

ACEP Simulation Case Template

SIMULATION CASE TITLE: Cholecystitis

AUTHORS: Courtney M. Smalley, MD

PATIENT NAME: Christine Williams

PATIENT AGE: 40

CHIEF COMPLAINT: abdominal pain

Brief narrative description of case

Include the presenting patient chief complaint and overall learner goals for this case

40 y/o female with history of hyperlipidemia, obesity, and GERD presenting with upper abdominal pain.

The goals of this case are to evaluate initial evaluation of young female with upper abdominal pain and review ultrasound findings of acute

Primary Learning Objectives

What should the learners gain in terms of knowledge and skill from this case? Use action verbs and utilize Bloom's Taxonomy as a conceptual guide

- **Identify physical exam findings consistent with acute cholecystitis**
- **Review image acquisition skills associated with RUQ ultrasound**
- **Discuss ultrasound findings consistent with acute cholecystitis**

Critical Actions

List which steps the participants should take to successfully manage the simulated patient. These should be listed as concrete actions that are distinct from the overall learning objectives of the case.

- **Place patient on monitor and obtain initial vital signs**
- **IV access**
- **Perform physical exam and identify Murphy's sign on palpation**
- **Obtain laboratory values**
- **Perform bedside ultrasound**
- **Consult general surgery**
- **Start antibiotic therapy**

Learner Preparation

What information should the learners be given prior to initiation of the case?

- **No ultrasound tech is available for formal ultrasound**

Required Equipment <i>What equipment is necessary for the case?</i>	Stethoscope, Monitor, IV, Bedside ultrasound
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INITIAL PRESENTATION			
Initial vital signs	HR: 110/min BP: 130 /90 RR: 16/min O ₂ SAT: 94 % T: 37.4°C		
Overall Appearance <i>What do learners see when they first enter the room?</i>	Middle aged woman in moderate distress secondary to pain, no diaphoresis		
Actors and roles in the room at case start <i>Who is present at the beginning and what is their role? Who may play them?</i>	Patient will be primary historian Learner roles (can be changed based on number of participants) Doctor #1: Team Leader Doctor #2: Survey Physician (performs exam) Doctor #3: History Taker Nurse #1: Fluid/Medication Administration Nurse		
HPI <i>