Jackie looks up at the doctor who has entered the trauma room. “Hello, Dr. Smythe. This is Mr. and Mrs. Singh. Mr. Singh came in with a complaint of chest pain radiating to left arm and jaw. We have given him two sprays of nitro, 81 mg of ASA, and oxygen saturations are above 93%, so I have not given him oxygen. I was just about to inquire as to his chest pain and call you about additional orders.”

“Thank you, Jackie. Mr. Singh, how do you feel right now?”

Harj looks up and sees a well-dressed, bow-tied traditional looking doctor in a short, white coat. “I am doing ok right now. I think everyone is making a bigger deal about this than is necessary. I need to get to work in the morning or I don’t get paid.”

“Let’s deal with one issue at a time here. Can you tell me about your chest pain?”

Harj rolls his eyes, then begins to explain that he had this type of chest pain a couple of weeks ago, but it went away when he rested in the cab of his truck. Today, after dinner, it came back. He took some antacids, but it did not go away.

“It felt like dull heavy pressure, with some numbness to my left arm.”

Priya adds, “He complained of feeling tired, and I had to help him walk to the car, as he was so short of breath and tired. He also looks pale.”

“Do you smoke, Mr. Singh?”

Pryia says, “Way too much. At least a pack a day.”

“Oh, come on! I don’t smoke that much.”

“Yes, you do. I see the empty packs in the recycling box.”

“Do you drink alcohol?”

“Yes, I have a drink after work.”

“More like two or three drinks after work. Harj, they are trying to help you, not criticize you. Tell them the truth!”

“Ok, I have two to three drinks per evening of Crown Royal.”

Dr. Smythe and Jackie write the information down. “Thank you, Mr. Singh. What about your work? Is it stressful?”

“Not really. I run a small trucking delivery company. Things have been tight, but not especially so.”

Priya rolls her eyes. “We are barely making ends meet. Everyday Harj is out fixing the truck. He is up at 5am and doesn’t usually come home till after 6pm.”

“That sounds a bit stressful. Do you have any activities other than work, Mr. Singh?”

“If you are asking, do I exercise, no.”

“Right, how would you describe your chest pain now?”

“A bit less than when I came in. Oh, right, you want a number. Three out of 10. The sprays helped, but it has really made my head ache.”

Dr. Symth looks at Jackie. “How long since the last spray of nitro?”

Jackie consults the emergency record. “A little over five minutes.”

“Ok, give him two more sprays of nitro, and if the chest pain doesn’t go away, try morphine, 1-2 mg IV, till the

pain is gone. I'll write that down for you. Plus, let's get some lab work, including CBC, lytes, BUN, creatinine, Trops, 12 lead, and a portable chest X-ray."

Jackie nods her head and makes note of what Dr. Smythe has stated.

Dr. Smythe moves over to the same side of bed that Priya is on. "I'm not positive that your husband is having a heart attack. We need to do some tests, then we will know more. I'm going to keep him here until we have those results."

"Aww, Doc," Harj says, "You are going to cost me money to do this."

Pryia grabs his hand. "Better a day's pay than a dead husband."

Harj rolls his eyes and leans back into his pillow with a sigh of exasperation.

"Mrs. Singh, why don't you follow me out to the admitting desk so we can get all of your contact information, and then you can call any other family. Jackie will take good care of your husband."

Dr. Smythe leads Priya out to the admitting desk and introduces her to the clerk there. "You can give your contact information to the clerk. When you're done, just go to the desk where you came in and ask to see your husband. They will guide you to him."

Priya thanks Dr. Smythe.

Dr. Smythe returns to the unit clerk's desk and asks her to have the lab and X-ray come to see Mr. Singh in Trauma 1.

She looks up at him. "Jackie already called me to let me know that she put the order into the computer as stat. They should be coming shortly. Do you want to add anything?"

"No, that's a good start. Let's see what the results are and go from there. He may not need to be admitted if it's just angina."

Time: 21h55

Jackie confirms with Mr. Singh that his chest pain is still three out of 10 and sprays two more doses of nitro under his tongue.

Place: Medical Laboratory

Alexa, just about to leave the Emergency Department and head to the lab to drop off some specimens and restock her cart, looks down at her buzzing pager, and thinks, *Stat lab work in Trauma 1. That takes precedence over going to the lab. Looks like my break will be a bit later than usual*.

Turning around her white cart, Alexa walks quickly to Trauma 1.

Entering Trauma 1, Alexa sees an overweight middle-aged East Asian male and Jackie, the nurse that is usually at the triage desk.

“Hi, Jackie. I’m here from the lab. You requested some stat blood work?”

Jackie turns around and smiles. “Hi, Alexa. Thank you for coming so quick. Yes, this is Mr. Harj Singh. We are investigating him for unstable angina, possible MI.”

“Ok, do you have the labels?”

“Yes, they’re over there on the printer.”

Alexa walks over to the label printer and pulls off three labels for Mr. Harj Singh.

Walking back to Harj’s bedside, Alexa begins the routine of checking identity. “Hi, Mr. Singh. My name is Alexa and I’m going to draw some blood for testing. I need to ask you some questions to confirm that you are the right person and that the labels all match up.”

“Really, here is my ID band. Is that not good enough?”

“No, we really want to make sure we are taking blood from the right patient, as many treatments are based on the results, and you would not want to receive the wrong treatment.”

“Ah, yes, you guessed right. I want no mistakes. Ask your questions.”

Alexa goes through the process of confirming name, date of birth, and Mr Singh’s ID number.

Once satisfied, she efficiently draws the blood from Harj’s right antecubital fossa.

“All done, Mr. Singh. Please hold pressure here for another couple of minutes. Jackie, I will take the blood back to the lab and you should have the results for the troponin very quickly.”

“Thanks, Alexa.”

“Ok, Mr. Singh, can you tell me how your chest pain is right now?

Harj looks up at her. “I think it’s gone.”

“That’s excellent. We’ll do all of these tests and make sure nothing else is happening, but this is a good sign.”

Time: 22h10

Gurpreet checks the list of patient requests and sees that the top request is a portable chest X-ray in Trauma 1. Pulling up the patient data she sees that the patient was admitted with potential MI. “Ok,” she says to herself. “I can understand them not wanting to transport to the department. Looks like I will do this with the portable machine.”

Gurpreet pulls the requisition off the printer and heads straight out the department doors and down the stairs that lead directly to the Emergency Department. At the bottom of the stairs she pulls an imaging plate out of the rack and places it in the rear door of the portable X-ray machine. Unplugging the machine, she pushes the portable down the hallway and navigates it through the chaos of people moving around in the Emergency Department into Trauma 1.

“Hi, I’m Gurpreet from Medrad here to do a chest X-ray on Mr. Singh.”

“Hi, Gurpreet. I’m Jackie and this is Mr. Harj Singh.”

“Hello, Mr. Singh. Do you think you can sit straight up and have a very hard board behind you?”

“I think so. Depends on how straight.” Harj points at his belly as he says this.

“We can work around it. Let’s see.”

Both Jackie and Gurpreet help Harj to sit up in bed, and they place the hard cassette behind his back.

Gurpreet moves to the end of the bed and looks at Mr. Singh. “Can you move a little to your right, that’s it. Hold right there.”

Gurpreet moves the machine into position. She pulls the tape measure out of the camera and confirms that it is the appropriate distance away. Looking at Mr. Singh she adjusts the technique settings for exposure. *That should work on someone his size,* she thinks to herself. Pushing a button to bring up the positioning lighting, Gurpreet makes adjustments to capture the chest correctly.

“Ok, ready to shoot.”

Jackie steps quickly out of the room as Gurpreet grabs the lead shield to cover her neck and chest and pulls the exposure button out as far as the cord goes. “Ok, Mr. Singh, take a deep breath and let it out. Ok, ready to shoot. Take a deep breath and hold it … X-ray! Trauma 1.”

Gurpreet presses the exposure button and the portable machine whines up and makes a clicking noise.

“Ok, all clear, Mr. Singh. Great job. Let’s get that hard cassette out.”

Both Jackie and Gurpreet remove the cassette and reposition Harj. “How is that?”

“I am good, thank you.”

“Thanks, Gurpreet. How long till I can see the results?”

“I’ll run it through now and should have it on the system in less than 10 minutes.”

“Excellent.”

Gurpreet pushes the machine out and places it back in its special niche. Grabbing the exposed cassette she heads back to the department to process the chest X-ray of Mr. Singh.

Just as Gurpreet is leaving, Dennis from Cardiology pushes his cart in. “I have a req for a 12 lead for one Mr. H. Singh with complaint of chest pain. Am I in the right place?”

“Yes, you are. I’m Jackie, taking care of Mr. Harj Singh. Please do the 12 lead.”

“Awesome. Hey, Mr. Singh. Can I ask you a couple of questions?”

Harj looks at Dennis and nods ‘yes’.

Dennis goes through the same routine as Alexa of confirming Harj’s identity.

“Ok, you are you. I am going to place 10 little sticky patches on you, Mr. Singh. One for each leg and arm and six on your chest. This test won’t hurt, but I will need you to stay very still. Have you had one of these before?”

“Yes, about four years ago when they determined I had high blood pressure. I’ve no idea if it showed anything.”

“Well, if we do find anything today, Dr. Smythe will discuss that with you.”

Dennis proceeds to place all the leads on Harj, and after a few minutes is ready to take the test.

“Ok, this is where you need to stay still. Ready. Excellent.” Dennis presses the record button and, a few seconds later, a pink 8 x 11 paper with multiple black lines is printed out. Dennis hits the print button a second time and gives the copy to Jackie. “Here is the preliminary result for you to discuss with Dr. Smythe. I’ll take the original with me for analysis by the cardiologist-on-call. If you have any questions, please call them.”

“Thanks, Dennis.”

“Ok, Mr. Singh. Looks like you’ve had all your tests done. We will need to wait for some of the results, and then Dr. Smythe will come and talk to you and your wife. I’m going to step out for a minute and get your wife to come in. Is that ok?”

Harj nods ‘yes’.

Time: 22h30

Jackie approaches Dr. Smythe at the nursing station. “Have you got a minute to look up the results of Mr. Singh in Trauma 1?”

“Yes, I was just about to check to see what’s back.”

Both Jackie and Dr. Smythe step closer to the computer screen. Dr. Smythe pulls up the X-ray first.

“The chest X-ray looks clear, so does not look like he has ventricle dysfunction or a low LVEF. Heart is a bit enlarged. He may be developing heart failure or is on the cusp of doing so.”

Next Dr. Smythe pulls up the lab work. “The WBC are normal. Not really helpful, but at least we know there is no inflammation. HGB is normal. BUN and creatinine are higher than I would expect but within normal range. Ah, here is what I am looking for. The troponin is normal, so no MI for Mr. Singh. All good news. You have his 12 lead, Jackie?”

“Yes, I don’t see any depression or elevation in any of his leads, so, looking at the 12 lead with the trops, he appears to have unstable angina, not an MI.” Jackie hands the 12 lead to Dr. Smythe.

“Completely agree. UA not MI. Ok. Let’s repeat and keep him until morning. But if everything stays the same

and he has no chest pain, he can be discharged. I see he has no doctor on file. Is there a way we can have him followed?"

"I will talk with social work in the morning. Maybe they can arrange a GP for him so he can be followed."

"Thanks, I'll go talk to him and his wife."

Case Study #4: Heart Failure (HF)

Learning Objectives

Case 4 describes a patient's experience with heart failure (HF) related to a post-pregnancy heart murmur.

Learners reviewing this case can consider how influenza affects chronic disease, how heart failure occurs, and treatment options. The same-sex family offers learning opportunities on what family means and explores the changes in societal norms. Interprofessional practice is role modelled between the healthcare professionals likely to care for a heart failure patient.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with HF
2. Build knowledge related to the patient's experience of HF
3. Continue to develop comprehensive assessment and monitoring skills and abilities (e.g., cardiac assessment, diagnostic studies, laboratory data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with HF (e.g., CCS Guidelines for the Diagnosis and Management of Heart Failure)
5. Recommend interventions based on the risk factors, status, and progression of cardiac disease
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Meryl Smith

Meryl Smith

Patient: Meryl Smith

Date of Birth: 06/06/19xx

PERSONA

Meryl Smith is 44 years old and she lives in a small two bedroom home with her partner, Dorothy. They co-parent two children with Meryl's ex-husband. Her marriage to him ended four years ago. Meryl is a police officer with the Royal Canadian Mounted Police (RCMP). Meryl drinks occasionally, she has never smoked, and she is physically active. Meryl and Dorothy also have two cats at home with them.

Past medical history includes a heart murmur developed after her second pregnancy. She had a cholecystectomy three years ago and a laminectomy 14 years ago. She has recently been recovering from a severe flu.

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Meryl Smith: Photo by Marie Lucie is in the public domain.

In the Supermarket

Day: 0

Time: 09h30

Place: Supermarket

Dorothy looked over her shoulder at Meryl, who seemed to be trailing with the shopping cart . *This is a bit unusual. Meryl hates food shopping and tries to complete it as quickly as possible*, she thought.

“Meryl, you doing ok dear? I think we are out of mayo. Can you grab the low fat, small jar as you walk past?”

Meryl looks up at Dorothy and smiles weakly. “I am feeling a bit tired, but I’m ok. Yes, I’ll grab the mayo, but I’m getting the one that is on sale.”

Meryl reaches up and grabs a small plastic jar of mayo and places it in the top part of the cart.*What the heck is going on? I really don’t feel so well and Dorothy is walking so fast today. She usually likes to shop*, she thought.

Dorothy waits for Meryl at the end of the condiment row and rubs her back and gives her a quick peck on the cheek before moving off again down the next row. Meryl, taking a deep breath and leaning heavily on the cart, plods slowly forward.

Time: 10h00

“Meryl, where are you?” Dorothy does a 360 degree turn in the row and does not see her spouse anywhere. She quickly checks the next row only to see it empty. Feeling a bit panicked, like losing a child, Dorothy retraces her steps to the previous row to find Meryl, sitting on the floor with the partially full cart a few feet down the row.

Rushing up to Meryl, Dorothy quickly looks around and then bends down. “Did you fall? Are you ok?”

Meryl looks up slowly and Dorothy immediately recognizes that something is not right.

“Oh my, Meryl, you do not look good. You are pale and quite dusky looking. I’m not quite sure you are over the flu.”

“Dorothy. I am not. Feeling good. Not the flu. Very dizzy.” Meryl whispers breathlessly. “I think it’s….My heart.”

Dorothy goes into full panic mode on hearing ‘heart’. She helps Meryl stand; Meryl wobbles a little bit before seeming to settle on her feet. Together they walk out like a coach guiding an injured player from the field.

“Dorothy… our cart!”

“Meryl, the least of my concerns is the cart. Someone can put the stuff back on the shelves. I am more concerned about you. We are going to the Emergency.”

Meryl places both hands on the roof of their small sports car and waits for Dorothy to open the door. “What if I. Don’t want to. Go to the Emergency?”

“Sorry, hon. Laying in the middle of Safeway examining the floor tiles closely, gets you one free express ticket to the Emergency. Don’t gripe. You are going to suck it up.”

Meryl allows Dorothy to help her into the passenger seat. Dorothy hears a bit of quiet grumbling from Meryl but chooses to ignore it.

Dorothy starts the car and backs out quickly. Driving faster than usual, Dorothy navigates the two of them through the back roads and into the parkade of the hospital.

Time: 10h30

“See, Meryl? This was meant to be. Someone left us a wheelchair to use.”

“You can’t be serious.”

“Try me, hon, you are riding until they tell me what is wrong with you.”

Dorothy guides Meryl out of the sports car and into the wheelchair. Pushing the wheelchair by the parking meter, Dorothy stops and pays for four hours of parking.

Emergency Room

Day: 0

Time: 11h15

Place: Emergency Triage

Nurse Jackie thinks to herself, *Wow, I finally get to sit for a minute. This flu season has been brutal. Fifteen patients before 10:30 in the morning*. She completes a number of stats forms behind the triage desk and adds some names to the whiteboard to keep track of where patients and staff are located.

Turning back to the desk, Jackie looks up to see two well-dressed, middle-aged women approaching, one in a wheelchair.

“I bet this is another flu case,” Jackie says to herself.

“Good morning, can I help you?”

Dorothy pulls the wheelchair up to the triage desk. “That is why we are here, for you to help us or more specifically help Meryl!!”

Jackie looks at both women and attempts a smile. *Ok, this could be challenging*, she thinks.

“What seems to be the problem or what can I help with?”

“My name is Dorothy and this is my wife, Meryl, who happened to pass out at Safeway this morning while we were shopping.”

“My name is Jackie and I am the triage nurse or the nurse that looks at you first to consider how serious your problem is. Ok, so you passed out? Did you lose conscious or did you become dizzy and just sink to the floor?”

Meryl looks over at both of them. “I think a little of both. I just remember coming to, sitting cross legged on the floor.”

“Ok, seems you are a bit short of breath?”

Meryl tries to take a deep breath that only results in a weak cough. “Yes, getting over the flu. Thought I was over it.”

Jackie steps out from behind the triage desk and brings the vital sign machine with her.

Hooking Meryl up to the blood pressure cuff and the pulse and temperature, she presses a button to initiate the machine to take Meryl’s vital signs.

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 11h20	106	95/60	20	36.5°C	95%

Nurse Jackie looks over the results and sees the temperature is not elevated, but the blood pressure (BP) is down and the heart rate (HR) is up. “Doesn’t look like it’s the flu for you, but maybe something else. Ok, let’s get you to wait over there and I will see if we can get someone to see you shortly. It’s not too busy so it should not be long.”

Dorothy shakes her head. “Wonderful — our health system at work. Ok Meryl, we get to sit and wait.”

Meryl looks up at Dorothy. “I am ok to wait.”

“You might be but I am not.” Dorothy directs the chair over to where Jackie indicated.

Time: 11h30

Nurse Jackie approaches Meryl and Dorothy. “I need to take some more information and then we can get you seen by the doctor.”

Jackie takes a full health history from Meryl asking her about past history, medication, allergies, and contact information.

“So you have a heart murmur that didn’t go away after your last pregnancy?”

“Yes, they told me not to worry too much about it.”

“Did they tell you anything more?”

“No, I haven’t worried about it till now. Today my chest just feels different and I am short of breath.”

“Ok, thank you. I am going to talk with Dr. Smythe and we will move you to another area here so we can explore more fully what is going on.”

Jackie walks away to find Dr. Smythe.

Time: 12h15

Just as Jackie is finishing recording her findings, Dr. Smythe approaches the bedside.

“Hello, my name is Dr. Edward Smythe. I am one of the Emergency physicians and Jackie asked me to take a look at you.”

Both Meryl and Dorothy look up and smile at Dr. Smythe and nod their heads together.

Dr. Smythe begins to assess Meryl, turning her head back and forth looking at her neck. He then checks her fingers and then looks at her ankles and gives them a bit of a squeeze. “I need to listen to your heart and lungs.”

Meryl adjusts her blouse to allow Dr. Smthye to access her chest. Dr. Smythe listens carefully to heart and breath sounds.

After completing his assessment, he steps back and looks at both Meryl and Dorothy. “I don’t think it’s the flu. Your heart murmur is quite loud, much louder than I expected, and you have quite coarse breath sounds. I believe I am also hearing an extra heart sound. Now this could be nothing or it could be serious so I would like to do some blood work, and a chest X-ray. I am also going to ask for a pregnancy test since the heart murmur appeared with your last pregnancy.”

Dorothy laughs. “Doctor Smythe, I don’t think she is pregnant!”

“Still it did happen and we need to rule it out.”

Dr. Smythe turns to Jill. “Please place her on the monitor and take vital signs q 15 minutes for the next hour then q1h. I will order a CBC, lytes, BUN, creatinine, trops, 12 Lead, and a portable chest X-ray.” Also, glucose, urinalysis, and a pregnancy screen. For the time being you’re on bed rest, and I will ask Cardiology to come see you.”

Jill records all this to make sure nothing gets missed.

Dr. Smythe turns back to the two women. “Meryl, you are going to be spending the better part of the day with us, so I am going to admit you to the Emergency and after we have all the tests results back, I will come and discuss these with you and what our next steps are.”

“Thank you, Dr. Smythe.”

Time: 12h45

The phone rings beside Jill as she is charting another episode of atrial fib, “Hello, this is Jill.”

“Hi Jill. This is Gurpreet in Radiology. I have a requisition for a chest X-ray on a Mrs. Meryl Smith. Can she come to the department?”

“I am thinking not as I have her on the monitor, and she was admitted with a complaint of loss of consciousness. I am a bit concerned that if she goes out, something may happen. I or another nurse will need to go with her.”

“Ok Jill, I thought that might be the case but I thought I would ask. I’ll be down in a couple of minutes and will do her X-ray with the portable in Emergency.”

“Thanks.” Jill hangs up the phone, finishes scotch taping the rhythm change to the patient’s chart and moves to Meryl’s bedside.

“Hi, Mrs. Smith. They’re coming down to do a chest X-ray so I would like to help get you setup so you’re ready for it when Gurpreet arrives with the machine.”

Jill then helps Meryl sit up straight, moves the ECG leads off her chest, and explains the X-ray to both Dorothy and Meryl.

Just as she is finishing, Gurpreet comes around the corner pushing the portable x-ray.

“Man, these things never get any lighter! Even with the power drive they’re a challenge to move around without running on toes. Is this Mrs. Meryl Smith?”

Jill smiles and looks at Gurpreet, “Yes it is, and that was quick. Do I need to check the wheels for any toes?”

“No, heard a couple of screams but nothing else as I drove here. Thank you for getting everything setup for me.”

“No problem.”

Gurpreet moves to the bedside, and checks Meryl’s position. “My name is Gurpreet. I just need to double check who you are and then I’m going to place a very hard board behind your back and take a picture of your chest.”

Meryl nods her consent.

Gurpreet looks at the requisition, and compares the information to the ID band on Meryl’s left wrist. “Can you tell me your birth date?”

“Yes it is June 6, 19xx.”

“Ok, we are good to go.”

Gurpreet returns to the portable X-ray and withdraws from the rear hidden compartment, a large board. Slipping the board into a special plastic bag, she returns to the bedside. With Jill’s assistance they both lean Meryl forward and place the X-ray board behind her back.

“Oh, that is so uncomfortable.”

“Its only for a couple of minutes. Relax against the board and try not to move.”

Gurpreet maneuvers the X-ray machine into position at the end of the stretcher. She turns on a light on the camera head and adjusts the aperture for Meryl’s chest size. Using the built-in tape measure, Gurpreet checks to make sure the X-ray is the proper distance away. Satisfied that everything is correct, Gurpreet nods to Jill and grabs a lead apron from the stanchion of the X-ray machine.

“X-ray ready in Bed 4.

“Stand clear, X-ray exposing Bed 4!” Gurpreet then presses a button which starts a whirring sound, ending with a dull click.

“Ok, all done Mrs. Smith.” Gurpreet hangs up the lead apron on the stanchion and moves to the bedside to help Jill remove the board and reposition Meryl into a more comfortable position.

Gurpreet backs the portable X-ray machine out.

Dorothy returns at the same time from grabbing coffees for her and Meryl. “Hey, what did I miss?”

Jill turns and says “First of many tests we have to complete. That was the X-ray and I’m hoping the lab person will be by shortly as well for the other tests.”

Time: 12h59

Alexa looks at the list of requisitions that have come into the lab. “Alright, there is a bunch from Emergency and two from the Family Birthing Unit. I can do the Emergency ones quickly. I should see if someone can do the FBU ones.”

Looking up, she sees Harry at the desk. “Hey Harry, can you do me a favour? I am a bit swamped with reqs from Emergency and there are two from the FBU that I can’t do as quickly as they would like. Do you mind?”

Harry smiles, “For you Alexa, anything, but it will cost you a coffee.”

“A coffee I can handle, thank you.”

Alexa grabs her lab cart and heads out the door to the Emergency Department. While waiting in the elevator she, looks over the reqs for Emergency. *Ok*, she thinks. *Nothing special. Appears to be more routine with no stats. Let’s start with the oldest time stamp and work my way to the recents*.

Time: 13h14

Alexa: “Good day, are you Mrs. Meryl Smith?”

“Yes, why do you ask?”

“My name is Alexa and the Emergency physician ordered some lab work for you.”

“Ok.”

Alexa looks at the requisition, compares this to the labels and then attaches the labels to the appropriate tubes. That done, she approaches Meryl’s bedside. “I need to ask you some questions to ensure that I have the right patient and the right lab work ordered.” Alexa sees Meryl nod. “Ok, can you tell me your full legal name?”

“Meryl May Smith. My birth date is June 6, 19xx.”

“Oh, you have been practicing.”

“Not really, everyone seems to ask me the same questions.”

“True, we need to make sure we have the right patient and the right tests. We try to avoid making an error as much as possible.”

Alexa, prepares for the venipuncture by gathering all the correct equipment. She then wraps a tourniquet around Meryl’s left arm. Carefully examining her ACF she finds a large prominent vein. “You may feel a bit of a pinch.”

Alexa then slips the vacu-container needle quickly into the vein and seeing a flashback of blood pushes the first tube down into the vacu-container. She repeats this three more times to fill all four collection tubes.

“Ok, Mrs. Smith, please hold here.” Meryl does as requested. Alexa rechecks the labels against the requisition and then places the tubes in their racks for processing .

“Now, lets put a bit of a band-aid on that and then I will leave you be. I hope everything turns out ok for you, Mrs. Smith.” Alexa then pushes her cart out into the main part of the Emergency Department. *Ok, that’s all the patients*, she notes. *I’ll take these samples back for processing and then see if anyone needs help.*

Time: 13h20

Jill approaches Meryl’s bedside just as the ECG technician arrives. “Is this Mrs. Meryl Smith?”

Jill looks up and sees the 12 lead cart. “Yes it is.”

“Ok, thanks, it has been a bit hectic. Sorry, I’m running a bit late.”

Jill shrugs and checks the monitor and writes down the vital signs.

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 13h20	104	98/60	22	36.5°C	95%

“Hi Mrs. Smith, I’m Denis and I am going to place some wires on your chest, legs and arms. This will then give us a better view of your heart electrical function.”

“Ok, I guess.”

Denis pulls the curtains closed to give Meryl some privacy and then requests she lift her shirt up a bit so that he can place the wires on the left side of her chest. Efficiently he quickly places the leads on Meryl’s chest, legs, and arms. About a minute later the machines is printing out a 12 lead ECG.

“Now that you have all those squiggly lines on pink paper, who looks at it and what does it all mean?” asks Meryl.

Denis smiles, “Well I give one copy here to Jill for your chart and another copy goes with me for the heart doctor to look at. Whoever the heart doctor is, will then dictate a report that goes on your chart.”

“When will I know what it says?”

“I would guess pretty soon, but that is up to Jill and the Emergency doctor.”

Meryl sighs and lays back.

Denis pulls the curtains back and passes the 12 lead to Jill.

“Ok, Jill, here you go. I’ll let you discuss it with the Emergency doctors. I need to get up to the fifth floor for a stat.”

“Thanks Denis.”

Time: 14h30

Jill finds Dr. Smythe reviewing the chest X-ray, labs, and 12 lead of Meryl.

“What do you think, Dr. Smythe?”

“Well, it’s not great. Mrs. Smith has some congestion in her lungs, but has no fever, a little rise in WBC, and no signs of infection so I think the congestion is cardiac in nature. When I look at her 12 lead, I see some left ventricle enlargement. Her lab work is interesting as she has decreased kidney function according to her GFR and creatinine, plus, she has an elevated BNP. All other cardiac markers are normal. So, it appears she has exacerbation of heart failure.”

“Wow, she is very young to have HF.”

“Yes, but the valve issues she had when she was pregnant have not gotten better and it appears may have worsened over time. Is her wife here? I would like both of them to hear this.”

“Yes, Dorothy is with Meryl now.”

Jill leads Dr. Smythe to Meryl’s bedside.

Dr. Smythe looks at both women. *It just never gets easy to give bad news; I so wish there was another way,* he thinks.

“Ok, Mrs. Smith, I believe I know what is wrong with you and why you are not feeling well. I have reviewed all your lab tests and it points to a diagnosis of heart failure.”

“What, what is that, am I going to die?”

“Heart failure is a broad diagnosis indicating that your heart is not pumping as well as it should. For you, it is related to the valve issues you had when you were pregnant. The valve is not closing as well as it should and this is putting strain on your heart to meet your body’s need. No, you are not going to die right now. This is a serious diagnosis and needs to be managed well by you and a cardiologist.”

Dorothy begins to cry quietly at the bedside. Meryl reaches over and holds her hand. “Ok, Doctor, what happens now?”

“I am going to contact the cardiology team. I would like to admit you under their care so that they can get you on the right meds, provide some teaching for you and your spouse, and get you involved with some support groups to help you cope with this. I know it’s a lot to take in, but with proper management you should be ok.”

Meryl, looking overwhelmed, looks back at Dorothy then at Dr. Smythe and Jill. “I’ll do what ever you ask.”

Dr. Smythe backs away from the bedside and walks toward the main nursing station to call the cardiology team. Jill approaches both Meryl and Dorothy. “Do you have any questions?”

“No. Can you leaves us alone for a little bit?”

“I certainly can. I’ll draw the curtains to give you a bit of privacy. I’ll come back in 15 minutes and get you ready to go upstairs to the fifth floor.”

Time: 15h30

Jill looks up at Meryl’s monitor and sees that her oxygen saturation is decreasing, now reading 88% on room air.

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 15:30	106	96/60	22	36.5°C	88%

“Hi Meryl, are you feeling ok?” she asks.

“No, I feel short of breath, can’t catch my breath. Feels like I have been running.”

Jill notes that Meryl’s heart rate is also increasing but still sinus.

“Ok, I think I am going to have to put some oxygen on you.” Jill frees a set of nasal prongs from their plastic bag and plugs one end into the oxygen flowmeter. She wraps the other end around Meryl’s ears and places the prongs gently in her nose. Jill adjusts the oxygen flow to 4 LPM.

“Ok, Mrs. Smith. Take some deep breaths through your nose and blow out through your mouth.”

Meryl takes a half dozen breaths as instructed and Jill notes the sats improve to 93% and the heart rate beginning to decrease to 95 to 100 beats per minute.

“Thank you, I feel a bit better but not normal. Am I getting worse?”

“Maybe, but it is too early to tell. Let’s just say you need a bit of oxygen, but nothing else has changed.”

“All right.”

Jill leaves Meryl alone and goes to find Dr. Smythe

She finds Dr. Smythe coming out of the dictation room with a cup of tea in his hand.

“Dr. Smythe, Mrs Meryl Smith is now requiring oxygen and she is stating she is not feeling quite right and is short of breath.”

“I thought this might happen. Ok, I am going to order a transthoracic echo and I will call Cardiology to take her as soon as a bed is available. They said they are discharging eight patients today so there should be space for her.”

Jill watches Dr. Smythe fill out the stat requisition for a cardiac ultrasound.

Time: 16h00

Charlie reviews the requisitions on the computer screen. *What is this: stat echo in Emergency?* he wonders.

Reading the information on the echo requisition, he notes that a consult to Cardiology has also been requested.

Grabbing the phone, Charlie calls Emergency and asks for the nurse caring for Mrs. Meryl Smith.

“Hello this is Jill.”

“Hi Jill this is Charlie in Echo. I have a stat req for Mrs. Smith. Can she come to the department?”

“I am not comfortable sending her to you. She is on oxygen and is monitored. She is now experiencing shortness of breath and is not feeling quite right. This is her first experience with heart failure and we’re not sure how she is responding right now.”

“Ok, I will bring a portable machine down. It won’t be ideal, but I can help add to the information on the patient. Most likely she will need a second echo in the department to get better pictures, but I will leave that up to Cardiology. I will be there in about 10 minutes.”

“Thanks Charlie.”

Time: 16h10

Charlie, true to his word, arrives pushing a large ultrasound machine in front of him. Slightly out of breath from having to push the machine and avoid all the activity in the Emergency Department, he maneuvers the machine close to Meryl’s stretcher.

“Hi Mrs. Smith, my name is Charlie and I am an echo cardiology technician. I’m going to take some moving pictures of your heart. It won’t hurt, but may be a little cold as I have to use some gel.”

“I remember having one of these when I was pregnant.”

“Meryl, I’m going to step out and update the family while Charlie does his test thingy. There’s not much room for me and his machine. I will come back.” Dorothy moves around the echo machine and heads to the waiting area to make some phone calls.

Charlie pulls the curtains around Meryl’s bedside and turns off the lights by the bed so it’s a bit darker and easier to see the echo machine’s screen.

“Ok, Mrs. Smith. You are going to need to pull your gown up a bit so I can see the left side of your chest.”

Meryl exposes the left side of her chest and Charlie adjusts the gown to cover most of Meryl’s breast.

“The gel is warm, but not really warm so it may feel a bit cold to you. I’m going to squirt some on your chest and on the probe. This helps us get a better picture.”

Meryl shudders a bit as the gel is placed on her chest and then relaxes as Charlie places the probe over her tricuspid area.

“Ok, Mrs. Smith, I am done with the echo.”

Charlie takes a towel and carefully removes as much of the gel as possible and then helps Meryl readjust her gown.

“What did you see? It looks like it was all shadows to me.”

“I can tell that your heart is not pumping as well as it should and that you have a problem with one of your valves on the left side of your heart. Anything more will be up to the doctors as I cannot tell anymore than that.”

“Not sure I needed this test as you just said the same thing as Dr. Smythe.”

Charlie smiles, “Yeah? Well it confirms what he told you then.”

Pulling back the curtains, Charlie navigates the ultrasound machine out of the space and waves goodbye to both Jill and Meryl.

Time: 16h30

Jill sees that Dr. Smythe is talking with Charlie and walks closer to hear what they are saying.

“Ok, Charlie tell me again what you saw on the ultrasound?”

“Right. The ejection fraction is estimated at about 30%. Her LV looks a bit dilated. The mitral valve is graded a moderate regurg. On the plus side, I did not see any vegetation.”

Dr. Smythe looks over at Jill. “This is much worse than I expected. I am quite surprised she was managing so well in the community and this is her first time admitted with HF.”

Jill nods, “There’s a bed available for her on the fifth floor. They told me I could move her after 4pm.”

“Well, given everything we know, that is the best place for her. Thanks Charlie. Say hello to your dad for me and tell him, when he wants another bowling lesson, I’m available.”

“Thanks Dr. Smythe. I’m pretty sure my dad is still recovering from that perfect game you threw the last time you were out together. He may not want a lesson for awhile.”

Charlie smiles at both Dr. Smythe and Jill and with a wave moves off to grab his ultrasound machine.

“Ok, Jill, I don’t think I need to speak to Mrs. Smith again. Let’s get her upstairs and let Cardiology manage her. That would be best. I’ll finish writing the progress note and her orders to date. Cardiology will need to add their specific treatment.”

“Right. I will phone up report to the fifth floor and then take her up after 4pm. Thanks, Dr. Smythe.”

Time: 17h15

“Ok, Mrs. Smith,” Jill says, “They are ready for you on the fifth floor and they have a real bed in an actual room for you. Dorothy can come with us. I’m going to attach your leads to a portable system and have Glen the porter help me with your stretcher.”

Both Dorothy and Meryl look relieved that there is a real bed ready.

Jill grabs the portable monitor system and places it at the end of the bed. She then pulls out of the main monitor the cartridge with all of Meryl's leads and information, and slides it into the portable system. Looking at the smaller screen, Jill makes some adjustments and nods satisfactorily that everything looks good.

Jill calls the front desk and asks for Glen the porter to help her with Mrs. Smith.

Glen arrives a few minutes later and together, with Dorothy's help, they get Meryl up to her room on the fifth floor.

Day 0: Medical Ward

Day: 0

Time: 17h30

Place: Medical Ward

“Hi Jill, how are you doing? Is this Mrs. Smith?” asks Simone.

“Hi Simone, yes this is Mrs. Smith. Did someone pass on my phone report to you?”

“Yeah, I got the message. Do you have the transfer note and orders?”

“Here is the transfer note summarizing the care thus far and here is Dr. Smythe’s transfer note and his orders,” Jill says as she hands over the information. “He knows you will change them to support Mrs. Smith better.”

Simone carefully reads through Jill’s transfer note. “So she has had all her diagnostics but no cardiac meds?”

“That is correct.”

“Ok, I’ll get the team to see her as soon as we have her settled.”

Simone, Jill, and Glen maneuver the stretcher into a semi-private room and help Meryl transfer to the bed near the window. Jill takes the cartridge out of the portable monitor and slips it into the monitor above the bed. Watching carefully, she sees the monitor boot-up and display Meryl’s vital signs.

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 17h30	110	90/60	22	36.5°C	95% with 4 LPM

“Is this more comfortable than the stretcher?” Jill asks Meryl.

“Most definitely. Thank you.”

“Glen, can you hook up the nasal prongs to oxygen at 4 LPM please? Great, thank you.” Jill then turns to Dorothy and Meryl, “Mrs. Smith, it was a pleasure to meet you and I hope everything turns out well for you.”

In unison both Dorothy and Meryl thank Jill for her assistance.

Glen and Jill reverse the stretcher and head out the door. Jill checks in with Simone before she leaves. “Simone, do you need any more information or are you good?”

“Family aware?” asks Simone.

“Yes, Dorothy is the wife and she has been updating siblings. I have had no contact with any other family. Dorothy was stressed on admission, but seems to have settled right now. They seem to be good people with what appears to be bad luck.”

“Ok Jill, thanks. If anything crops up before the end of the shift, I’ll call you.”

“Sounds good.”

Both Glen and Jill wave and head to the elevators to get back to the Emergency Room.

Time: 17h45

Simone approaches the nursing station and sees the Cardiology team sitting at the small conference table in the middle of the nursing station.

“Hi Dr. Grant, Meryl Smith has just arrived from Emergency. She is the newly diagnosed heart failure patient.”

“Yes, I was talking with Dr. Smythe about her. Have they started any cardiac meds?”

“No. They have left that to you and the team to start. Essentially she has had all her diagnostics done, but no interventions. She is stable right now. On 4 LPM nasal prongs. Sinus rhythm. I haven’t done an assessment yet and wonder if we should all go in and talk with her and her wife.”

“I think that’s a great idea. We will be there in a couple of minutes. Simone, please go in and let her know she will have the team come and see her shortly.”

“Excellent. Will do.”

Simone heads to Meryl’s room to let her know the plan.

“Hi Mrs. Smith, my name is Simone and I’m one of the cardiology nurses that will be caring for you while on the unit. In a few minutes, the cardiology team will be in to assess you and ask you a few questions. We are going to do our assessments together and this way we coordinate our care and plan the best approach for you, and you get to ask any questions you have. Does this sound ok?”

“It’s a bit overwhelming.”

“I understand that. It is a lot to take in. Remember we are here to help you get better.”

“I realize that. It’s just so new.”

Dr. Grant then enters the room with the cardiology team.

“Good afternoon Mrs. Smith! My name is Dr. Neal Grant and these people behind me compose the cardiology team.”

“I’m Dennis, a senior resident.”

“I am Haley, the cardiology pharmacist.”

“I’m Harjinder, the junior resident.”

“I am Addy, the dietician for cardiology.”

“Ok, now that is a lot of names right now. We would like to get to know you a bit better, have a listen to your heart and lungs, and then plan out the interventions that will make you feel better than you do right now. How does that sound?”

Both Meryl and Dorothy nod but look a bit shy with six people standing around the bedside.

Dorothy asks, “Do you need me here?”

Dr. Grant nods. “I would like you to stay here so you can get the same information and it helps us learn about your wife. You are integral to her care especially when we send her home which I hope is a couple of days from now.”

Dorothy smiles at that but stands up and moves away from the bedside to give the cardiology team more room.

Dr Grant begins by asking general health questions, about activity levels, and then steps forward to listen to Meryl’s chest. Haley asks about medications at home, both prescribed and over-the-counter. Addy inquires about diet and activity. The two residents follow Dr. Grant’s lead and perform a physical assessment.

After 30 minutes of questions and assessment, Dr. Grant steps to the end of the bed “Ok, I think that is all for now. What I would like to do is start you on some medications. A beta blocker to slow your heart beat a bit so that the heart can fill better, an ace-inhibitor to decrease your blood pressure and then a drug to make you urinate a bit more to get rid of the extra fluid you are carrying around. These are common medications for patients that have your type of disease. They are also powerful medications and can cause you to be dizzy or not feel like yourself which is why we are going to keep you here to monitor you and make sure you are stable on the meds before going home. You will know they are working when you do not need oxygen any more. Do you have any questions?”

“No, but it’s a bit much to take in right now. Dorothy?”

Dorothy nods. “I agree with Meryl. Let’s just sit with what you have told us and maybe we’ll have questions later.”

“That sounds good. I am on call all this week so you will see me each morning during rounds. Please ask any questions then or ask Simone here or another member of the team. We are all here to make sure you get better”

Dr. Grant then turns and leaves the room followed by the team and Simone.

In the nursing station, Dr. Grant facilitates a debrief of everyone, which leads to each making their own notes in Meryl’s chart and Dennis writing the orders for the medications that Dr. Grant talked about.

Day 1: Medical Ward

Day: 1

Time: 08h00

Place: Medical Ward

“Good morning, Mrs. Smith. Do you remember me from yesterday. I’m Simone?”

“Yes, Simone, I remember you from yesterday. I see you’re back. This your second day shift?”

“Yes, this is my second. I am doing three days and a night shift this week so we will probably have one more day together. I have your meds here: a beta blocker, ace-inhibitor, and diuretic. But before you take these, I need to check your morning weight and your blood pressure. This is something you’re going to have to do each day on your own.”

“Ok, do you need me to do anything?”

“Nope, just lie back and relax while I take your BP and weight.”

Simone then presses a button on the bed to get Meryl’s weight and then presses the NIBP button on the monitor.

Day: 1	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O2 Saturation**
Time: 08h00	65	90/55	18	36.5°C	95% 3 LPM

“Your blood pressure is down to 90/55, which is what we expect. Your heart rate is around 65, which is also what we expected. You have lost 1 kg of fluid since we started the diuretic, which is a bit less than we expected. How are you feeling when you stand at the bedside or use the commode?”

“I feel a bit lightheaded but nothing really serious, I don’t think.”

“Your oxygen has been dialed back to 3 LPM, but is not really changed. I would like to listen to your chest, then I will give you your meds and morning tray.”

Meryl adjusts her gown so that Simone can listen to her heart and lungs. Simone methodically moves through a head to toe assessment and records her findings.

“All done, Mrs. Smith. Here are your pills as we discussed and your breakfast.”

“This is it for breakfast? Some cereal, skim milk, and a couple pieces of fruit?”

“Yes, Addy the dietician you met yesterday has ordered for you the cardiac diet low in sugar and salt. She will be coming by later this AM to discuss diet with you and hopefully Dorothy. Diet is very important in heart failure and knowing more about how food affects your condition will help keep you out of the hospital.”

“Ok, this will take some getting use to. I really like my sausage and eggs for breakfast.”

“I can honestly say me too, but for you the rare sausage or eggs will be ok, just not every day. But Addy would be best to ask.”

Simone heads out of the room to check on her other patients. Meanwhile, Meryl picks up her spoon and moves the cereal around but really does not eat anything other than the half apple and tea on her tray.

Time: 10h30

“Hello, Mrs. Smith. My name is Addy and I am the dietician for Cardiology. We met yesterday with the rest of the team. You are Dorothy right? Mrs. Smith’s wife?”

Dorothy smiles. “Good memory, yes I am.”

Meryl looks up, “You’re probably here to discuss what I can or cannot eat?”

“That is correct. For you, diet and activity are going to be very important to maintaining good health and keeping you out of the hospital.”

Dorothy looking unhappy and says: “I suppose I’m here to learn as well so that I keep her on the straight and narrow path.”

“Yes, in my experience and in the research: when families are closely involved in the care of a loved one, the care is much more effective. The diet is not all bad, and you and Mrs. Smith will learn how to adapt it to your likes, but there are some things to consider.”

Addy sits at the bedside and hands both Meryl and Dorothy a sheet of do’s and don’ts for heart failure patients along with some sample menus and some links to recipes.

“It is really important that you consider low sodium foods and not adding any additional salt when cooking. Adding salt can lead to further water retention, which can stress your heart and make it not pump as well as it should.”

“Look, Meryl, many of the menu items we already eat. I just need to not add salt.”

“That is correct, Dorothy. Many patients find they are already cooking similar diets. I recommend that you not have a salt shaker on the counter or on the table. That way you’re not tempted to add salt. Look for fresh herbs and spices to add that kick of flavor we all desire. Things like garlic, cilantro, or sage can add some additional flavor to something like a broiled chicken breast.”

“Oh Meryl, we have always said we wanted a herb garden. I guess this will be the encouragement we need to start.” Dorothy’s eyes light up a bit more. “I can go shopping for the stuff we need and when you come home we can start planting.”

“Dorothy, this is not an excuse to go shopping. You always get so excited about things. We need to take this slowly. A garden is a good idea, but let’s start buying and cooking first.”

Dorothy’s eyes shine a bit less brightly, but she nods.

“Ok, you both look like you understand what I am asking you to do,” says Addy. “I would like you to look through the information I have given you. If you have any questions, write them on the sheets and I will come back tomorrow to see how you’re doing. The meal trays you get will be example meals that you should consider making at home. Dorothy, I need you not to bring anything extra in from home until Mrs. Smith is stabilized. Do you think you can do that?”

“I was just thinking of picking her up a milkshake, but I guess that’s out of the question?”

“Yes, until we have things more stabilized and the medications working well, that is for the best.”

Both women nod. Addy gets up and waves good bye to both Dorothy and Meryl, and heads out of the room to see the next patient on her list.

Time: 11h00

Simone stops Addy a couple of doors down from Meryl’s room. “How did your talk go?”

“Pretty well. They are both intelligent and are ready to learn. They seem less overwhelmed than yesterday. Meryl seems to be feeling better, but is still on oxygen. Dorothy was very excited about making a herb garden. All good signs.”

“Awesome, thanks. If they have any questions are you coming back today?”

“No, I think they will need to digest what I gave them. I said I would be back tomorrow to see how they are doing and to answer any questions.”

“Sounds good.”

Time: 11h15

“Mrs. Smith, how are you doing? I am back to do another ECG heart tracing on you.”

“Ok, and you are?”

“I’m Denis. I performed the test yesterday. Do you remember?”

“Oh, there was so much happening, I’m so sorry ,I can’t remember everyone’s name that is helping me.”

“That is quite all right. Ok, this test involves me placing some sticky tape on your arms, legs, and chest.”

“That I remember.” Meryl re-adjusts her gown so Denis can place the leads on her chest and arms. Denis pulls the covers up, leaving Meryl’s feet exposed so he can place the leads on each foot. “All done with that. I now need you to stay very still while we do the test.”

Denis pushes the button and the pink coloured paper is slowly pushed out of the machine with the squiggly lines from each of the 10 leads.

“All done.”

“Is there any change?”

“Mrs. Smith, I see lots of patients every day and my apologies. I cannot remember your test from yesterday. All I can say from looking at the ECG is that there is nothing to be done right away and you are not in danger right now.”

“I guess that’s a good thing, thanks.”

Denis prints out a second copy as an interim report for the chart, then removes the leads and stickies from Meryl’s body. “I’ll see you tomorrow.”

Meryl waves him goodbye.

As Denis is exiting the room, Simone pulls him aside. “You have the latest 12 lead?”

“Yes, I was going to place it in the chart.”

“Excellent, let’s do that and compare it to yesterday.”

Both go to the nursing station where Simone pulls up **y**esterday’s 12 lead and looks back and forth from today’s ECG to yesterdays.

“Do you see any differences Denis?”

“Nope, although it is quite a bit slower than yesterday’s. Did you start her on something?”

“Yes, we started her on a beta blocker to slow her rate down and to prevent any remodeling.”

“Well, it seems to be working. Heart rate is about 65, but other than that everything looks the same as yesterday.”

“Ok. Thanks Denis. See you tomorrow?”

“Yes, I’ll be here about the same time.” Denis then grabs his ECG cart and heads down the hallway to another patient.

Time: 14h00

“Good afternoon, Mrs. Smith.”

“Hello.”

Dorothy looks up to see a slightly stooped women enter the room and pull a chair up to the bedside. “Who are you?” she asks.

“My name is Stella and I am a social worker for the hospital. I come and see all the cardiac patients to make sure things are going well and to see if I can help at all.”

“Oh, not sure what you can offer.”

“Me neither, but lets have a conversation. Then I might have something a bit more definitive.”

Dorothy looks Stella over a bit more. “I guess that’s ok. Meryl has psych coverage as part of the RCMP so not sure what you can help with?”

“That’s good to know. If there’s something that needs to be shared, I can share it with the RCMP. It benefits people to ensure there is good coverage. I have a few set questions to ask, but please feel free to interrupt at any time. I do this to see if there are any gaps and where a social worker can assist you in your new journey to better health.”

Both Meryl and Dorothy nod.

“Ok, how long have you two been together?”

“We have been living together four years, but have dated for about eight years before moving in. I met Dorothy while I was having a coffee break and stretching my legs after being in the patrol car for 10 hours on a stake out. She was sitting in a booth by herself and the restaurant was completely jammed. I asked if she wouldn’t mind sharing her booth and she told me that it was ok and that I looked to be a safe person. We started talking and here we are 10 years later. She was the right person at the right time after my previous relationship dissolved due to him cheating with the teaching assistant.”

“You were previously married?”

“Yes, before Dorothy, I had a traditional family with a male husband. We were together for about six years. I never really felt comfortable in the relationship, but thought that that was what a woman should be when being a wife to a male. Anyway, he started cheating after I had our second child and then I just left.”

“How many kids?”

“Two. A boy, Roger, and a girl Jennie. Very lovely kids, but they’re growing up so quick. Roger is 16 and Jennie is 14. We share custody. Although Matt, my ex-husband, gets weird with me living with Dorothy.”

“Any issues with the coparenting or the kids?”

“No, the kids have adjusted nicely to having two moms and have really bonded with Dorothy.”

“How long have you been with the RCMP?”

“Twenty-four years—looking at retirement in about five or six, I think. Got a promotion three years ago that took me out of the patrol car and more desk duty. Been a little less active since that time, riding a desk.”

“Yes, physical activity is important. I think that is Addy’s day two talk after she gives you the news about your diet.”

All three women laugh.

“Oh, I am still active, just not the same level as when I was in a car. I like to walk, run a little, and really enjoy hiking on some of the trails we have around here when the weather is nice.”

“Sounds lovely. Good way to relieve stress in your type of job.”

“Yes, I guess so.”

“Do you smoke?”

Both women shake their heads no. “We both quit years ago. Never felt the need to take it up again.”

“How about alcohol?”

“Dorothy and I enjoy a glass of wine after work and the occasional martini when we go out, but I don’t think it’s excessive. What do you think, Dot?

Dorothy ponders this and a few seconds later answers. “Not sure we do drink every day, but only a glass, so I don’t feel it’s excessive.”

“Sounds quite normal to me. Ok, thank you for answering my questions. You are very normal people and look like you have the coping skills and support needed to make the adjustment that heart failure requires. I don’t think I need to be involved. With your permission, I would like to send a note to your HR benefits person in the RCMP to give them an update, and maybe they can follow up with any necessary assistance. “

“That would be fine.” Meryl then gives Stella her division number and the contact information for benefits in her division.

“Thank you both. Have a great day.”

Stella heads out of the room and to the nursing station to update her notes.

Simone comes by just as Stella is finishing up. “Anything I need to know?”

Stella looks up and smiles. “No, I think she is doing pretty good. I don’t believe the diagnosis has really hit her or her partner yet. Right now they’re still processing. On the plus side, good supportive family, and she has great support from the RCMP so things are setup well for her to be successful in this transition. The real question is: will she be allowed to continue to work or will the RCMP push for retirement? But that’s not my decision and could add quite a bit of stress to Meryl and Dorothy.”

“Thanks Stella. I have a good feeling about them. Will you check in with them again?”

“No. I’ll see them in the healthy heart clinic, but I don’t think I need to follow up beyond that.”

Simone nods and moves over to complete her charting on the other patients she is caring for.

Time: 16h00

“Hello Mrs. Smith, how are you doing?” Simone asks as she looks over the monitor and does a primary sweep of her patient.

Meryl looks up with reddened eyes, “It’s going ok I guess.”

“Have you been crying, Mrs. Smith?”

“Just a little. I just. Why me?”

“I don’t know why this has happened to you, but I can explain things a bit more to you if you would like?”

“That might help. I think it’s suddenly hitting me that my body is changing and not for the better and I may have to retire and make so many changes. I, oh gawd. I just don’t know what to do.”

“This is perfectly normal. Let me pull up a chair and I can explain what is happening in your heart ,and what the plan is for you. Does that sound ok?”

“Yes, thank you.”

Simone sits down beside Meryl’s bed and explains how heart failure develops when a valve is not working, how valves become diseased, and the various treatments. She also carefully discusses some of the complications that can develop if Meryl does not follow doctor’s orders.

“Oh, thank you. I think I understand a bit better now. It looks like I’m not going to die.”

“Yes, Mrs. Smith, with the correct treatment, and you watching your diet and exercise you can live a very enjoyable life—maybe not the one you envisioned, but still quite enjoyable.”

“Yes, I think it’s all the changes I am facing that is overwhelming me. “

“Could very well be. Often facing one’s mortality can be a bit daunting. You need to give yourself time to grieve and recognize that this has happened to you and that it is not a punishment, but something that you need to deal with. Remember, there are many people here to help you and Dorothy make the best of this situation and diagnosis. You need to allow us to help you.”

“Thank you again. Yes, I will be asking for help now. What is the plan for tomorrow?”

“Much the same as today. You will have another chest X-ray, ECG, and lab work. I hope that I’ll be able to take you off oxygen, and then, if that happens we can introduce you to the heart failure clinic, which will begin an exercise routine with you to help strengthen your heart and your coping skills.”

“It would be nice to begin moving around again.”

“Let’s plan to do that tomorrow, shall we? I can hear the dinner trays being moved about in the hallway, so I’m going to get your meds and check on my other patients.”

Meryl smiles and pats Simone’s hand.

Simone moves the chair back to the corner and heads off to gather meds and check her other patients.

Day 2: Medical Ward

Day: 2

Time: 08h00

Place: Medical Ward

Simone looks over the MAR and double checks the meds she is pulling for Meryl Smith. *That all looks right,* she thinks to herself. *Beta blocker, ACE-I, and Lasix. Along with some vitamins and a proton pump inhibitor. Let's go see how she is doing this morning.*

Walking into the room, Simone can immediately see that things are not right. Looking up at the monitor she sees that Meryl's heart rate is 50 and that she looks a bit pale.

"Good morning, Mrs. Smith. How are you doing?"

"I don't feel quite right. I am not sure what is going on?"

"Ok, I am going to listen to your chest and take your blood pressure."

Simone carefully listens to Meryl's chest and hears a few less crackles than yesterday. Nodding to herself she thinks, *A bit better but let's check the BP.*

Pressing the NIBP button on the monitor, Simone waits a few seconds and sees the result displayed on the screen: 84/48. Placing her forefinger on Meryl's wrist, Simone double checks that the pulse is accurate when compared to the monitor.

Day: 2	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 08h00	50	84/48	18	36.5°C	95% on 3lpm

"Well, your heart rate is a bit slower than it was yesterday and your BP is a bit lower. All this can be caused by your medications, so before I give out your meds, I'm going to have Dr. Grant take a look."

"Sure sure." Meryl leans back against her pillow and closes her eyes.

Hmmm, a bit tired as well. Ok let's find Dr. Grant, thinks Simone.

Simone steps out of the room and sees Dr. Grant at the nurses' station.

"Dr. Grant, before you start rounds, can you quickly see Meryl Smith? Her heart rate is 50, BP 84/48, and she is a bit drowsy."

"Good morning, Simone. That sounds like she is having some issues with her meds. You know me by now: if they can keep their eyes open, I'm ok with whatever BP they have."

"True enough, but it's more the heart rate that is concerning me and her drowsiness."

"Ok, let's do a quick drive by and see how things are going."

Dr. Grant and Simone head to Meryl's room. They find her propped up in bed staring forlornly at her breakfast tray.

"Hello Mrs. Smith. How are you doing?" asks the doctor.

"Would be better with some sausages and pancakes, not the cardboard and watery milk that you're feeding me here."

"Ok. Do you mind if I have a listen to your chest and check you out before you dig into breakfast?"

Meryl pushes the bedside table away and adjusts her gown for Dr. Grant to listen to her heart and lungs.

After Dr. Grant finishes checking Meryl out, he steps back. "Ok, Simone, I am good with the BP, as that is not affecting her too much, so the ACE-I is good. She is down another ¾ of a kilo in weight. The heart rate is down a bit more than I would like. Let's cut her dose of beta blockers in half and then go a bit more slowly up than we have been. Give her body a bit more time to adjust to the new drugs. How does that sound?"

"Great, thank you. Will you write that out as an order?"

"Yes. In the meantime cut the beta blocker pill in half. She needs to get on these drugs to get better."

"I will do that and give her the half dose with breakfast along with the rest of the meds. Thanks again."

Both professionals leave Meryl alone with her breakfast tray.

A few minutes later Simone comes in with the medications and explains everything to Meryl and the reason behind the changes. Meryl seems to understand but is still unhappy about her breakfast.

Time: 19h30

Dorothy peeks around the corner. "Up for a visitor?"

"Oh yes. Someone not dressed in those awful blue pajamas and who will talk to me about something other than my heart. What is that I smell, french fries?"

"Shhh the pajama police will hear!"

Both women share a laugh.

“You shouldn’t. It’s not on my diet!”

“You are doing so well, I thought we could celebrate. I brought a milkshake as well. I looked up on the web to see who had the healthiest French fries and I went there to pick some up to share.”

“Healthy fries? You are looking out for me, eh, or trying to get my life insurance payout?”

“Nothing of the sort. Just celebrating.”

The two women sit close and share what happened over the course of the day. For Meryl, it was a normal hospital day with another ECG, chest X-ray, and lab work. But she did share that she was able to go for a walk with the physio, up and down the hallway. Dorothy shared about the kids’ parent teacher interview and laughed at how awkward her ex-husband felt when he had to explain that Dorothy was not his wife but his wife’s wife.

An hour later with visiting hours almost over, Dorothy cleans up the evidence of the celebration, kisses Meryl, and waves good bye. “Till tomorrow hon.”

Time: 22h30

“Hello Mrs. Smith. Let’s get you tucked in and taking your final meds of the evening.”

“Ok Siri. Has Dr. Grant changed any meds again?”

“No, everything is the same as it was this morning. We are going a bit lighter on the beta blockers and allowing you to adjust a bit slower to them.”

Siri then helps Meryl to the bedside commode and gives her the PM medications. Checking again with her that everything is fine, she turns the lights off in the room, leaving each patient with control of their own bedside lighting.

Day 3: Medical Ward

Day: 3

Time: 03h00

Place: Medical Ward

Meryl wakes up suddenly. *Something's not right*, she thinks to herself. *Oh my heart is beating so quick. I can't catch my breath. What the hell is going on? Where is that damn call bell?* Looking around her bedside in the dark, she finds the call bell and pushes it. A few minutes later she sees a flashlight waving around on the floor as it approaches her bedside.

Siri peeks around the corner of the curtain to find Mrs. Smith sitting upright in bed breathing rapidly and looking quite panicked.

"Well, Mrs. Smith, things don't look right. How are you feeling?"

"I don't feel good at all. Not sure why. I feel short of breath and I feel like my heart is just pounding."

"Ok, let me turn the lights on here and give you a good once over."

Siri turns the lights on over the bed, considers the monitor, and sees Meryl's heart rate at 100. Saturations are less than 88% on room air. *Something isn't right*, she says to herself. *I wonder what's going on?*

"I'm going to take your blood pressure and listen to your heart and lungs."

Siri listens to Meryl's chest and hears substantially more crackles than at the beginning of the night shift. The BP cuff beeps and the monitor shows 90/50.

Day: 3	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 03h00	100	90/50	24	36.5° C	88% RA

"Ok, something is not quite right Mrs. Smith. Let's put you on a bit of oxygen. I'm going to ask the RT to see you, along with Dennis the senior resident. I expect we are going to do a chest X-ray and another ECG and some labs to see what's going on."

“If you say so. Oh, why is this happening?”

Siri grabs the nasal prongs hanging on the flowmeter and places them on Meryl’s nose. She turns the flowmeter on to 3 LPM. Not waiting to see what happens, Siri rushes out to the nursing station.

“Can you page the RT for me and find Dennis? I’d like both of them to see Meryl Smith in Room 23.”

“Dennis is just seeing the patient that came in last night at 22:00. I think he’s almost done, but I will let him know you need him. Jackson is the RT covering the floors and I’ll page him now.”

“Thanks.”

Time: 03h20

“Hi, I’m Jackson the RT. You paged?”

Siri turns to see a very tall, smiling male dressed in bright blue scrubs. “Yes we did. Wow, are those the new RT scrubs?”

“Yeah, a bit bright, eh? They tell us they will fade with washing. Same colour as my grad suit was during the high school prom. Not a great colour then and less so today.”

Siri laughs. “Ok. Mrs. Meryl Smith is a 44 year old woman who developed heart failure due to a heart murmur that occurred 16 years ago during her last pregnancy. She was doing fine and came off oxygen 24 hours ago. Just a few minutes ago, she rang and complained of distress and shortness of breath, and her sats were down. I put her on 3 LPM nasal prongs and have not had a chance to double check to see if that worked.”

“Ok. Well, let’s look now.”

Day: 3	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 03h20	102	92/55	26	36.5° C	90% 3 LPM

Both Jackson and Siri head into Meryl’s room to find not much of a change with saturation around 90% and HR around 100. Latest NIBP is 92/55.

“Hi Mrs. Smith, my name is Jackson and I am a respiratory therapist. I manage oxygen for patients and it seems you might need a bit more. I need to listen to your lungs. Is that ok?”

Meryl just nods.

Jackson listens quickly. “Wow, she is crackly everywhere. I’m going to get a mask and a water bottle. I’m probably going to put her on .5Fi02 and see how she does. Is the doc going to see her?”

“I’ve asked Dennis to come in and review, which I hope is soon.”

Just then Dennis walks in. “How is this for soon?”

Siri smiles “Pretty good. Jackson is going to place her on oxygen. She woke up in distress about 15 minutes ago. HR is up, BP is up, and saturations are down. She is complaining of SOB and not feeling quite right.”

“Ok. Jackson, what did you hear chest-wise?”

“She is crackly in all fields. I’m going to place her on .5 mask and see how she does. Resps are about 26 per minute right now.”

“Thanks, I’ll order a CXR and 12 Lead, with CBC, lytes, BUN, creatinine along with a troponin to see if this is an MI. After I look at the CXR, I may order some Lasix as she may be having an exacerbation of heart failure.”

Siri stays with Meryl while Jackson gets the oxygen mask and Dennis writes the stat orders.

Over the course of the next hour, Meryl’s saturations improve to 93% on .5 Fi02. A chest X-ray is complete, a 12 lead is done, and all morning lab work is completed.

Siri and Dennis are both looking at the CXR and the 12 Lead. “Ok, Siri what do you see on the CXR?” Dennis asks.

“Well, comparing it to yesterday, she seems to have a lot more infiltrates generally. There doesn’t seem to be a pattern nor does she have a temperature or cough so I think, for some reason, she is retaining more fluid or her heart is not pumping very well.”

“Excellent. I agree as well. Let’s look at her 12 lead.”

Both professionals compare the last two days’ 12 leads with the one taken a few minutes ago.

“Same question, Siri. What do you see?”

“Well, comparing all three ECGs, they all look the same. If we are looking for an MI, I don’t see any ST elevation nor Q waves on tonight’s ECG. She could be having a NSTEMI I guess.”

“That could be happening, but I’m suspecting it’s something else. I wonder if the trop is back yet.”

Dennis pulls up the computer and looks under Meryl Smith’s lab work. “Awesome. Look here: no troponin detected. So, no MI. Let’s give her 40 mg IV Lasix now and if she responds really well, just follow up with her normal AM dose. If she has a limited response, say less than 1500 cc urine in the next three hours, let’s double the dose. But talk to me first before doing so. I’ll write the order for the 40 mg direct IV.”

“Ok, something happened here. I’ll go see how she’s doing and talk with her.”

Time: 04h30

“How are you feeling now Mrs. Smith? I am going to give you some Lasix that will make you want to pee quite a bit for the next little while.”

“Ok, is the commode close?”

“Yes it is, but I want you to call if you need to get up. Just want to make sure nothing happens or you slip. Ok, here goes the medication. Has to go in quite slowly.”

Siri very slowly pushes the 40 mg IV over the next 5 minutes into Meryl’s IV.

“So all those tests we did show you did not have a heart attack, but show that your heart is not pumping as well as it was yesterday. Anything different happen?”

Meryl sighs and looks sheepishly at Siri. “Dorothy and I celebrated just a little after dinner before you came on shift.”

“What do you mean?”

“Well, Dorothy brought me fries and a large milkshake, you know one of the big ones.”

“Oh my. Ok, I think I know what happened. Addy talked to you about salt and water, did she not?”

“Yes. I am not supposed to have too much of either.”

“Yes, no extra salt and we’re watching your fluids very carefully. So the extra salt from the fries caused your body to hold onto fluid, then the extra big milkshake gave you more fluid than your heart could handle, causing your heart to be overstretched and not pump well. The Lasix that I’m giving you will help, but you can’t do things like this.”

“Yes, I know that now. Thank you. Are you going to talk with Dorothy?”

“Not tonight. But I think you both need to meet with Addy and Stella.”

“Ok.”

Time: 06h30

Siri helps Meryl back to bed for the eighth time since the Lasix has been given.

“Oh, I feel so thirsty.”

“Yes, here is some water. Just take a sip and rinse it around your mouth before swallowing. That will help with some of the dryness.” Siri removes the pan from the commode and measures the urine. *That gives us a total of 2200 cc since 0430. Not bad*, she says to herself.

“Ok, about two liters out. How are you feeling?” Siri checks the monitor and sees the heart rate below 90 and saturations sitting at 99% on the .5 $Fi0_2$.

Day: 4	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 06h30	88	110/75	20	36.5° C	99% .5 FIO_2

“Much better,” Meryl says. “Feels like I’m back to where I was yesterday.”

A few minutes later Jackson comes in to check on Meryl.

“How you doing now? Wow — 99%. Let’s see if we can get you off the mask and onto something more comfortable or maybe even off oxygen.” Jackson removes the mask and replaces it with nasal prongs at 3 LPM.

“I’ll be back in 10 minutes to see how you are doing.”

Time: 06h45

“Ok, Mrs. Smith, your sats are 96% on 3 LPM. Let’s take you off the oxygen. I’ll ask my day shift counterpart to check on you when they come in, but I think you don’t need the oxygen anymore now that you got rid of all that fluid.”

“Thank you. I feel so guilty. I did this to myself and I thought I knew better.”

“Hey, now you know. Have a good morning Mrs. Smith.”

Time: 07h30

“Hi Simone, back again?”

“Yeah, Philippa wanted to trade her day shift for a night. Something to do with a school outing, I think.”

“Very happy to see you. Should be an easy report.”

“Thanks Siri.”

“Ok, everyone had a good night except Meryl Smith, but will get to her in a minute. Beds 2 to 6 are ready for discharge as soon as the morning labs are back. Discharge orders are written. If labs are normal, they are good to go. I have phoned all the family and they are aware to come and pick them up. I have updated my charting and everything should be a go for them.”

“Thank you very much. Now what happened with Meryl?” Simone asks.

“The evening started out well. HS meds and care, she was doing fine. Did not need any assistance to commode. Then at 03:00 she wakes up not feeling right, SOB, sats down, chest sounding quite crackly throughout, and did not look exactly right. RT up, placed on FM at .5 Fi02, stat blood work, CXR, and the resident in to see her. Appeared to be having either an MI or acute exacerbation of HF. Labs came back with trop negative, 12 lead unchanged but CXR showed increased infiltrates. Had a bit of a discussion with her and it seems her and her partner celebrated how well she was doing with fries and an extra large milkshake. Looks like this tipped her over the edge. She received 40 mg IV Lasix. Diuresis of 1.5 L out and this morning is off oxygen with sats of about 93%. She feels pretty guilty. I think social work and Addy from dietary need to come and talk with both her and Dorothy to do some teaching.”

“I agree,” nods Simone. “When they were talking yesterday the conversation seemed a bit too easy. More teaching is definitely needed.”

“Ok, Simone, that’s it for me. This is my last night shift so maybe see you next week. Have a great shift.”

“Thanks Siri, I hope you get some sleep.”

Time: 08h10

The discharge patients are all up and dressed, Simone says to herself. *Breakfast trays delivered. So they should be good. Right. Let’s go see Meryl and see how she is doing.*

Simone double checks that she has the right meds, remembering yesterday that the beta blocker was adjusted.

Entering the room, she finds Meryl sitting up in bed looking much better than yesterday morning, despite the events of the night shift.

“How are you feeling Mrs Smith?”

“Much better thank you. I imagine you know what happened last night.”

“Yes I do. How do you feel about that?”

“Very embarrassed and a little scared.”

“I can believe that. Here are your meds for the morning. It looks like your heart rate is good at 65. Let’s do your blood pressure and then afterwards let’s talk about last night.”

“Ok. You aren’t mad, right?” says Meryl.

“Definitely not. I just want to help you develop a better understanding of your disease and see what we can put in place to prevent these sorts of things happening again.”

“Thank you.”

Over the course of the morning, Meryl discusses her feelings with Simone and seems to show a deeper understanding of heart failure and the implications. When Dorothy comes in, Addy and Stella meet with the two women and provide counseling and coping strategies.

The next three days show great improvement with Meryl. On the fourth day, she is discharged home, with appointments for follow up to the health heart clinic.

Case Study #5: Motor Vehicle Collision (MVC)

Learning Objectives

Case 5 describes a patient's experience with a motor vehicle collision (MVC) and the resulting trauma. The patient is a young male who fell asleep while driving, resulting in head injury. His girlfriend was the passenger and her status is intentionally left undetermined.

Learners reviewing this case can explore the experiences of trauma, its causes, and its treatments. Generating discussions regarding how to support family and patients experiencing trauma and/or death of a loved one is an intention of the narrative. There are a number of ideal interprofessional interactions to analyze.

Learning Objectives

In this case, learners have an opportunity to:

1. Build knowledge related to the patient's experience of trauma, including mechanism of injury, and trauma management, particularly spinal immobilization
2. Integrate knowledge about acute brain injury into existing knowledge associated with caring for patients experiencing trauma
3. Continue to develop comprehensive assessment, and monitoring skills and abilities (e.g., neurological assessment, monitoring, diagnostic studies)
4. Discuss the links between evidence-based knowledge and practice in the care of patients experiencing trauma (e.g., trauma protocols and guidelines)
5. Recommend interventions based on the risk factors, status, and progression of trauma and brain injury
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Aaron Knoll

Aaron Knoll

Patient: Aaron Knoll

Date of Birth: 09/14/19xx

PERSONA

Aaron Knoll is a 24 year old student in his final year of studying Environmental Science. He lives with his mother (his father died 10 years ago). He has no siblings.

Aaron works part-time as a waiter at a local restaurant. He enjoys bowling, hiking, and snowboarding. He recently met his girlfriend, Melissa, at a party and they have been enjoying spending time together.

Aaron has no allergies, no medical conditions, and no surgical history. He does not smoke and he drinks alcohol occasionally.

Attribution

Crash Scene

Watch this video first.

Day: 0

Time: 22h30

Place: FireHall #6

“Attention, attention,” blares the announcement. “Motor vehicle crash, Hemlock and Willow, two casualties reported. Respond, code 3.”

Six fire personnel jump up from their table and rush to the small ladder truck.

Jack, the driver, hits the big red button to open the large garage door before hopping into the truck.

“Dispatch, this is Truck 6, responding code 3 to Hemlock and Willow,” Jack responds. “ETA three minutes.”

“Roger, Truck 6. ETA three minutes.”

The ladder truck moves quickly out of the station with lights and sirens on. Maneuvering the truck through the neighbourhood, they arrive in three minutes at the scene.

Quickly surveying the scene from the truck, Jack says, “Captain, this looks pretty bad. Car looks significantly damaged. Looks to be gas leaking.”

“Agreed. Ok, Smith and Sidhu, you have traffic,” directs the captain. “Manage the scene and direct cars and bystanders to the other side of the street. Johns and Roche, you guys grab the foam and check out that gas leak. Jack, you’re with me. Let’s take a look inside the car to see what we have.”

The captain and Jack make their way to the car and see two people, a young male in the driver’s seat bleeding profusely from the head, and a female passenger with no apparent wounds.

“Ok, check the pulse on the passenger.”

“Captain, she has a pulse,” Jack reports. “It’s weak but present.”

“Dispatch, this is Truck 6 at Hemlock and Willow. What is the ETA on the ambulance?”

“ETA on ALS crew is five minutes.”

“Roger that, Dispatch. The sooner the better.”

“Ok, Jack, there is no way we can extract them without removing the doors and maybe the roof. Roche, how’s that gas leak?”

“Cap, the leak is pretty small. Laid some foam down. Should be ok.”

“Great. Go grab the saw and a couple of long bars, and tell Johns to bring the oxygen and some blankets.”

The crew works quickly to apply oxygen to the two victims in the car. Johns carefully drapes a blanket around them.

“Ok, I want you, Roche, to cut those two forward pillars and then we’re going to pull the roof back.”

Roche quickly cuts through the two pillars holding the windshield and the roof. Using the bars, the captain and Johns lever the roof back like a tuna can, exposing both the driver and the passenger.

The captain checks the pulse on the driver. “Ok, still doing all right. Let’s lever the doors open on both sides. I hear the ambulance. They should be here in less than a minute.”

The crew, grunting with effort, manage to open both doors and Roche cuts the hinges off, dropping the doors to the ground.

The white and blue ambulance, its lights still flashing, pulls up. Two paramedics hop out, each with a tackle box in hand and make their way over to what is left of the car.

“Hey, Captain, not often seeing you out on a call.”

“I like to keep practicing. Can’t sit at a desk all the time. We were short a man tonight, so here I am. We have two victims, a male driver and a female passenger. Airbags deployed and seat belts were on. Both have weak pulses and rapid respiratory rates. We’ve given them oxygen and started dismantling the car for you to extract them. We haven’t moved them. The female passenger’s legs look like they are stuffed under the dash and we may need the jaws to move the dash off her.”

“Ok. Thanks, Cap.”

The two paramedics move to the driver’s side. Checking ABCs, they find the driver is breathing but his pulse is thready. “James, you take the passenger. I’ll get Cap to help me here and have him assign someone to you. Looks like IVs to start, then let’s immobilize and extract onto backboards.”

“Sounds good,” James says.

Both paramedics get to work, establishing large bore IVs in the ACF of each victim. After each has secured a

cervical collar, they both stand up and take a look around at the car, trying to see how to move the occupants out of the automobile.

“Dispatch, this is Truck 6. Can you send another ambulance? We have two victims here. Both unconscious and will need transport to Memorial.”

“Roger, Truck 6. Is this a code 3?”

“Dispatch, negative on code 3. Code 2 for transport only.”

“Roger, Truck 6.”

“Ok, Captain. James and I will slide the backboard behind the driver here and secure it, and then if you and the guys can help us move him out of the car?

“No problem.”

Working as a team, the fire crew and the two paramedics quickly get the backboard behind the driver and, keeping the driver’s back straight, slowly move him out of the car and onto the pavement.

“James, you stay with the driver here. Looks like he might need some more fluid. He’s looking a bit shocky.”

Repeating the same process for the female passenger, the fire crew and the paramedics are able to extract her after pushing the seat as far back as possible from the dashboard.

Checking her vital signs again, the paramedic finds them to be stable but she is unresponsive.

“Captain, if you can have a couple of your guys hold her IV bag and keep an eye on pulse and respirations, I’ll help James with the driver. When that other crew arrives, they can take her directly to Memorial.”

“Will do. Sidhu and Roche, check pulse and resps on the passenger and keep that IV going. Smith, check the gas leak and see if we need to do anything more. Let’s throw down some absorbent to soak it up.”

Both Sidhu and Roche move to the passenger and begin their checks. The second ambulance arrives. Two paramedics pull a stretcher out and move towards the scene.

James waves them over to the female passenger. “She appears more stable than the driver. Check her vitals and, if things are good, transport to Memorial.”

“You got it, James.”

“James,” says the second paramedic and pointing to the driver. “How is he doing?”

“Resp rate is 28, pulse 130, BP 90/70. He’s had one liter so far and I have another liter hanging. He looks a bit shocky. Other than his scalp lacerations, everything seems ok. His belly is a bit firm and he moans when touched there. Still not waking up. Here’s his wallet and phone.”

Day: 0	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 22h45	130	90/70	28	–	–

The lead paramedic looks at the wallet. “Name is Aaron Knoll, age 23. Appears he is a student at the college down the road. Maybe the passenger is his girlfriend?”

“Not sure, but let’s get him in the ambulance and to Emergency. He looks stable, doesn’t need intubation right now, and all vital signs are reasonable given the situation.”

“Hey, Cap, can we have a hand to lift and place the driver on the stretcher?”

“You bet. Hey, Sidu, Smith, and Roche, give a hand here for a lift.”

The fire crew and the paramedics work together to move Aaron to the stretcher and then into the back of the ambulance.

“Thanks, Cap. That was really helpful. Tell your team they did really well and made a difference tonight.”

“Thanks, James. I’ll pass that on to my crew. I appreciate it. We still have some clean up here to complete, and the RCMP will want to do their investigation. Might be a longer night than I expected.” James smiles and shakes hands with the captain and hops into the back of the ambulance. His partner moves to the driver seat.

A hard thump on the back of the door and the ambulance moves out with lights on, no siren.

Emergency Room

Day: 0

Time: 23h30 (1 hour post-MVC)

Place: Emergency Room

The ambulance pulls in and the paramedics easily lift the stretcher out of the back onto its wheels, and enter the triage doors.

Nurse Jackie looks up from the triage desk. “Is this the male driver from the single vehicle collision?”

“Yes, it is,” responds James. ” I believe his name is Aaron Knoll. I have his wallet and some of the paperwork. We stabilized in the field and I’ll need to complete the paperwork here.”

“They’re waiting for you in Trauma 2,” says Jackie. “Give me his wallet and I’ll get him in the system. Next of kin?”

“We don’t know. It was just him and a female passenger.”

“Thanks. Head to 2. Dr Pierce is expecting you and they’re set up and ready.”

The two paramedics navigate the stretcher through the doors at the back of triage and into the trauma area. Looking in at Bay 1, they see the female passenger getting an X-ray. Moving a bit farther down the hallway, they turn the corner into Trauma bay 2.

“Good evening, Dr. Pierce.”

“Hello, James. What have you brought us this fine evening?”

“This is Mr. Aaron Knoll, driver of a single motor vehicle collision on Hemlock and Willow. Air bags deployed. Was wearing his seat belt. Fire had to remove the roof and doors for extraction. We placed a hard collar and he is on a backboard. Vitals are sinus tachycardia at 130, resp rate at 32 last check, SpO_2 90% on 10 LPM rebreather, BP 90/70. Lacerations to scalp and primary survey did not show any additional injuries to limbs. My partner found that his abdomen is tender and firm. Initial GCS is 13/15 and he has not fully regained consciousness, but is now

moving all limbs spontaneously. We have not given him any analgesics. He has received two liters of D5NS [1]. No next of kin notification. Anything else, Dr. Pierce?"

Day: 0	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 23h30	130	90/70	32	–	90% 10 LPM

"No, let's get him on the bed and give him a closer look," replies the doctor.

The paramedics and the nurses move Aaron over to the hospital trauma bed. He moans quietly as he is repositioned.

Acting quickly as a team, the two Emergency nurses begin cutting off Aaron's clothing, hooking him up to the monitor, and checking his IV site. The respiratory therapist checks the oxygen flow and auscultates his chest. In under five minutes, Aaron is on the telemetry monitor, covered with a light sheet. Vital signs are charted and communicated to Dr. Pierce.

"Ok, he looks like he's waking up a bit more now. BP is still a bit lower than I would like to see. Ingrid, start a second IV and draw the usual trauma bloodwork. Give me a glucose now in case we're dealing with some sort of diabetes issue."

Ingrid easily starts a 16 gauge IV in the opposite ACF the paramedics used. She draws eight tubes of blood and hangs normal saline wide open. "Dr. Pierce, the blood glucose is 10."

"Thank you, Ingrid." Looking over at the RT, the doctor asks, "How does the chest sound?"

"So far, pretty good," Ingrid replies. "Good air entry to the bases, equal throughout, and no extra sounds. On 95% rebreather with equal expansion. Sats are 99% right now and I'll begin to titrate the FiO_2 down."

"Great. When you get the FiO_2 below 70%, draw an ABG to see where we are."

Dr. Pierce moves closer to the patient and begins an assessment of his limbs and trunk. Finding nothing abnormal with the limbs, he moves to the abdomen and finds Aaron guarding, abdomen firm, no bowel sounds, and some bruising over the left upper quadrant.

"The BP is coming up a bit with the fluid. Let's see what the HGB is before giving any blood here. I'd like to clear his C-spines and see what is going on in his abdomen. How is urine output right now?"

"Foley has been in about five minutes and we have 200 cc of light coloured urine," says the nurse. "Sample has been sent."

"Fantastic. I'll go out and contact the radiologist-on-call and see if we can get a CT scan done pronto."

Time: 01h00 (2.5 hours post-MVC)

Glen, the porter from the X-ray Department, enters Trauma 2 and announces that the CT technologist is now ready for Aaron Knoll.

1. normal saline with dextrose 5%

Ingrid looks up. “Hey, Glen. Thanks. Are you helping to get us to CT?”

“Yeah, it’s been a slow night up till now.”

“Maybe for you. We’ve been swamped down here.” Looking at the RT, Ingrid asks, “You ready?”

“Yes, let’s go.”

Grabbing all the paperwork from the desk, Ingrid indicates she is ready as well.

The three push and pull the stretcher through the Emergency Department and out the back doors to the elevator that will take them directly to the X-ray Department.

Once in the X-ray Department, Glen indicates the hallway to the right of the reception desk. “They have CT 3 ready. The other room has the female passenger in it.”

Ingrid nods and guides the stretcher down the hallway to find the CT technologist holding the door open for them.

“Good morning, Ingrid. How’s your night? Is this Aaron Knoll?”

“Been busy and yes. Did you get called in?”

“Yeah, two of us due to the accident and some other issues going on this evening.”

“Wow. Ok, Dr. Pierce did the req, but we want to clear the C-spine to see if anything is going on inside his head and see what is happening with the abdomen, as he is quite tender,” Ingrid reports. “Urine output has been good. Labs indicate no renal insufficiency, so we can use dye for the abdomen. No dye for the head scan, because, as you know, contrast and blood look too similar on the scan. Helical scan, because that is faster, and then we can reformat the images.”

“Great. Let’s check for cerebral bleeding before abdominal. Move him onto the table with his head to go into the scanner first.” Ingrid and the technologist work together using the CT scan trauma protocol.

Time: 02h00 (3.5 hours post-MVC)

Place: Triage Desk

“Can you help me. I’m looking for my son?”

Jackie looks up to see a very anxious woman who has obviously been crying. “Can you tell me your son’s name?”

“Aaron. Aaron Knoll. I’m his mother. Is he alive? Oh, please don’t tell me he’s dead!”

“No, Mrs. Knoll, your son is not dead. He is here in the Emergency Department,” Jackie says reassuringly. “I’m going to get Dr. Pierce to talk to you and then take you to see your son.”

“Oh, thank goodness.” Mrs. Knoll looks relieved. “What about his girlfriend?”

“I’m sorry, but I can’t say anything further. Let me get Dr. Pierce.”

A few minutes later, Jackie comes back to the waiting room and guides Mrs. Knoll to the family room.

“Dr. Pierce, this is Mrs. Knoll.”

“Hi, Mrs. Knoll,” greets Dr. Pierce, shaking her hand. “This is Ingrid, one of the nurses that is helping me care for your son.”

“Oh, my. What happened?”

“Please sit down,” he says and guides Aaron’s mother to a chair. “So, about three and a half hours ago your son was in a single vehicle collision not far from what we think is his girlfriend’s house. The car was significantly damaged. He was unconscious at the scene, but is slowly waking up. We have done some tests and it looks like he will need surgery for some internal bleeding.”

“Oh, no. That’s awful. Will he be all right? When can I see him?”

“We are hopeful that with surgery and some time to recover, he’ll be ok. However, many things can happen in the meantime, and he’ll need a lot of support to get better.”

“I’m feeling a bit overwhelmed right now,” says Mrs. Knoll. “He never drinks and drives. How did this happen?”

“Mrs. Knoll, he was not impaired by alcohol or drugs,” the doctor says reassuringly. “Our best guess right now is that he fell asleep while driving, but only he can tell us when he wakes up.”

“He will wake up, right?”

“We believe so. At this point, it looks like a concussion. The CT scan did not show any damage to his head or neck. As time goes by, we’ll know more. There is reason to hope for a full recovery. Like I said, though, things can happen in the meantime and he will need a lot of support to recover.”

“Ok, I think I’m getting it. He’s seriously hurt and will take a long time to get better, and there may be complications that you can’t see.” Mrs. Knoll looks at the floor as she tries to take in the information.

“Yes, that is correct. He is young, which often means a better outcome than if he were my age.”

“Can I see him now?”

Ingrid stands up and moves closer to Mrs. Knoll. “Yes, let me show you where he is and explain some of the equipment at his bedside. I believe the surgeon will want to talk with you as well.”

Ingrid then leads Mrs. Knoll out to Trauma 2 to see Aaron.

“Mrs. Knoll, before we go in, you need to be aware that there is a lot of equipment around him and that there will be quite a few people coming in and out of the room. Not all will introduce themselves or even interact with you. It is taking quite a few health professionals to look after your son. It’s stressful for us to see your son this way as well.”

“Ok, ok.” Mrs. Knoll nods as she talks. “Can I just see him now?”

“Follow me.” Ingrid takes Mrs. Knoll around the corner into Trauma 2. There she sees her son lying flat on a stretcher with a clean, white sheet over top of him. Wires snake out from under the sheet to the monitor on the wall. Clear IV tubing goes from bags hanging on hooks, through blue coloured IV pumps, down under the sheet to Aaron’s arms. Clear plastic tubing is at the end of the bed with light yellow liquid in it.

“Oh, my. He looks so ill. What are the bandages on his head for?”

“Most likely he hit his head on the steering wheel before the air bags deployed, or on the side window,” explains Ingrid. “He has a couple of cuts there that we had to suture.”

“Will he have scars? He has such a handsome face.”

“I’m not sure. It depends on how he heals up. It’s a bit early to be thinking of scars. Let’s get him through the next couple of days and then we can consider whether scarring is an issue.”

“Can I touch him?”

“Most definitely, and please tell him you are here and where he is. Somewhere under there he can hear us, but he is familiar with your voice and trusts you, so hearing things from you will have more meaning for him. Let me get you a chair and you can sit and hold his hand for a little bit.”

Pulling a chair out of the corner, Ingrid assists Mrs. Knoll to sit at the bedside with Aaron.

Time: 03h00 (4.5 hours post-MVC)

“Mrs. Knoll? I am Dr. Labinski. I’ve been asked by Dr. Pierce to take a look at your son and take him to surgery to fix some internal bleeding.”

“Yes, I’m Mrs. Knoll. How bad is it?”

“Well, it’s bad enough that they have asked me to take a look and fix it. So it’s serious. Let me explain what I want to do, and then if you can sign the consent, we’ll get him up to surgery and hopefully have him on the road to recovery quite soon.”

Dr. Labinski then explains to Mrs. Knoll that Aaron has mostly likely torn part of his spleen, and that without surgery he will continue to bleed. He’s lost a bit of blood but is reasonably stable now. However, this won’t continue without surgery. He also explains the risk for anaesthesia, infections, and scarring, along with the chance of further bleeding that can’t be stopped in the operating room.

Mrs. Knoll signs the consent form.

“I’m now going to go up to the OR to let them know that we’re going to do his surgery tonight, within the next 60 minutes, I would say. I’ll phone you when we’re done. I strongly encourage you to either go home for a couple of hours or ask Ingrid if you can sleep in the family room. You’re going to need some rest. Aaron will need your support when he wakes up. I expect the surgery will take about two to three hours, then about four hours in the recovery room, and then up to the surgery floor, so you’ll be able to see him around 10am.”

“Ok. I don’t feel right leaving, so I’ll talk with Ingrid.”

“That’s fine. I will phone you after.”

With that, Dr. Labinski leaves Trauma 2 and heads to the OR.

Operating Room

Day: 0

Time: 03h30 (5 hours post MVC)

Place: Operating Room: Charge nurse's desk

"Dr. Labinski! On-call again, I see."

"Yes, Ruth, and I see you are in charge again. I have a patient downstairs with a lacerated spleen. Aaron Knoll. I have classified him as a 1A. Needs to be done soon. Is that possible?"

"Yeah, we should be finished with the C-section in OR 4," says Ruth. "I'll ask Lydia to set up a major abdominal set for you. Is there anything special you need?"

"No, that should be good. Let Dr. Lai, the anesthetist, know that he may need the rapid infuser and should have four units up, as I expect a lot of bleeding," instructs Dr. Labinski. "And make sure there are a lot of suction containers available. Is there an assist around to help me out? I'm concerned that this could go sideways quickly."

"Dr. Bondie is available. She's watching the C-section right now."

"Excellent. Which OR?"

"We'll set up OR 7 for you. It'll be ready in about 30 minutes."

Time: 04h00 (5.5 hours post MVC)

Ruth looks up to see Dr. Bondie and Lydia bringing a patient through the doors.

"Is this Aaron Knoll?" asks Ruth.

"Yes, it is. I have checked the pre-op checklist and checked him against his consent. His mother identified him as well," confirms Lydia. "So, right patient."

"Ok, you're already set up. Bassam is scrubbed in and ready. I'll follow you down and help you position."

"Thanks, Ruth," says the doctor.

Positioning their masks correctly, both Dr. Bondie and Lydia enter OR 7 to see that Bassam has most of the back table set up and is standing in his sterile gown at the far end of the back table. Dr. Lai is relaxing on his stool by the anaesthetic machine.

“Hey, guys, this is Aaron Knoll. He’s still a bit unconscious, most likely from a concussion post-MVC. Let’s get him positioned and draped.”

Ruth, Dr. Lai, and Lydia slide Aaron from the stretcher onto the OR table. Dr. Bondie checks the patient’s identity again and assists with positioning him at a 45 degree tilt to the right, with his left arm stretched over his head and supported by the arm board attachment from the OR table.

Dr. Bondie steps back. “That looks good, but before we go ahead and prep and drape, let’s check with Dr. Labinski.”

Dr. Lai nods. “Sure. I’m going to go ahead and start putting him to sleep and getting myself ready here. Should be about 15 minutes at the most.”

A few minutes later, Dr. Bondie and Dr. Labinski re-enter the OR and assist with prepping and draping the patient.

Dr Lai looks over top of the drape separating him from the operative field. “I’m ready and the patient is fully under.”

“Thanks. Ok, everyone let’s just pause before we begin and double check we have everything, and we all know what’s going to happen.”

Ruth and Lydia gather a bit closer but stay a meter away from the surgical field. Bassam, who is scrubbed, and Dr. Bondie lean in close. Dr. Lai adjusts his stool so his head is above the separation drape.

“Ok, let’s confirm a couple of things. This is Aaron Knoll, right?” Everyone nods. Ruth and Lydia confirm that his identity is correct.

“Great. Aaron was in an MVC about six hours ago. Appears he fell asleep at the wheel. Pretty messed up crash, which required fire rescue to cut the car into pieces. His girlfriend is still in Emergency; not sure what is happening there. Aaron received a significant laceration to his head and a concussion. The spleen laceration was confirmed on CT. Most likely from the trauma of the seat belt. The bleeding looked a bit loculated, but I expect it is tamponaded due to the swelling of the spleen and the parietal membrane.”

Bassam nods. “I have extra lap sponges and three extra sterile suctions with bottles hooked up.”

“Thanks. I hope we won’t need all of that, but I expect we may. Looking at the CT scan, I had hoped to repair minimally invasively, but there is so much blood and swelling that I’m unsure how big the tear may be. My plan is to go in slowly and once I get to the parietal membrane, expose it as much as possible. I’ll let Dr. Bondie and Bassam know when I’m going to cut in deeper. It will be a smaller incision. Then we will stick the suction in to see if we can relieve some of the pressure and help visualize the area better. Once that’s done, we’ll fully open him up, find any bleeders, tie those off, and then if we can sew the spleen up or do a partial splenectomy, that is preferable to fully removing it. I can’t decide which until I see what is what in there.”

Ruth speaks up. “Four units of PRCs in the fridge and Dr. Blake has told me he’s going to stick around in case Dr. Lai needs any help managing the rapid infuser. PACU is aware that he may be unstable and I have arranged for ICU nurse coverage if necessary.”

“I have extra vascular clamps, retractors, and silk on the back table. I’m all counted in and ready.”

“Ok, if there are no more questions, let’s get started,” states Dr. Bondie. “Lydia, would you turn on the Michael Bublé mixed tape, please?”

Post Anaesthesia Care Unit (PACU)

Day: 0

Time: 07h00 (8.5 hours post-MVC)

Place: Post Anaesthesia Care Unit (PACU)

“Thank you, Lydia and Bassam. That went better than I expected. I’m going to go speak with Aaron’s mother.”

“Sounds good, Dr. Lai, and I’ll take him to the PACU,” Lydia says. “Dr. Lai, are you ready?”

“Just give me a couple more minutes to fill out the record here and organize the pumps.”

“Ok. I’ll phone the PACU and give them our ETA.”

Ten minutes later, with the aid of a porter, Dr. Lai and Lydia push the stretcher into the PACU.

“Hi, Lydia. Is this Aaron Knoll who you told me about?”

“Morning, Joannie. Yes, this is Aaron Knoll, MVC from last night. Let’s transfer him to your monitor and settle him in before I give you the full report. Dr. Lai and I have been up all night and are feeling quite tired.”

Joannie and Lydia push Aaron’s bed closer to the wall. They remove the OR ECG leads and attach the PACU ECG leads. Joannie levels and zeros the arterial line. Once that is done, both nurses step back with Dr. Lai and look at the vital signs on the monitor.

The monitor shows a regular sinus rhythm (RSR) of 90 per minute, BP 100/75, RR 14, and SpO_2 99 on .5 FiO2 via a T-piece.

Day: 1	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O2 Saturation**
Time: 07h00	90	100/75	14	36.5° C	99% on .5 FiO2

Dr. Lai lets out a sigh. “He’s reasonably stable right now. Lydia, do you want to give a bit of history and the OR report, and then I’ll follow with the anaesthesia report?”

“Sure,” says Lydia. “So you know he was in an MVC. That was about nine hours ago. Fire rescue had to cut the

roof and doors off the car to extract him and the passenger. We think the passenger is his girlfriend and we don't know her condition. He was unconscious at the scene and slowly began to wake up before he went to surgery. Never fully awake. All vitals were at the shocky end of the spectrum and he received a lot of NS before surgery. He had a CT which showed no head injury, no cervical injury, but a large laceration of his spleen. We were unsure of how big, until we cleared out some of the blood. Dr. Labinski didn't feel the minimally invasive approach would work, so we did an open left flank approach. The surgery went reasonably well and only part of his spleen was removed. We were able to save a significant portion of it. There was a lot of blood in the abdomen and we used a lot of sponges. Dr. Labinski was satisfied with the count, but as a double check he would like an abdominal flat plate, just in case something was missed. Over to you, Dr. Lai."

"Patient was supported with fluid on arrival in the OR," the doctor began. "Hemoglobin was 70 which did not leave much room for any further bleeding. I gave him another two liters of ringers lactate and three units of blood during the surgery. There is one more PRC in the fridge up here, in case it's needed. Latest HGB just before closing was 95. I inserted a right radial art-line for monitoring which, if BP stays above 100, can be removed before leaving the PACU. BP during surgery hovered around 70 to 80 systolic. Once I reversed anaesthesia, the blood pressure improved to what you see now. I have him on a morphine drip, but we should look at changing that to a PCA before he goes to the floor, especially if he becomes more awake than he was prior to surgery. Urine output was minimal during surgery, so I hope it improves now that we're done and the anaesthesia is clearing. He has a #8 OETT in situ, as I wasn't sure how he would breathe post surgery. But after reversal he was taking some good breaths, so I left him on T-piece. He can be extubated at the RT's discretion. I would like a chest X-ray post extubation to make sure he has not aspirated or anything untoward has occurred that we didn't see prior to surgery. Anything else?"

Joannie looks down at the anaesthesia record and sees the type of general anaesthesia used and the estimated blood loss of two liters. "No, I think that works for me. What about parents?"

"Dr. Labinski is going to talk with the mother. He will let her know that she can visit in here, but not for about an hour."

"Oh, he does not have to limit her coming in," Joannie says. "I imagine she is very concerned. I can easily work around her visiting her son."

"So, Joannie, here are my orders for the time being as we discussed. I'm going to grab a few minutes sleep, but if there is anything you need, let me know. I am covering for a while longer until Dr. Stacey shows up."

"Thank you. And both of you go get some sleep, eh?"

Lydia and Dr. Lai move off towards to OR doors and Joannie turns back to look at Aaron on the stretcher. Joannie efficiently completes her PACU assessment and records it.

He looks stable right now, she thinks. *BP holding and maybe slightly better since arrival. RR is up by three breaths per minute. I think now is a good time for the abdominal X-ray*.

Walking over to the main PACU nursing station, Joannie asks for a portable X-ray for Aaron Knoll, as requested by Dr. Labinski.

Jackson, the RT covering PACU, comes into the unit to check on the patients requiring oxygen. After looking at each patient in the PACU, he finally comes to Joannie and Aaron Knoll.

“Hey, Joannie, who do you have here?”

“Good morning to you, Jackson. This is the MVC from last night, Aaron Knoll. He had a partial splenectomy by Dr. Labinski and is quite slow to wake up post-MVC and surgery.”

“Right. We got the report on him from the Emergency RT. Pretty lucky guy. I understand they tore the car apart to get him out.”

“That’s what I hear and his girlfriend was the passenger, but I have no information on her as of yet.”

“Ok. How is he doing?” asks Jackson.

“From a respiratory standpoint, his RR is about 16 to 18, so the anaesthesia is beginning to really wear off. He has coughed a couple of times, but has not really appeared to be bothered by the OETT.”

“I’m going to have a listen, then draw an ABG to see how he is doing. Chest X-ray?”

“Dr. Lai wants one post extubation. Extubating is at your discretion.”

“All right, then. Looks like a bit longer for pulling the tube, but let’s get a gas and see where we’re at.”

Jackson auscultates Aaron’s chest and finds that his chest is clear with a few fine crackles at the bases. Jackson then places a gauge over the OETT to measure tidal volumes, which are normal for someone Aaron’s size. Blocking the inhale valve, Jackson measures the maximal inspiratory pressure and notes the gauge goes to 75 cm H_2O. When he releases the valve, Aaron coughs but settles on his own after a few seconds.

“Joannie, Aaron is breathing ok. Not sure he’ss awake enough to take the tube out, as his efforts are a bit weaker than expected. I’ll draw the ABG now and send it to the lab. I’ll come back in an hour and see if he is a bit more awake, and if he is, we will extubate.”

“I agree, tidal volumes are ok, but his cough is quite weak. Not sure he could protect his airway without the tube.”

“Yeah, that is my thinking as well. Hopefully in an hour he will be more ready.”

Time: 09h00 (10.5 hours post-MVC / 2 hours post-op)

Place: PACU

“Yes, Mrs. Knoll, you can talk to him,” Joannie says gently. “I would like you to tell him where he is and what has happened to him. If he hears it from you, a familiar voice, he may understand and not be quite so confused. He is waking up and starting to move around quite a bit more, which is a good sign, but I would like him to not get too worked up.”

Mrs. Knoll holds her son’s hand and explains what happened to him and where he is. Slowly Aaron’s eyes start to open and stay open a bit longer each time. Mrs. Knoll asks, “Are you in pain?”

Aaron looks at her and weakly shakes his head ‘no’.

“Joannie, I think he’s a bit more awake. He nodded his head.”

“That’s an excellent sign. It will take him a bit longer to wake up. He was significantly injured.”

“I understand. I’m just so relieved that he’s waking up. I was worried that he would not wake up and it would be like he just stayed asleep and never woke up.” Mrs. Knoll continues to hold Aaron’s hand.

“I can appreciate that concern. We will certainly know more as more time goes by, and so far it looks quite positive.”

Joannie looks up. “Hi, Jackson. Back to see Aaron again?”

“Most definitely. The ABG I drew about 45 minutes ago shows slight acidosis. The $PaCO_2$ was 45. High normal, but if he is starting to wake up and take some deep breaths, the CO_2 will be lower. Do you mind if I have a listen and check his vital capacity?”

“No, not at all.” Joannie turns to Aaron’s mother. “Mrs. Knoll, this is Jackson. He’s a respiratory therapist and is going to check Aaron out. If things look good, we’ll take that tube out.”

“Oh, that would mean he could talk. That’s fabulous. I need to have some breakfast and phone my husband and my work. I’ll let you do what needs to be done and be back later.”

“Thank you. I have your cell number in case something changes. I>m hoping in the next two hours to move him to the surgical floor.”

“I’ll phone before I come back in case he has moved. Thank you again for all your help.”

“Our pleasure. Enjoy your breakfast. I would try the little café around the corner and not the cafeteria.”

“Oh, is that a recommendation?”

“They have great food and the prices are pretty good.”

“Thank you, again.”

After Mrs. Knoll leaves the bedside, Jackson moves closer to Aaron, introduces himself and checks to see how awake Aaron is.

“Aaron, can you take a deep breath for me?”

Aaron responds by taking a deep breath, but grimaces partly through his breath.

“Joannie, he might be having some pain and guarding here that is stopping him from taking a full breath.”

“Thanks, Jackson, I’ll give him something extra after you’re done. I want him to be as awake as possible.”

“Sure. Ok, Aaron, I am going to measure your volume that goes in and out with each breath.”

Placing a gauge on the end of the OETT, Jackson notes the tidal volume of 425 cc.

“Awesome. Ok, now I am going to block your airway for a few seconds to see how strong your breathing muscles are.”

Jackson then holds a switch on the gauge and sees the needle move around to show -150. Aaron begins moving on the bed and reaching up to Jackson’s hand and the OETT.

“Ok, ok, Aaron. All done. Just relax, buddy. You are doing very well. It looks like we can take this tube out.”

Jackson nods over to Joannie. “Looks good here. Why don’t we pull the OETT and get him sitting up a bit more. I see you have an oxygen mask all ready.”

“Yeah, I was being positive. Let me come around to the other side and help you.”

Together, Joannie and Jackson explain the removal to Aaron, who nods that he understands.

Jackson then cuts the ties holding the tube in and Joannie deflates the cuff on the OETT. Then Jackson tells Aaron to take a deep breath. As Aaron blows the breath out, Jackson quickly removes the OETT.

“Awesome. Your voice will be a little hoarse. I’m going to put an oxygen mask on you. It’s more for the humidity to help your sore throat out. As you get a bit stronger and more awake, we will take the mask off.”

“Thanks, Jackson. Can you stay and help with the X-ray? We can take a look at the results together and see if we need to call Dr. Lai or Dr. Stacey.”

“Will do. I’m just going to finish my charting over at the nursing station, so give me a shout when the X-ray comes.”

“Thanks.”

Time: 10h00 (11.5 hours post-MVC / 3 hours post-op)

Place: PACU

Jackson and Joannie are huddled around the computer screen looking at Aaron’s recent X-rays when Dr. Lai and Dr. Labinski come up behind them.

“Anything interesting, Joannie?”

“Good morning, Dr. Lai. I thought you would have gone home by now.”

“Heading there now, but just wanted to check and see how Aaron is doing and if things are progressing.”

“Looking good, more awake, extubated about 20 minutes ago, and is on .4 FiO_2.”

“Great. Is this his chest X-ray?”

“Yes, it is.”

Leaning in, Dr. Lai looks closely at the X-ray. He points out the little bit of fluid at the bottom of each lung close to the diaphragm. He also points out the small amount of black below the diaphragm. “See that?” Jackson and Joannie nod. “That is air trapped below the diaphragm, most likely from the surgery. If he didn’t have surgery, air would be an indication for possible surgery.”

Dr. Labinski smiles at the group. “I guess that is a segue to me, eh? Do you have his abdominal X-ray?”

“Yes, we did that X-ray a few minutes after I settled him in this morning.” Joannie quickly changes the X-ray to the abdominal one taken three hours ago.

“The count was correct for all the instruments and sponges, but I felt that an abdominal X-ray was warranted to make doubly sure, as we used a lot of sponges and there was a lot of bleeding.”

All four lean in close to the monitor. Dr. Labinski points out the surgical site and the staples he used to radiographically mark the area.

“Ok, I am not seeing any sponges or any surgical tools left behind,” Dr. Labinski says. “Other than a little bit of air just below the diaphragm, everything looks good. He will have a CT in a couple of days to ensure the fix worked and then maybe discharged in five or six days if things go well.”

“I agree,” Dr. Lai says. “Joannie, if he meets all the discharge criteria from the PACU and you feel he would do well on the floor, please transfer him. If you have any concerns, call Dr. Stacey and have him put a referral in to high acuity.”

“Sounds good,” Joannie says. “He’s almost there. I think another hour or maybe two and he can go to the floor. Anyone going to update the family?”

Dr. Labinski nods. “I’ll update Mrs. Knoll once he hits the floor. I don’t have anything to add right now. Please let me know, as well, if he doesn’t go to the surgical floor. I have informed them to expect him and have discharged a couple of patients in prep for his PACU discharge.”

“Will do. Thank you both,” Joannie says.

Time: 11h30 (13 hours post-MVC / 4.5 hours post-op)

Place: PACU

“Ok, Aaron, I’m just going to remove these ECG leads. Everything is looking good. You are ready to go to the floor. I’m going to let your Mom know and the surgical floor to expect you shortly.”

Aaron waves his right hand in the air and whispers hoarsely, “I’m having a bit of pain.”

“If you are feeling pain, just push this button.” Joannie touches Aaron’s hand that is holding the PCA button.

“Right, I forgot. My girlfriend?”

“Sorry, Aaron, I don’t know anything. Maybe your Mom knows.”

Aaron slumps down in his bed, looking quite sad.

Joannie moves off to the nursing station to phone the surgical floor to give her report.

Surgical Ward

Day: 1

Time: 08h00

Place: Surgical Ward

“Good morning, Aaron. My name is Jeremy and I’ll be the nurse caring for you this fine morning. How are you doing?”

“I guess I’m doing better,” Aaron whispers. “My throat is still sore and my voice doesn’t sound like my own.”

“Yeah, that will go away in time. You have had a tough go of it for the last 24 hours.”

“Any information on my girlfriend?”

“Sorry, I don’t know anything. I just came on. I would ask your Mom when she comes in.”

Looking disappointed, Aaron nods.

“I know this is tough. Let’s focus on you. Today will be a bit action-packed for you. Bloodwork today, probably in a couple of minutes. Then Physio is going to see you and get you up and about. Dr. Labinski will come in, and together we are going to change that dressing. If you can tolerate more than a few sips of water, we will see if I can get you something a little more like jello.”

“Can I have a milkshake?”

“Maybe later. Let’s see how the water goes down.” Jeremy pauses. “Now, if you’re up to it, I am going to give you the once over, listen to your chest, and check your dressing.”

“Sure, whatever. The tube that is down there, you know…”

“That’s called a foley catheter and it goes through your penis to your bladder. It drains your urine out and allows me to see if you are drinking enough or not. If things keep going well today and you are able to tolerate an increase in fluids, I’ll remove the catheter. Sound ok?”

Aaron leans back, closes his eyes and nods.

Jeremy efficiently completes his assessment and moves outside the room to record his findings.

Time: 10h45

Jeremy feels a light touch on his shoulder and turns away from the computer where he is charting to see a very fit young man in street clothes. “Can I help you?”

“Sorry to disturb you. My name is Chin and I’m the physiotherapist today. Just started here a couple of weeks ago.”

“Oh, hi.” Jeremy looks down to see an ID tag dangling from Chin’s right front pocket.

“I’m here to check on a patient from last night. Mr. Knoll?”

“Yes, he’s one of my patients. Doing quite well and is probably ready to get out of bed and begin moving around.”

“That’s excellent. Can you tell me more about him?”

“Sure, come closer and I’ll pull his chart up on this computer and we’ll go through the history together.”

Time: 11h00

“Thank you, Jeremy, for walking me through the chart,” says Chin. “Are you able to assist me with mobilizing Aaron?”

“Yes, let’s go see him and see if he wants to get up.”

Walking into the room, they find Aaron and Mrs. Knoll talking.

“Hi, Aaron, Mrs. Knoll. This is Chin. He’s a physiotherapist, and he’s going to help me get Aaron out of bed and learn how to move around with the large incision that he has.”

“Do I have to leave?” Mrs. Knoll asks.

Chin shakes his head. “Definitely not. I would actually like you to stay and see how we assist Aaron. That way, if he wants to move or needs help, you can provide that assistance.”

“Oh, I would like that,” says Mrs. Knoll, smiling.

Jeremy moves to the opposite side of the bed to arranges the IV pumps and untangles the nasal prongs tubing in order to give Chin and Aaron enough room.

Chin then moves to beside Jeremy and sits on the edge of the bed. “Ok, Aaron, we are going to get you standing and maybe taking a couple of steps. Not much activity in comparison to what you were able to do two days ago. It will be uncomfortable and I want you to press your PCA if you’re having pain. We need to get you up or you’ll get stiff and your lungs will accumulate fluid.”

Aaron looks around at his mother and she nods to him but looks concerned.

“Jeremy is going to help me. We’re going to roll you onto your side. Jeremy will lift you to a sitting position and I will slide your legs off the bed so you are sitting on the edge of the bed. Then we will let you relax and get used to sitting. If things are ok, then we will help you stand. At any point in time, you let us know if this is too much or to keep going.”

Chin stands up and asks Mrs. Knoll to come and stand behind them so she can see what they do to sit Aaron up and to get him to stand.

Moving slowly, both Jeremy and Chin get Aaron sitting up on the side of the bed.

“How do you feel?” asks Chin.

“Very dizzy and can’t believe I’m so weak.”

“Yes, it will take awhile to get your strength back.”

Aaron reaches for the PCA remote and presses the button once.

A few minutes go by, with everyone talking about the weather. During a break in the conversation, Chin asks, “You ready to stand, Aaron?”

“I think so.”

Jeremy stands close to Aaron’s right side and Chin stands on the left. Both assist Aaron to wiggle a bit forward to the very edge of the bed so he can place his feet flat on the floor.

“Ok. Jeremy and I will take some of the weight by holding your arms and shoulders. If at any time you don’t feel well, just sit back down.”

Aaron nods that he understands.

Moving quite slowly, Chin and Jeremy get Aaron standing upright. Legs shaking but holding, Aaron looks around and weakly smiles at his mother.

“Wow, that is awesome. You are up out of bed.” Mrs. Knolls smiles and clasps her hands together. “Oh, I’m going to have to tell everyone that you are doing so well.”

“Yeah? If this is well, I’ll have to lower my standards.”

Chin laughs. “Aaron, it’s going to take time for you to get better. You’re young and will probably get better faster than other patients. It’s important, though, that as you feel better, you don’t overdo it. I’m going to create an activity plan for you and post it by your bed and on your chart, so that everyone knows and you know what your activity is.”

Chin continues. “Ok, let’s take two small steps.”

Aaron shuffles two steps forward, then stumbles.

“All right then, Aaron. Let’s get you back to bed.”

Jeremy and Chin help Aaron back to bed and settle him in.

“Very good, Aaron. I’ll come back this afternoon and see if you’re ready to sit in a lazy boy chair.”

Aaron just nods and closes his eyes. “So tired,” he says.

Jeremy checks the IVs and then leaves the room with Chin. “Thanks for your help, Jeremy,” Chin says.

“No problem. If you want help this afternoon, I’m around.”

“Excellent. If Mrs. Knoll is around, I may see if she can help so she can learn how to assist Aaron when he goes home.”

Time: 14h50

Dr. Labinski enters Aaron’s room to find Aaron sitting in a large grey chair and Mrs. Knoll sitting beside him holding his hand.

“Good afternoon, Mrs. Knoll and to you, Aaron. Not sure you remember me. I am Dr. Labinski. I operated on you last night.”

Aaron looks up. “I can’t remember anything except having dinner with my girlfriend then going to the library.”

“Not surprising. Your surgery went well and I expect you will make a full recovery in time.”

Dr. Labiniski then explains the surgery and how he expects the next few days to go. “Do you have any questions, Aaron?”

“Just one, my girlfriend. What happened to her?”

Dr. Labinski leans forward. “Aaron, both you and your girlfriend were in a serious accident that required cutting you out of the car. Your girlfriend was brought to the hospital before you.”

Dr. Labinski goes on to explain what happened to Aaron’s girlfriend.

Case Study #6: Sepsis

Learning Objectives

Case 6 describes a patient's experience with sepsis resulting from a urinary tract infection (UTI).

Learners reviewing this case can consider how sepsis develops, UTI causes, and treatments for both of these disease processes. The interprofessional interactions are typical for this type of situation.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with sepsis
2. Build knowledge related to the patient's experience of sepsis
3. Continue to develop comprehensive assessment and monitoring skills and abilities (e.g., ABGs, diagnostic studies, lab data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with sepsis (e.g., sepsis guidelines)
5. Recommend interventions based on the risk factors, status, and progression of sepsis
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: George Thomas

George Thomas

Patient: George Thomas

Date of Birth: 10/10/19xx

PERSONA

George Thomas is an 82 year old male. He is widowed and living in an assisted care facility. He has one daughter who lives with her husband in another town that is a two hour flight away.

George is an avid trainspotter and a member of the local Model Railroad Club. He also enjoys playing bingo, chess and cards with other men and women at Sleepy Hollow. He particularly enjoys the yoga and ballroom dance classes at the facility.

George has an allergy to sulfa drugs and is a type 2 diabetic. He has a tendency to develop urinary tract infections that are responsive to antibiotics. He had a cholecystectomy seven years ago.

Attribution

George Thomas: Photo by Ahmet Demirel is in the public domain.

Sleepy Hollow Care Facility

Day: 0

Time: 17h00

Place: Sleepy Hollow Care Facility

“Janey, come and help me. I can’t wake George.”

Janey, the charge nurse for the day at Sleepy Hollow Care Facility, looks up from the computer and sighs. “Gosh, this has been a challenging day. Two clients missing this morning, a family upset that it’s not an all-inclusive resort, and now George.”

Janey gets up from the desk and quickly recalls information about George in her mind. *He is a character, likes wearing his train hat all the time, does yoga, but I think that’s just to meet women, and can recite seminal movie lines from every movie ever made*. The smile disappears from her face. “Why is he not waking up?”

Walking quickly down the hall, she enters George’s not-so-tidy suite. “Hi, Preet. Why is George not responding?”

“I just can’t wake him. I have shaken him and shouted his name, but he doesn’t respond. And before you ask, yes, he is breathing and has a pulse.”

“Thank goodness. Well, let’s get him on some oxygen, call the ambulance, and see about moving him to the hospital.”

Janey moves out of the room to use the hallway phone and dials 911.

“911. What is your emergency?”

“I’m the charge nurse at Sleepy Hollow Care Facility. We have a client that is unresponsive and requires an ambulance.”

“Thank you. Transferring you to Ambulance Service.”

“911 Ambulance. How can I help?”

“I am at Sleepy Hollow Care Facility. We have a client that is unresponsive.”

“Does the client have a pulse?”

“Yes, and he is breathing.”

“Do you have a blood pressure?”

“We are getting his pressure now.”

“How long has the client been unresponsive?”

“Not sure.” Janey calls out: “Preet, how long has he been unresponsive?”

“About 90 minutes ago he was fine.”

“Did you hear that?” Janey asks the 911 operator.

“Yes, client unresponsive with pulse and breathing. Has been like this for up to 90 minutes. Anything else I need to know? An ambulance has been dispatched.”

“No, we’ll talk with the paramedics when they arrive.”

“Do you want me to stay on the line?”

“No, as long as ambulance has been dispatched I think we’re ok. How long for paramedics?” Janie inquires.

“Should be there in about seven minutes. I’ll hang up now, but if condition changes, call 911 again.”

“Thank you.”

Place: Ambulance Station

“Ambulance 52,” the dispatcher’s voice broadcast through the ambulance station. “Unresponsive patient, Sleepy Hollow Care Facility. Client has respiration and pulse. Proceed code 2.”

“Roger that, Dispatch. 52 heading to Sleepy Hollow Care Facility, code 2.” James looks up from completing the call log and touches the button for the emergency lights. “Ok, you heard the lady. Let’s be off.”

James’s partner, Zac, smiles. “Not sure Dispatch likes being called that: lady.”

Zac quickly moves the large ambulance out into traffic and navigates through the congestion while lights and car drivers freeze at the very sight of an ambulance.

Place: Sleepy Hollow Care Facility

“Great time in getting here, Zac.” James writes the arrival time at the top of the ambulance form.

Both paramedics hop out of the ambulance and open the rear doors. Pulling the stretcher out and setting its wheels on the ground, James looks at Zac. “Ok, what should we take?”

“Unresponsive patient: need the airway box, defibrillator, and drug/IV fluids box.”

“I agree. Let’s grab that stuff.”

Zac hops in and quickly locates the three boxes and places them on the stretcher.

Once through the doors of the care facility, the two paramedics stop at the front desk and identify themselves.

“Yes. Janey is expecting you. Go out through the doors behind you, turn left, then turn right at the end of the hall. George’s room is on the left. There will be an orange cone out in front.”

“Thank you.”

Both paramedics walk quickly down the hall and turn right to find a tall, well-dressed woman standing outside a room marked with an orange cone.

“Great, you’re here. Come on in. This is George Thomas’s suite.”

The paramedics leave the stretcher just outside the room and follow Janey into the room to find another woman in a nursing uniform holding George’s hand.

James looks about quickly and thinks, *Slightly messy room, patient is in his own clothes, chest rising, colour is not great, a bit ashen. Looks sick.*

To Zac, he says, “Ok, Zac, go check George out. I will get more information from…?”

“My name is Janey. I’m the charge nurse for today.”

“Thanks, Janey. What can you tell me about George?”

Janey reaches over and grabs the Kardex from the top of George’s dresser. “This is usually on the back of the door. Anyway, George Thomas is an 82 year old, reasonably healthy client, active, widowed, which is why he came to live here, and he has a daughter who is a bit of a challenge. Last week he was diagnosed with a UTI and was placed on antibiotics. Usually we let patients deal with their own meds, but George kept forgetting, so we have been giving him his antibiotics regularly. In the last 24 hours he seemed to be occasionally confused, and this morning needed guidance to breakfast. After lunch, we didn’t see him until Preet went to check on him and reminded him it was close to dinner time, and found him unresponsive.”

James quickly writes the information into the ambulance record. “Anything else regarding health issues?”

“He has type 2 diabetes and has been investigated for a heart murmur, but nothing further on that. He has been a healthy, active client while he’s been here. No trouble at all, except he likes the ladies.”

James smiles. “Thank you, Janey. Zac and I will check George out and see what we can do for him.”

“Thank you. I’ll go let his daughter know. Oh, one last thing, he is a DNR level 3.”[1]

1. Please check the resuscitation codes and levels of care relevant to your clinical context.

“That helps a lot. If we can, we will try not to transport to hospital, but I am thinking we’re going to be taking him to Memorial.”

“Ok. I will leave Preet here to help.”

“Thank you.”

James turns to his partner. “How are you doing?”

“Good. RR 28, shallow excursion, breath sounds slightly coarse at bases, HR is 110, sats in the low 90s, BP 98/60. His colour is a bit ashen and he feels cool to touch. I think he might be septic, but not sure of the source.”

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 18h00	110	98/60	28	cool to touch	–

“I agree that he might be septic, as well. He’s being treated for a UTI, so that could easily be his source. Given that his BP is a bit lower, let’s start an IV and give him some NS. Place on monitor and ready for transport.”

“Sounds good. You want to do the IV or me?”

“Uh, Zac, you start the IV with Preet’s help. I’ll get the monitor and call ahead to Memorial.”

The two paramedics and Preet complete their tasks and transfer George to the ambulance stretcher.

Janey reappears with a large envelope. “These are his medical records that we have to date. I have photocopied them for you, as I know they will ask. Anything else? Do you need a nurse to go with you?”

“Thanks for the chart. No, we’re good, just Zac and I. Memorial is aware and is trying to find a space for George now.”

Emergency Room

Day: 0

Time: 18h00

Place: Emergency Room

“Hello James and Zac,” greets the triage nurse, Jackie. “Is this the patient you called about?”

“Hi, Jackie. Yes, it is,” James says. “BP is a little low. HR and RR are elevated. He looks septic to us. We have given him most of a liter of saline. Here is his chart from Sleepy Hollow. I need to finish my charting up before handing that off.”

“Sounds good. Please take him to the back room. They are set up for you there. The trauma rooms are busy with two victims from an MVC.”

Zac and James steer the stretcher through the double doors and down the long hallway to one of the back rooms, to find Dr. Pierce standing and talking with another nurse.

“Dr. Pierce, how are you doing?”

“I am well, James. Is this the patient from the care home?”

“Yes, this is George Thomas, 82 year old male with what Zac and I think is sepsis from UTI.”

James then delivers his report to Dr. Pierce along with the information from the care facility and the information that he and Zac gathered.

“Awesome report. Thanks, James. Well, let’s get him on our bed and to our monitor.”

Working together, all four health professionals move George from the ambulance stretcher to the emergency stretcher.

“I’m going to wait until he’s on your monitor before Zac and I leave, if that’s ok.”

“Sure thing. My name is Jim and I am one of the new Emergency nurses. Just give me a minute to get everything set up and ensure that George is safe.”

Jim quickly gets George on the monitor and presses the NIBP cuff. The two paramedics and Jim watch the monitor closely to see the displayed vital signs.

HR: sinus tachy at 110; RR 28; SpO2: 93%; BP: 98/64

Day: 0	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 18h15	110	98/64	28	–	93%

"Thanks, Jim. That looks like what we got in the field. I just need to record these and sign the sheet and the charting is all yours." James completes the ambulance form and hands it off to Jim and Dr. Pierce.

Jim moves closer to George and completes his primary assessment. Dr. Pierce stares at the monitor for a bit, and then steps to the other side of the bed and listens to George's heart and breath sounds. "All right, Jim. What do you think?" asks the doctor.

"From the ambulance report, Mr. Thomas was being treated for UTI. Became increasingly neurologically challenged over the last couple of days, till today found unresponsive. Looking at vital signs, he meets all the criteria for SIRS. So I believe he has sepsis. The larger question, given his CNS changes, is does he have severe sepsis?"

"Completely agree about the sepsis. Let's wait on the severe sepsis until we have given him more fluid, as I think he is still dry. If he does not respond to fluid, then I believe it may be severe sepsis. I'll start the sepsis protocol. Do we have a weight on Mr. Thomas?"

Jim looks through the photocopied chart from Sleepy Hollow. "Ok, two months ago it was documented that he was 91.2 kg."

"Guidelines state lactate and another liter of fluid. Start another IV, draw a lactate, blood cultures and give one liter of NS. Mr. Thomas should have a foley and urine spec sent as well. I'll complete the rest of the orders and arrange for him to have a chest X-ray also as he has a few basilar crackles. And I need to know if this is pneumonia as that will change my antibiotic choices. I think I'll see if someone is around from infectious diseases or the clinical pharmacist can assist me with antibiotic choices. Cultures first, then antibiotics."

"Sounds good," says Jim. "I'll get that done right now." Jim quickly gathers the equipment to start the IV and draw the lab work that Dr. Pierce has ordered. After the lab work is drawn and labelled, Jim starts the IV and places a pressure bag around it to infuse it quickly under 15 minutes. Calling to the front desk, he has the porter collect the blood samples for delivery to the lab. Next, Jim inserts a #16 foley catheter and collects a small amount of concentrated, not normal smelling, urine. He places this into a collection container and places it in the fridge for pickup by the lab.

Jim thinks to himself, *Liter is almost in. Let's check to see how he's doing.*

"Mr. Thomas. George. Open your eyes."

George's eyes flutter open and closed. A low groan emerges from his lips and he spontaneously moves all of his limbs.

A bit better than he was on arrival, but still not really awake. May need a bit more fluid, Jim thinks.

Jim documents the new CNS findings, checks the monitor, and records the latest vital signs, which have not really changed much. He listens to George's chest and does not hear any increase in crackles or other sounds. He notes that urine output has not increased.

Time: 19h30

Dr. Pierce approaches Jim, who is finishing up his charting and readying himself to head off shift.

"Jim, have you seen the latest lactate?"

"Yes, it's 4.1 and I'm wondering if you would like to give him another liter as his urine output has not increased. He perked up after that first liter we gave him. Other blood work is back. WBC are 22, HGB is 110, and other stuff is pretty well normal."

"Ok, let's give another liter," instructs Dr. Pierce. "When is the next lactate due?"

"21:00. Jason is taking over for me and I'll be sure to remind him."

A few minutes later, Jason walks in and sits down beside Jim. The two nurses huddle together and Jim delivers his report on George Thomas.

"Thanks, Jim. Are you back tomorrow?" asks Jason.

"Yes. I have asked to be back here. If so, that will make reporting a bit easier for you."

"Sounds good. See you in the morning." Jason hears a whirring sound of heavy machinery coming closer and looks over his shoulder. *I bet that's for Mr. Thomas*, he thinks.

Gurpreet pushes the portable X-ray machine right up beside Jason. "Hi, I'm Gurpreet and I have a req for Mr. George Thomas. Portable chest X-ray with differential diagnosis of pneumonia."

"Hi, Gurpreet. I'm Jason and George is one of my patients this evening. He's not very awake and is probably not going to sit up for you. Is it possible to do this supine?"

"Yes, but not a great picture that way and the radiologist prefers upright. We do what we can."

Gurpreet moves to the bedside and checks on George. "My name is Gurpreet. I just need to double check who you are and then I'm going to place a very hard board behind your back and take a picture of your chest."

No response from George.

Gurpreet looks at the requisition and compares it with the information on the ID band on George's left wrist. "Jason, can you confirm George's identity for me?"

"Yes, this is George Thomas." Jason goes on to read out the birth date and medical plan number.

"Ok, we are good to go."

Gurpreet returns to the portable X-ray and withdraws a large board from the rear hidden compartment. Slipping the board into a special plastic bag, she returns to the bedside. With Jason's assistance, they both lean George forward and place the X-ray board behind his back.

Gurpreet maneuvers the X-ray machine into position at the end of the stretcher. She turns on a light on the camera head and adjusts the aperture for George's chest size. Using the built-in tape measure, Gurpreet checks to make sure the X-ray is the proper distance away. Satisfied that everything is correct, Gurpreet nods and grabs a lead apron from the stanchion of the X-ray machine. She announces, "X-ray ready in Back Room 1."

"Stand clear, X-ray exposing." Gurpreet then presses a button which starts a whirring sound ending with a dull click.

"Ok, all done." Gurpreet hangs up the lead apron on the stanchion and moves to the bedside to help Jason remove the board and reposition George.

Gurpreet then backs the portable X-ray machine out.

At the X-ray desk at the rear of the nursing station, Gurpreet places the exposed cassette into the scanner and enters the information from the requisition. A few seconds later, George's image appears on the screen. Gurpreet looks the image over to ensure it is not overexposed and that all the thoracic fields are on the screen. *Not a great film, being supine*, she thinks. *Will have to probably repeat when he can sit up*. Gurpreet presses a sequence of buttons and releases the X-ray for viewing with notations that it's a supine film.

Once done, she double checks that the portable machine is ready for the next patient. "All right, then, back to the department to see what's next," she says to herself.

Time: 21h00

Alexa pushes her cart out of the lab area and heads to the elevator that goes to Emergency. She pushes the button for the Emergency floor and watches the buttons slowly creep towards that floor. Exiting, she pushes her cart up to the Emergency staff doors. Taking a deep breath, she pushes the button. As soon as the doors open, she sways back from the noise and the smells and the overwhelming sense of chaos.

Navigating her cart through the Emergency Department, she quickly finds herself at the nursing station and moves towards the desk area where all the requisitions are waiting. She notes that someone has taken all the stat ones as there are none in the pile. Looking through the requisitions, she notes that they are all pretty similar and all the reqs have close to the same time on them.

Let's start with this one, she thinks. A frown creases her forehead, and she mumbles, "Back Room 1. Where the heck is that?"

Jason, walking by, hears Alexa mumble and stops. "Hi, I'm Jason and Back Room 1 is my assignment. Who are you looking for?"

Alexa, looking somewhat sheepish, says, "I didn't think anyone would hear me mumble in this noise."

"It's not so noisy and you do get used to it."

“I’m looking for George Thomas.”

“He’s my patient. Let’s walk over here and down this corridor.”

Jason moves confidently up to George and lightly touches him on the arm. Alexa notes that George opens his eyes briefly and then closes them.

“George, this is Alexa, one of our lab technicians. She is here to take some blood from you. Is that ok?”

No response from George.

“I don’t think he will mind. He does wake up vigorously at times, so I’ll stay and hold his arm in case he does.”

Alexa moves her cart closer. She looks at the req and then at George’s ID tag.

“Jason, can you confirm that this is George Thomas?”

“Yes, I can confirm.”

“Excellent, thank you.” Satisfied, she gathers the tubes, double checks them and picks up the venipuncture equipment and tourniquet.

“Ok, this will pinch a bit.”

Carefully sliding the needle under the skin, Alexa quickly finds the vein and pushes the first of three tubes into the vacu-container holder.

Once all tubes are full, Alexa slowly and carefully shakes them to mix the blood and the anticoagulant. After that, she carefully places the tubes in the holder in the front of her cart.

“Thanks for your help, Jason.”

“No problem. I’ll probably see you in a couple of hours for the next lactate.”

“I believe so. I am covering down here all this week.”

Alexa moves away and heads towards the nursing station. She looks down at the next req on her list and notes it’s not a hallway but a number. Looking around, she quickly finds number 12 and heads towards the next patient.

Time: 22h00

Jason looks at his charting and the interim results from the lab work and X-ray.

He thinks, *Ok, lactate is unchanged, other lab work is really ok. Urine analysis shows bacteria present, but not the type. He’s waking up, but not quickly by any stretch. Urine output better, still not on oxygen, so probably no pneumonia. I wonder about another 500 cc or even a liter of fluid*.

As Jason is considering all the data, Dr. Smythe comes by. “So, Jason, how are you and George Thomas getting along?”

“Good evening, Dr. Smythe. I was just pondering that question myself.”

Dr. Smythe pulls up a chair and Jason shows him the lab work. They both look at the CXR and the latest vital signs on the Emergency flowsheet. Jason then shares his concern about Mr. Thomas still being vascularly dry.

“I agree, Jason. Mr. Thomas is probably still a bit short on fluid. I also agree that we might want to slow down on an 82 year old patient. Don’t want to make the treatment more of a problem than the disease. How about this: before his next lactate, give him another 500 cc NS.”

Jason nods in agreement.

“Then if the lactate is still up and urine output not up to 75 per hour, give him a second 500 cc. I’m going to call the Medicine admitting team and see if they can take Mr. Thomas in the morning, as he is trending better, and at this point he is not really an Emergency patient.”

“Sounds good to me. I will give him another 500 now, and then see what the lactate and urine output is like. Thank you, Dr. Smythe.”

Time: 11h00

Jim is on the phone with the Medicine floor nurse, who is accepting George Thomas.

“Yes, nothing has happened this morning. I got him up to the bathroom. He is unsteady and does require assistance, but big improvement CNS-wise from admission,” explains Jim. “Yes, yes, yes. The transfer sheet is completed. He has had his antibiotic this morning and the next dose is due tomorrow morning. Family is aware of transfer and doctor’s orders are complete. Ok, thank you. Glen will bring him up to you in less than 60 minutes. Thank you for accepting him.”

Glen, the porter for the Emergency Department, looks up at the mention of his name. “All good for Mr. Thomas to go to med/surg?”

“Appears so. They say they are really busy right now, but I imagine, like everyone, we are all very busy. Let me help you pack him up and take him off the monitor, and then you can take him up to the floor.”

“Sounds good.”

Jim gathers medications, all the paper charting not captured in the EHR and George’s personal belongings. Just before removing him from the monitor, he documents the vital signs and records them on the transfer sheet.

“Ok, Glen, he’s all yours. Mr. Thomas, take care and I hope you feel better soon.”

“Thank you, doctor,” mutters George.

Jim just smiles and helps Glen move the stretcher out of the alcove and into the main hallway.

Day 1: Medical Ward

Day: 1

Time: 12h00

Place: Medical/Surgical Floor

“You must be George Thomas?”

“I am, and you must be the waitress that I’ve been waiting for. I asked for a two-egg omelette and fried tomatoes and black coffee. Service is so bad here. Even my driver here can’t get a drink.”

“All right then, Mr. Thomas. You are in the hospital, you have a serious infection, and your driver here, Glen, is the hospital porter. I am going to be the nurse caring for you. My name is Greta.”

“Right, right. I remember now. That Dr. Jim was always telling me that. You must think I am a crazy old man.”

“No, Mr. Thomas. Sometimes infections do strange things to our thinking.”

“Greta, can you help me push Mr. Thomas into his room?” Glen asks.

“Sure thing, Glen. Mr. Thomas, hands off the rails. I don’t want to catch your finger on the door frame as we go through.”

Glen and Greta get the stretcher into George’s room, and with a little help, George is able to slide from the stretcher onto the bed.

“Oh, this bed is so much more comfortable. Why was I on that thing?”

Glen leans down and quietly looks around like he is sharing a secret. “That is the Emergency Room stretcher. It’s designed so it’s easy to move and transport, but it’s really made to be uncomfortable so people don’t stay long in the Emergency.”

George nods his head. “Makes sense to me. That’s the way I would have designed it.”

“Had your fun, Glen? Let’s not make Mr. Thomas more confused,” Greta reprimands, hiding a smile. “Mr. Thomas, Glen is pulling your leg.”

“I knew that. Just checking to see if you did.”

Glen moves the stretcher out of the room. “I’ll drop the charting off at the desk.”

“Yes, that would be perfect,” says Greta. “Thank you.” She then turns her attention to the patient. “Mr. Thomas, I’m going to pull the side rails up here to keep you safe. Here is a call button. If you need anything, press it, and I will come and help you. I want you to stay in bed until Physio can help us. I’ll be back in a few minutes to take your blood pressure and complete your admission to this floor.”

“Got it. Stay in bed, push button for help, you’ll be back.” George nods.

Greta smiles and leaves the room.

Day: 1	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 12h30	100	100/66	22	–	96%

Time: 13h00

“Mr. Thomas, I have a small lunch tray for you.”

Greta enters the room and sees the bed empty, and a small pool of blood on the sheet with the IV device hanging on the side rail.

“Confound it. Where did he go?” Greta looks down and sees small drops of blood on the floor and notes that the trail leads to the bathroom.

Moving quickly to the bathroom, she opens the door to find George on the floor under the sink to the left of the toilet.

“George, George, are you ok?”

“I think so. Who waxed the floor and made it slippery? This is an accident waiting to happen!”

“Yes, do you hurt anywhere?”

“My hip hurts.”

“Ok, stay right where you are.” Greta leans across George and pulls the nurse assist cord.

“What do you think I have been doing for the last while?”

A few seconds later, Addy comes in and opens the bathroom door wider. “Oh my, you really do need help, Greta.”

“Yes, Mr. Thomas slipped here and says his hip hurts. I wonder if the physiotherapist is around and can help us move him in a manner that won’t further injure his hip.”

“If you’re ok, I will find the physio and another to help,” Addy says.

“Yeah, I believe we’re ok,” responds Greta.

A few minutes later, Addy returns to the bathroom with Dorothy, a physiotherapist.

“Greta, Tim will be joining us shortly to help move him. He’s gone to get one of the stretchers that go almost to the floor, as he thinks if his hip hurts he will be going for X-rays.”

“Good thinking. Are you our new physio?”

“Yes, name is Dorothy. Quite the pickle you have here, eh?”

“That’s one way of describing it. How can we get Mr. Thomas out of the bathroom?”

“Well,” considers Dorothy, “if he can lift his shoulders a bit, we can wrap a lift sheet around his upper body, then pull on the sheet and slide him out from under the sink.”

Addy grabs a lift sheet out of the cupboard just outside of the room and assists Dorothy with lifting Mr. Thomas’s shoulders while Greta wraps the sheet around his upper body.

Dorothy leans down and grabs one end of the sheet and holds onto the sink with the other hand. Greta imitates her and uses the wall for balance.

“Addy, can you just lift Mr. Thomas’s heels off the floor, and we will slide him little by little out the door where it will be easier to look after him,” Dorothy says.

All three work together to slide George out through the bathroom door and into the middle of his private room.

“Ow, my hip really hurts.”

“Addy, can you take his vital signs? Dorothy, can you help me assess his hip?” Greta says.

Addy leaves the room to grab the vital sign machine.

Dorothy kneels down beside George and pulls his legs slightly to straighten them.

“Ok, it looks like his left leg is slightly shortened, and look how it turns out a bit more than the right. He may have fractured his hip or maybe this is the way he has always been. Not sure. Needs an X-ray.”

“Right. Once we have him on the stretcher, I will contact Dr. Pierce who is covering today and let him know,” Greta says.

Addy takes George’s vital signs to find not much of a difference.

Tim finally arrives with the stretcher and lowers it down to about six inches off the floor.

The three nurses, with the physiotherapist coordinating the lift, move George off the floor and onto the stretcher.

“Thought I would get a nice bed. Back to Emergency I go?” asks George.

“No, Mr. Thomas. Just this stretcher until we can X-ray your hip,” Tim says.

“Ok,” Greta says. “Can someone help me bring the stretcher out to the nursing station? I want to keep an eye on him until I contact Dr. Pierce and get the X-ray completed.”

Addy and Tim laugh. “Sure thing,” Tim says.

Greta contacts Dr. Pierce and explains the whole situation. Dr. Pierce agrees that a left hip X-ray is warranted. He also asks Greta to restart the IV.

Time: 14h30

“Greta, X-ray called,” reports Addy. “They can take Mr. Thomas now. Should I send for a porter?”

“Yes, he is good to go with a porter.”

Time: 15h00

“Gurpreet, this is Mr. George Thomas, from med/surg, fell this morning in the bathroom, suspected hip fracture.”

“Ok, follow me into Room 2 and we can get started.”

“Not sure if you remember me, Mr. Thomas. I was the one that took your chest picture when you were in Emergency.”

“Oh, yeah, I remember you. I asked for a discount on the picture.”

Gurpreet smiles. “Not quite, Mr. Thomas. Not that type of picture. Ok, we are going to help you shuffle over to this X-ray table.”

The porter and Gurpreet get George onto the X-ray table, and they position him for the X-ray. Gurpreet places a cassette under George’s hip, and then positions the camera. Double checking the distance and the aperture settings, she steps back behind the lead shield and presses the button. Gurpreet repeats the process three more times to get views of George’s hip from all directions possible.

At the scanner she reviews the images and makes some adjustments to the brightness of the last image. She thinks to herself, *All look good. Don’t see any fractures*. Gurpreet then releases the images into George’s health record.

Day 2: Medical Ward

Day: 2

Time: 13h00

Place Medical/Surgical Floor

“Dr. Pierce? My name is Jean. I’m the social worker for med-surg.”

“Hi, Jean. Yes, I’m Dr. Pierce. How can I help?”

“I was just talking with the family of George Thomas, and I believe an update with the family is a good idea. They seem to be over the shock of his admission and are ready for information.”

“Ok, I need to finish up here but then I could talk with them. It would be best if the nurse could attend, and the charge nurse and anyone else involved in his care. We should have a bit of a quick discussion before we talk with the family. Let’s say about 15 minutes from now.”

“Sounds good. I will round up everyone. Thank you.”

Jean, Dorothy the physiotherapist, Addy the nurse caring for George today, and Jennifer, the charge nurse, all join Dr. Pierce at the back of the nursing station.

Jean looks around at all the faces. “Thank you, everyone, for coming. This is about George Thomas and his family. The family seems ready for an update.”

Dr. Pierce nods his head. “Yes, he has had a trying time here, but I think he is ready for transfer back to Sleepy Hollow.”

Jean nods. “How are you thinking of approaching the family, Dr. Pierce?”

“Good question. I was going to review his care and how he has improved the last couple of days. Then I was going to broach the subject of sending him back to his home. I would also like to explain to the family that we should change his status to DNR level 2[1], meaning treating him at the care facility but no transfer to acute care. I believe this would be the best for George.”

1. Please check the resuscitation codes and levels of care relevant to your clinical context.

Dorothy, a frown creasing her face, says, “Does that mean he won’t get treatment anymore and just die? That doesn’t sound right.”

Addy reaches out and touches Dorothy. “No, what Dr. Pierce is suggesting with the change to level 2 is that George will stay where he is most comfortable and familiar, and any conditions that he develops will be treated there. Transferring to acute care can be traumatic and uncomfortable. We are not abandoning him, but will provide as much care as possible to him in his home. If he does take a turn for the worse, he can die in the comfort of his home and not here.”

“Does that sound ok to you, Dorothy?” Dr. Pierce looks around at everyone. “I think it is important for all of us to agree on this change in code status. Much of the care on this floor is team-based, and right now you are the team looking after Mr. Thomas.”

Addy says, “I agree. We do some pretty uncomfortable things to people in their final days. Mr. Thomas would probably be more comfortable being treated at home than here.”

“Can he change his mind?” Dorothy asks, looking around at everyone.

“Oh yes. It’s not an absolute and patients can change their minds. In this case, with his existing disease conditions and how quickly he deteriorated with a minor UTI, I am not sure I would support changing his status, but it is a decision that his family and he can make.”

“Ok. If he can change his mind, I will support his change in status.”

“Thank you, Dorothy. Any other comments?” Dr. Pierce asks.

All shake their heads no.

“Ok. What I was going to do is have the discussion at George’s bedside. Is that ok?”

Jean nods her head. “Yes, that would work well.”

“Ok, we will all go in, introduce ourselves, and then I will review the care that he has received so far.”

“As I am the nurse today, I will add the nursing care he requires and talk about how much he has improved,” Greta says.

“From a physio perspective, he is mobilizing well and is a lot more steady on his feet. Family should know this,” Dorothy says.

“Excellent, everyone. Once the family has had an opportunity to digest this and ask any questions, I will bring up the change to level 2 code status. All agreed? Ok, let’s talk with the family and George.”

Epilogue

The discussion with the family and George went well. There were many questions and all were answered by the team. The following day, George was transferred back to Sleepy Hollow, his home.

Case Study #7: Colon Cancer

Learning Objectives

Case 7 describes a patient's experience with colon cancer that leads to surgical treatment.

Learners reviewing this case can consider how colon cancer develops, treatment options, and interventions. The interprofessional collaboration occurs in the operating room and on the ward between the physician, nurses, and social worker.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with colon cancer
2. Build knowledge related to the patient's experience of colon cancer
3. Continue to develop comprehensive assessment, and monitoring skills and abilities (e.g., gastrointestinal assessment, diagnostic studies, laboratory data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with colon cancer (e.g., colon cancer treatment guidelines)
5. Recommend interventions based on the risk factors, status, and progression of colon cancer
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Fred Johnson

Fred Johnson

Patient: Fred Johnson

Date of Birth: 11/11/19xx

PERSONA

Fred is a 57 year old male. He was born on a First Nations reserve and is from the Coast Salish Nation. He lives with his partner, Eric. They have been together for six years and they are planning their wedding which is set to occur in six weeks. They have no children, but they have a black Labrador named Sam. Fred's parents live in another province and they didn't see Fred for many years after he told them that he was homosexual. They are, however, finally coming to terms with his relationship with Eric and have promised to be at the wedding.

Fred has a history of hypertension. He is constantly watching his diet and exercise, and trying to keep his weight down. He had an appendectomy as a child, but has had no other surgeries.

Fred enjoys reading, walking, and cooking. He smokes about one pack of cigarettes a day, but he is constantly trying to quit. Eric disapproves of Fred's smoking and is always encouraging him to stop or at least cut back on the number of cigarettes he smokes.

Attribution

Fred Johnson: Photo by Uyvsdi is in the public domain.

Two Months Ago

Time: Two months ago

“Oh, not again. Something must really be wrong.” Fred looks down into the toilet bowl at the long skinny stool and the large amount of bright red blood.

Fred’s partner, Eric, looks up from his Kindle as Fred leaves the ensuite bathroom. “Oh my. You don’t look happy.”

“Yes, I’m a bit worried. The bleeding hasn’t stopped.”

Looking aghast, Eric says, “What bleeding? What are you hiding from me?”

Fred comes and sits beside him. “It’s embarrassing.”

“After these many years of being together, I would think you could share an embarrassing thing or two.”

“Yeah. For the past couple of weeks, I’ve been seeing blood in the toilet and after wiping. I’ve also been getting these awful cramps and my stool looks different.”

“Whoa, Fred. Have you talked to our doctor about this?”

“No, but I think I need to make an appointment.”

“Yes, you do! And I’m coming with you.”

“Eric! I’m not a child.”

“That may be, but it seems like you’re acting like one.”

“Ok, ok. I’m phoning right now for an appointment with Dr. Baker.”

Pre-Surgery Admission

Day: 0

Time: 07h00

Place: Pre-Surgery Admissions

“Hello, I’m Fred Johnson. I’m here to have surgery today.”

Jag, the unit coordinator for Pre-Surgery Admissions, looks up from behind his desk .“Ok, let me just check here. Oh yes, Dr. Baker, scheduled for later this morning. Have you had anything to eat or drink today?”

“Nothing to eat, just a few sips of water to get my normal pills down. They said that would be ok.”

“Yes, yes, more than fine. Ok, please follow me, and let’s get you a bed to relax in until your surgery.”

Fred follows Jag through a hallway of curtains to an unoccupied stretcher.

“There is a gown on the stretcher. Please remove your clothes and put them in the bag at the end of the stretcher. The gown goes on with the opening in the back. I’ll let Tracey know you’re here and she will come by and check on you.”

“Ok. My partner is parking the car. Can he come up and stay with me before I have surgery?”

“No problem.”

Fred draws the curtains closed. He nervously looks around to ensure he has privacy and slowly removes each article of clothing and folds it before placing it in the bag. Looking at the gown, he grimaces and slides his arms in. He struggles to tie the gown behind his neck, thinking, *They certainly make it tough to get dressed.*

“Mr. Johnson, would you like a hand with the ties on your gown?”

Startled, Fred spins around. “Ahhh, yes. I guess so.”

“My name is Tracey and I’m the nurse helping you get ready for your surgery.”

“Hi, Tracey. You haven’t caught me at my best today, and yes, I need help with this incomplete shirt.”

Tracey laughs softly as she helps with the gown. “Yes, they are a bit challenging. This is your first time for surgery?”

“Yes. Do people come here more than once?”

Tracey replies, “Yes, unfortunately. Some people require our assistance multiple times.”

“Well, I’m hoping all I’ll need is this one time.”

Tracey lowers the stretcher to make it easier for Fred to get on the narrow bed.

“I know it’s not the most comfortable bed, but it’s only for a short period of time. I realize this is also pretty stressful. What’s going to happen next is that I’ll step out and grab all your paperwork, and then return to ask you questions and make sure you understand what is happening today. The lab assistant will be by to draw some lab work, so we have some comparison during and after your surgery. I’ll start an intravenous and give you an antibiotic, along with a medication to relax you. A few minutes before 11 o’clock, a porter will come by and take you to the operating room. Ok?”

“Sure. My partner will be up shortly. Is that ok?”

“Yes. I’ll be right back with your paperwork.”

When Tracey returns to Fred’s stretcher, she finds his partner, Eric, sitting on the side of the stretcher holding his hand.

“Hi, I’m Tracey, the nurse caring for Fred before he goes to surgery.”

“Hi, Tracey. I’m Eric. Pleased to meet you.”

“Ok, Mr. Johnson. First I’ll take your vital signs and then I will ask you 20 questions, and you get to give me all the answers. There are no prizes, sorry.”

“Ok, I guess.”

Day: 0	**Pulse Rate**	**Blood Pressure**	**Respiratory Rate**	**Temperature**	**O_2 Saturation**
Time: 07h30	84	140/80	16	36.5°C	99% on RA

Tracey then goes through all the pre-op questions including, “have you eaten anything”, “have you washed your abdomen with the proper soap”, “do you know what surgery you are having?”, and “who do we contact when the surgery is over?”

Fred answers all the questions and Tracey records the answers on the pre-op checklist.

“Ok, that was great. I have all the information I need and it appears you are good to go from my point of view. There is nothing that would mean we have to postpone.”

“Thank goodness. So the lab is next?”

"Yes, a lab assistant will come by and draw some blood, and after that I will get your intravenous started and antibiotic. Eric, you can stay until the porter comes to take Fred to the operating theatre."

Time: 08h30

Carol, the lab assistant for pre-op, checks in at the desk and sees that there are five patient requests. Looking through the requests, she sees that Fred Johnson is scheduled for surgery at 11am, which is earlier than the other four patients.

Ok, Johnson first, she thinks to herself. *Singh will be second, and for the others, I'll check with nursing to see who should be drawn next*.

Looking around for directions, Carol sees Tracey sitting at the desk computer and typing rapidly. "Hi, I'm Carol from the lab. I'm looking for Mr. Fred Johnson."

Tracey looks up. "He's four stretchers down in the area to your right. His partner is sitting with him. I believe he is the only patient with a family member with him right now, so he should be easy to find."

"Ok, thanks." Carol slowly walks down the curtain hallway, counting out to herself. When she reaches number four, she finds the only stretcher occupied by both a patient and a visitor.

"Good morning. Are you Mr. Johnson?"

"Yes, he is. Are you from the lab? Do I need to leave?"

"Yes, my name is Carol and I'm from the lab. No, please stay, unless you have issues with seeing blood."

"No. As long as it's Fred's and not mine, I'm ok."

Carol smiles and nods. She checks Fred's ID band against the requisition, asks the usual questions to ensure she has the right patient, and efficiently draws blood from Fred.

"Ok, I'm all done. Let me place a band-aid on your arm here. Press two fingers over the band-aid for a few minutes. That will ensure no bruising."

Fred nods as he stares at the band-aid on his right forearm and places his fingers on it.

Carol gathers up her lab basket and waves goodbye.

Time: 10h50

Tracey walks into Fred's area, accompanied by two others.

"Mr. Johnson, it's time. This is Nancy from the operating room. She will be present during your surgery and this is Jack who will help get you to the OR. Eric, I'll show you where you can wait while Fred is having his surgery."

Eric leans over and kisses Fred on the forehead. "Good luck. You'll do fine." Fred nods his head and smiles weakly.

Tracey leads Eric off to the Post Anaesthesia Care Unit (PACU) waiting room.

Nancy, holding the chart in her hand, compares the consent to the ID band on Fred's right wrist.

"Ok, just a couple more questions and we're off. Nothing to drink? Dr. Baker is your surgeon? Type of surgery is removing your lower bowel for cancer?"

For each question, Fred mumbles "yes" and nods affirmatively.

"Ok, then, we're off. Please keep your hands inside the rails as we don't want them pinched in the doorways."

Operating Room

Day: 0

Time: 10h55

Place: Operating Room

Fred enters the operating room and quickly notes he is the only one not wearing a mask. He looks around to see a horrendous amount of gleaming silver utensils laying on a dark green table. He is then asked to shift over to an even more uncomfortable bed. Looking up, he sees an upside down head.

“Ok, Mr. Johnson. My name is Dr. Ben Ng. I will be monitoring your anaesthesia during surgery. Right now, I’m going to place this mask over your nose and mouth. I want you to take deep breaths in through your nose and out through your mouth. Let’s see how many breaths you can do.”

Fred tries to respond after the first breath and suddenly feels weightless. By the fourth breath, Fred’s eyes are closed and his breath is slow and steady.

“Charlie, the patient is asleep. Just give me a few more minutes to get an esophageal airway in and another IV. Then we should be ready to go.”

Dr. Baker looks up from the back table where he is selecting a couple of tools he likes to use. “Ok, I need a couple of more minutes to set up shop as well.”

Time: 11h07

“All right, Charlie, patient is asleep, stable, and ready for surgery.”

“Thanks, Ben. Let’s pause right now and discuss the surgery and what approach will be taken today.”

The scrub nurse and circulating nurse gather closer, and Ben stands to hear Dr. Baker review Fred’s history and the surgical approach to be taken.

“Any questions?”

“Other than the usual cytology specs, do you want anything specific?”

“No, his colonoscopy samples were able to stage the cancer. The MRI gave a well-defined area to be removed, but the MRI also showed some areas of metastasis that we will not be dealing with today. The tests that I ordered should be sufficient with no extras. Any concerns or questions?”

All members of the OR team shake their heads ‘no’.

“Ok, let’s get started, then.” Dr. Baker reaches for the scalpel and begins cutting into the anterior abdomen of Fred Johnson, between the abdominal erectus muscles, to access his large intestine.

Time: 13h30

“Hi, Eric. The surgery went very well. Fred is in the recovery room. The cancer was extensive, like the MRI showed, but I believe we got most of it. He’s going to be pretty sore for a few days. The anaesthetist placed a special IV in his back to help with pain. There is a large drain to get rid of any bleeding that may occur, as there is always a bit. He has an ostomy that is attached to a bag, but the nurse will explain more about that to you later.”

“Oh dear,” Eric responds, looking distressed. He glances up, “Thank you, Dr. Baker. Fred will be so disappointed to hear he has a bag. It was his biggest worry.”

“It’s hopefully temporary. The cancer had spread, as I explained. I took a number of samples all around the area, so we’ll know in a couple of days whether Fred will need chemo, radiation or other additional treatment.”

“Thank you, again. Can I see him?”

“I’ll let the nurses in recovery know that I have talked with you and that you can visit. He is going to be very sleepy for the next little while. His voice may be weak as well.”

“Fred is not much of a conversationalist at home, so I am used to the one-sided conversations.”

“All right, then. A nurse will come and get you in a few minutes.”

Surgical Ward

Day: 4

Time: 08h00

Place: Surgical Ward

“Dr. Baker, can we speak?”

Dr. Baker turns to see the social worker for the Surgical Department standing behind him with her arms crossed. “Ok, Nancy. You look serious.”

“I am. I believe we need to meet with Fred Johnson and discuss the next steps for his treatment and how best to support everyone. His partner, Eric, says they haven’t had an update from you since surgery.”

“That is correct. I’m waiting for the specimen results. Let’s check together for the results, and if they’re back, plan to meet with them both later today.”

Dr. Baker signs into one of the nursing station computers and quickly navigates to Fred Johnson’s results, “Ok, they’re back. Now, let’s see…”

Dr. Baker looks through the results and sees that Fred has a terminal diagnosis with the spread of his cancer.

“Ok, Nancy. This is not good. I knew it would be pretty bad, but not terminal.”

“Oh. That makes it very important for us to talk with him today. What are his options?”

“I’m thinking that we could offer radiation to a couple of the areas, along with chemo. All this would be palliative and could extend his life another six months to even a year. No treatment, he probably has less than a year. So the pain of chemo may be worth it, but it’s up to them to decide.”

“I agree that it’s their choice, and I’ll support them to make this decision. Is there a rush on this decision?” asks Nancy.

“No, I don’t believe so. A few days here or there is not going to make a big difference. I do need to consult with

the Cancer Agency to make sure that I'm correct. I'll call them now. Can you set up a meeting for later today with the Johnsons and the nursing staff caring for him?"

"Yes, I'll talk to the charge nurse now and get things set up. Say 3pm?"

"Good. I will have more answers then. Thank you."

Time: 15h00

Fred and Eric meet with Dr. Baker and the nursing staff, along with Nancy, to discuss goals of care and the next steps in treatment. Fred's children attend by speaker phone so that everyone can hear firsthand the results of the tests and the suggested treatments and outcome.

Case Study #8: Deep Vein Thrombosis (DVT)

Learning Objectives

Case 8 describes a patient's experience with Deep Vein Thrombosis (DVT) that develops as a complication of her hospitalization.

Learners reviewing this case have an opportunity to explore how DVT develops, treatment options and prevention. The interprofessional collaboration is role modelled between nursing, ultrasound, nuclear medicine and medical residents.

Learning Objectives

In this case, learners have an opportunity to:

1. Review etiological factors (i.e., risk factors, prevalence, comorbidities) associated with DVT
2. Build knowledge related to the patient's experience of DVT, specifically related to compromised communication
3. Continue to develop comprehensive assessment, and monitoring skills and abilities (e.g., assessment, diagnostic studies, laboratory data)
4. Consider the links between evidence-based knowledge and practice in the care of patients with DVT
5. Recommend interventions based on the risk factors, status, and progression of DVT
6. Define the roles of healthcare professionals and the contributions they make to the healthcare team (or describe your own role and the roles of those in other professions)

Patient: Jamie Douglas

Jamie Douglas

Patient: Jamie Douglas

Date of Birth: 04/04/19xx

PERSONA

Jamie Douglas is a 35 year old female. She was recently diagnosed with laryngeal cancer, for which she had a laryngectomy 12 days ago. She now has a permanent tracheostomy and communicates by writing on a white board. Her cancer was caught in the early stages and she is expected to make a full recovery. Jamie has a supportive husband of three years, Jack, but no children.

Jamie works full-time at a local restaurant as a waitress. She doesn't smoke and only drinks alcohol occasionally.

Jamie has a history of hypothyroidism and depression.

Attribution

Surgical Ward

Day: 12

Time: 05h00

Place: Surgical Ward

Jamie rolls over, attempting to get more comfortable, and feels a throbbing, burning sensation in her right leg. Unable to get comfortable and having a feeling of dread, she pushes the nurse call button.

A few minutes later, Wanda, the night nurse, comes in. “Morning, Jamie. What can I help you with?”

Jamie grabs her small white board and marker and writes: *My right leg is killing me. It’s throbbing and burning.*

“Ok, I’ll need to have a look.” Wanda goes back to the door and turns on the lights. Removing the blanket, she examines Jamie’s right leg. Just looking at the leg, Wanda can tell it’s swollen and significantly larger than the left. A light touch reveals that it is warmer than expected. A light squeeze elicits a grimace on Jamie’s face.

“Ok, Jamie, I’m going to do the Homan’s test. I am going to push your foot up to stretch your calf. You let me know if this is painful.”

Performing Homan’s test causes Jamie extreme pain and she tries to wriggle up the bed away from Wanda.

“Ok, that was definitely painful for you. I won’t do that again. Take a couple of deep breaths and relax. Are you feeling short of breath? Any pain in your chest?”

Jamie shakes her head ‘no’ to both questions.

“Ok, I will be right back. I want to check your vitals and then I’m going to call the resident to come and see you.”

Wanda comes back to find Jamie holding her white board towards her. *What is wrong with me?* it says.

“Good question. I think you may have a blood clot in your calf from being on bed rest and not moving around, as you would normally do at home. This is not an uncommon thing, but we need to treat it, and for that the resident needs to come and see you.”

Jamie relaxes a little bit but still appears tense.

Wanda completes her assessment and finds Jamie's chest is clear, RR is 20 per minute, HR 80, BP 110/64, SpO_2 95% on .35 FiO2 via tracheal mask (TM).

Day: 12	Pulse Rate	Blood Pressure	Respiratory Rate	Temperature	O_2 Saturation
Time: 05h30	80	110/64	20	–	95% on .35 FiO_2 TM

"I'm going to call the resident and see what he or she has to say. I'll be right back as soon as I know something."

Wanda sits and organizes her thoughts before calling the resident. She writes the following on a scrap paper:

> **S:** Woke complaining of pain in right leg, states it's throbbing and burning
>
> **O:** Vital signs not changed, no temp, chest is clear, SpO_2 95% on .35 FiO_2 TM, right leg is warm to touch, grimacing, positive Homan's test
>
> **A:** DVT in right leg from decreased mobility
>
> **P:** Resident to see and confirm, heparin infusion?, ultrasound, VQ scan

Comfortable she has everything ready, Wanda calls the resident-on-call and communicates her concerns and findings using the SOAP notes she made.

The resident agrees and says she will be up to see both Wanda and Jamie right away.

A few minutes later, a tall, slightly disheveled woman in a short white lab coat is standing in front of the nursing station. Looking up, the unit clerk says, "Yes?"

"Good morning, I'm Dr. Betty Johnson, resident-on call for Medicine. Wanda called me about Jamie Douglas."

"Oh yeah, right. Ok, both Wanda and Jamie are in Room 22 down the hall to your right."

"Thank you."

Betty walks down the hall to Room 22 to find both Wanda and Jamie.

"Hi, I'm Dr. Johnson, resident-on-call. You called?"

"Thank you, Dr. Johnson, for coming so quickly. This is Jamie Douglas who we discussed on the phone."

"Yes. Can I see your leg, Ms. Douglas?"

Jamie pulls the sheet off her legs and Dr. Johnson assesses and confirms Wanda's findings.

"Ok, Wanda, I agree. Looks like a DVT. I would like to start a heparin infusion and I will check with the senior resident and the staff man to confirm starting. Pharmacy can help with the dosage. I'll call Ultrasound and Medrad for VQ. I would recommend that you get Ms. Douglas here ready for a trip to the X-ray Department. I would like these done stat to confirm and ensure no untoward effects."

“Thanks, Dr. Johnson. Do you have any questions, Jamie?”

Jamie shakes her head ‘no’.

Time: 06h00

“Ok, Jamie, I’m going to take you to X-ray now for the two tests that Dr. Johnson talked about. One is an ultrasound of your leg, which has no special requirements, and the second one will require an injection of dye into your IV while they take pictures of your lungs.”

Jamie nods and waves her hand, indicting she is ready to go.

Place: X-Ray Diagnostics Department

Wanda moves Jamie’s stretcher closer to the check-in desk. “Hi, I’m Wanda and this is Jamie. I called earlier to confirm an ultrasound and V/Q scan stat, as ordered by Dr. Johnson.”

“Yes, yes, right you are. Down the hallway to your right. The door should be open and Adele is waiting for you in Ultrasound, Room 2. Second door on the left.”

Wanda steers the stretcher down the hallway to find Room 2 open and Adele typing data into the ultrasound machine.

“Good morning. This is Jamie Douglas.”

Turning around, Adele smiles. “Be right with you. Just finishing up from the previous case. Please push the stretcher in here to the right of me. Thank you.”

Wanda gets the stretcher in position, applies the brakes, and slides the side rails down.

“Thank you for waiting. The last case went longer than I expected. Ok, so this is Jamie Douglas, and you are having some leg pain?”

Jamie nods and points to her right leg.

“Ok, so what I am going to do is put some cool gel on your whole right leg and run a small probe up and down to check the blood flow in your leg. The gel will be cool and the probe may cause you a bit of discomfort as sometimes I need to push firmly to get better pictures. Ok? Do you need any pain medication before I start?”

Jamie shakes her head.

Adele grabs the gel from the warmer on the left side of the machine and squirts a small amount on Jamie’s right femoral area. She places the probe on the gel and begins the scan.

Wanda looks at the screen and then looks at Jamie and sees a bit of worry and curiosity on her face. “Adele, what are you seeing there?” Wanda asks.

“I’m looking at the femoral vein and femoral artery to see if there are any blockages. You can tell the vein from the

artery. When I push down, the vein collapses, but the artery has a muscle around it and it is resistant to collapsing easily. You see the blue and red flow that indicates venous and arterial flow. Everything looks good here. Next, I need to check her popliteal area or behind her knee. Can you help position Jamie so I can get a good view?"

Wanda helps Jamie move onto her left side so that her right popliteal area is accessible to Adele.

"Ok, Jamie, same thing. A bit of gel and some movement up and down with the probe. Might be uncomfortable since your calf is sore."

Adele begins the scan, explaining everything she is doing. Suddenly Adele stops her explanations and stares intently at the screen.

Jamie then motions with her right hand. Wanda responds, "Yes, Jamie. It looks like something is different on the screen. Adele, what's going on? What do you see?"

Adele looks up from her screen. "Ok, not official as this needs to be reviewed by the doctor, but it looks like there is some clotting in the popliteal artery. I need to do some more scanning of Jamie's calf, but it looks to be that you were correct in thinking it was a DVT."

Adele finishes off the scan and wipes all the gel off Jamie's leg. "Are you ok, Jamie?"

Jamie grabs her white board and writes, *I am never getting out of here*.

"Yes, this appears to be a setback, but it's not a bad one. Let's see what all the tests show and what the doctors say and then go from there. Hopefully, it won't hold you back too much."

Adele then turns to Wanda, "Next is VQ, right?"

"Yes. Can you help me with the stretcher? It's pretty tight in here and I feel like I would be banging back and forth against the walls."

Adele laughs. "I'm not sure I'm a better driver. You can see a number of marks on the wall from me pushing stretchers. Maybe the two of us will be better."

Adele helps push the stretcher to the nuclear medicine exam room for the VQ scan.

"Hey, Jenny, your patient is here. Ms. Jamie Douglas."

A slim woman in a white lab coat looks up from her computer screen. "Great. Can you help me get her on the exam table?"

"Sure."

The three health professionals position the stretcher beside the nuclear medicine exam table, and assist Jamie in moving across onto the table.

"Thank you, everyone," Jenny says.

Jenny goes to a cupboard and gathers the equipment for the ventilation part of the V/Q scan.

“Ok, Jamie, I’m going to have you breathe in a special gas that will go into your lungs. As you are breathing, I will take some pictures with this large camera. The camera is going to sit very close to your chest. During this time, please do not move around or we may have to do the test again. Your nurse will be in the room, so just wave if you need something.”

Jamie nods.

“Ok, positioning the camera now. Still ok?”

Jamie makes the ok sign with her left hand.

“Now, breathe normally, and I’m going to start taking pictures now.”

Over the next five minutes, black and white pictures of Jamie’s lungs appear on the screen.

Wanda looks closely at the pictures. “To me, her lungs look like the lungs in the pictures.”

Jenny smiles. “Yes, it appears ventilation is good. Nothing abnormal to my eyes, but the doctors will have to look as well and give the final say.”

Jenny then moves to Jamie’s bedside and pushes the camera away from her chest. “Ok, done the first part. In the next part, I am going to inject a medication in your IV that will show how your lungs are perfused. This will take a bit longer and, again, the camera will be close to your chest.”

Jenny then gathers the radioactive injection from a secure area in the room. Double checking the IV and confirming its placement, she then injects the substance into Jamie’s IV port closest to the insertion site. Then she lowers the camera again to be almost sitting on Jamie’s chest.

“Ok, Jamie, starting the second test.”

Jamie makes the ok symbol again with her left hand.

Over the next 15 minutes, new pictures appear on the screen outlining the perfusion of the lungs.

“Jenny, what are you seeing?” Wanda asks.

“From my perspective, everything looks normal but, again, the doctors will have to take a look to confirm.”

Time: 07h30

Wanda, tired from night shift and from pushing a stretcher throughout the hospital, heaves a sigh of relief as she moves the stretcher into Jamie’s room.

“Jamie, do you think you can wriggle over to your bed?”

Jamie looks over at the bed and then nods.

“I need to chart all of this activity, so give me a couple of minutes to catch up, and then I will get Dr. Johnson to come and talk to you.”

Jamie grabs her white board and writes, *I am ok right now, very tired, pain med when you back?*

“Most definitely. I will bring something for you.”

Wanda finds an empty workstation and adds her charting to the progress notes. After completing that, she finds Dr. Johnson reviewing the V/Q scan and the ultrasound test.

“Hi, Dr. Johnson. Can you talk with Jamie Douglas about her tests?”

“Please call me Betty, and yes, I would be happy to. Did you see anything on the tests?”

“Adele in ultrasound said there were some blockages in the popliteal area and the V/Q scan looked normal.”

“I agree. I need to review the tests with the senior resident and the staff doc, but that looks like just a DVT with no complications. So what do you recommend for treatment?”

“That’s an easy one: heparin IV bolus based on weight, then a continuous infusion based on the normogram. Although I’m not sure, possible SC injection of dalteparin, or warfarin PO may be used. We should check the B.C. and Canadian guidelines.”

“The medications are very much correct. I just spoke to the pharmacist-on-call and he said that since it is a localized DVT and there is no lung involvement, dalteparin SC and warfarin PO would be his recommendation. He recommended 200 U/kg SC daily of the dalteparin and five days of warfarin until her INR [1] reaches at least 2.0.”

“Ok. Should we go discuss this with Jamie? Should we have Jamie’s husband present as well? I can set up the speaker phone so he can be present.”

“That is a great idea. Give me five minutes and I will meet you in the room.”

“Sure thing.”

Epilogue

After a further three days of hospitalization, Jamie was discharged home on warfarin PO, daily blood work, and weekly follow-up at the Respiratory Clinic for her tracheostomy.

1. international normalized ratio

Appendix: Overview

This table provides a summary of the key elements for each health case study.

Case	Issue/Concept	Scenario Context	Healthcare Roles
Erin Johns #1	Respiratory Disease – Chronic Obstructive Pulmonary Disease (COPD)	Emergency Room Diagnostic Imaging- X-ray Clinic – Community follow up	Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Respiratory Therapist Medical Laboratory Technologist
Erin Johns #2	Respiratory Disease – Chronic Obstructive Pulmonary Disease (COPD) – Pneumonia	Emergency Room Diagnostic Imaging -X-ray Medical Ward	Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Respiratory Therapist Medical Laboratory Technologist Physiotherapist

Harj Singh #3	Cardiovascular Disease – Unstable Angina – Hypertension	Clinic Emergency Room	Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Respiratory Therapist Medical Laboratory Technologist Cardiology Technologist
Meryl Smith #4	Cardiovascular Disease – Heart Murmur – Congestive Heart Failure – Flu – viral	Emergency Room Medical Ward	Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Medical Laboratory Technologist Cardiology Technologist Diagnostic Sonography Pharmacist Dietician Social Worker

Aaron Knoll #5	Motor Vehicle Collision (Trauma) – Hemo / pneumothorax	Emergency Room Operating Room Post Anaesthesia Care Unit Surgical Ward	Paramedics Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Medical Laboratory Technologist Respiratory Technologist Cardiology Technologist Physiotherapist
George Thomas #6	Sepsis – Urinary Tract Infection – Advanced Directives – Falls Risk – Dementia	Assisted Living Emergency Room Diagnostic Imaging Medical Ward	Paramedics Nurse Unit Clerk Porter Doctor Medical Radiography Technologist Medical Laboratory Technologist Respiratory Technologist Physiotherapist Social Worker

Frank Johnson #7	Colon Cancer Palliative (potential)	Pre-surgery Admission Surgical Ward Operating Room Cancer Agencies	Admission Clerk Nurse Doctor/ Surgeon Medical Laboratory Technologist Social Worker
Jamie Douglas #8	Laryngeal Cancer Tracheostomy Deep Vein Thrombosis Hypothryroidism Depression	Medical Ward Diagnostic Imaging	Nurse Admission Clerk Porter Doctor Medical Radiography Technologist Medical Laboratory Technologist Diagnostic Sonography

About the Authors

Glynda Rees, RN, MSN

Glynda Rees teaches at the British Columbia Institute of Technology (BCIT) in Vancouver, British Columbia. She completed her MSN at the University of British Columbia with a focus on education and health informatics, and her BSN at the University of Cape Town in South Africa. Glynda has many years of national and international clinical experience in critical care units in South Africa, the UK, and the USA. Her teaching background has focused on clinical education, problem-based learning, clinical techniques, and pharmacology.

Glynda‘s interests include the integration of health informatics in undergraduate education, open accessible education, and the impact of educational technologies on nursing students’ clinical judgment and decision making at the point of care to improve patient safety and quality of care.

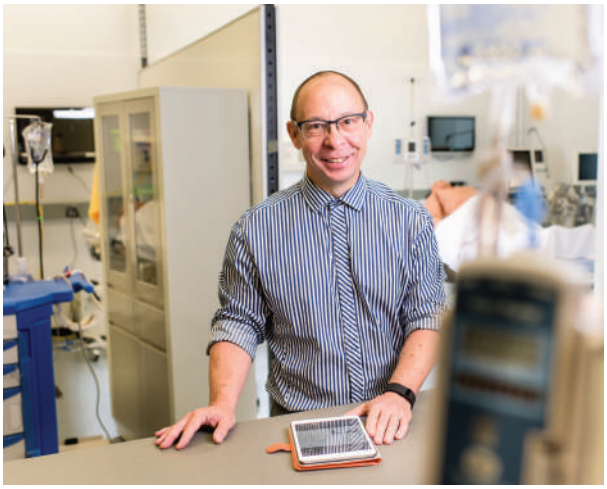
Glynda co-authored the open textbook *Clinical Procedures for Safer Patient Care* in 2016 with her colleague, Jodie McCutcheon at BCIT.

Glynda is a faculty peer leader in BC for the Canadian Association Schools of Nursing and Canada Health Infoway Digital Health Faculty Peer Leader Network. She co-developed the CASN/Infoway Consumer Health Solutions Resource.

Glynda is co-leading a provincial initiative to develop an Interprofessional Educational Electronic Health Record for teaching and learning in healthcare.

Glynda is the School of Health Sciences representative on the Research Ethics Board at BCIT, and a member of the SoHS Learning Technologies group and the OER Working Group. She is President-Elect for the Canadian Nursing Informatics Association and a member of the AMIA Education and Nursing Working Groups.

Rob Kruger, RN, MEd, CNCC(C)



Faculty member in the critical care nursing program at the British Columbia Institute of Technology (BCIT) since 2003, Rob has been a critical care nurse for over 25 years with 17 years practicing in a quaternary care intensive care unit. Rob is an experienced educator and supports student learning in the classroom, online, and in clinical areas. Rob's Master of Education from Simon Fraser University is in educational technology and learning design. He is passionate about using technology to support learning for both faculty and students.

Part of Rob's faculty position is dedicated to providing high fidelity simulation support for BCIT's nursing specialties program along with championing innovative teaching and best practices for educational technology. He has championed the use of digital publishing and was the tech lead for Critical Care Nursing's iPad Project which resulted in over 40 multi-touch interactive textbooks being created using Apple and other technologies.

Rob has successfully completed a number of specialist certifications in computer and network technologies. In 2015, he was awarded Apple Distinguished Educator for his innovation and passionate use of technology to support learning. In the past five years, he has presented and published abstracts on virtual simulation, high fidelity simulation, creating engaging classroom environments, and what the future holds for healthcare and education.

Janet Morrison, PhD, MA, RN, COHN(C)

Janet Morrison is the Program Head of Occupational Health Nursing at the British Columbia Institute of Technology (BCIT) in Burnaby, British Columbia. She completed a PhD at Simon Fraser University, Faculty of Communication, Art and Technology, with a focus on health information technology. Her dissertation examined the effects of telehealth implementation in an occupational health nursing service. She has an MA in Adult Education from St. Francis Xavier University and an MA in Library and Information Studies from the University of British Columbia.

Janet's research interests concern the intended and unintended impacts of health information technologies on healthcare students, faculty, and the healthcare workforce.

She is currently working with BCIT colleagues to study how an educational clinical information system can foster healthcare students' perceptions of interprofessional roles.

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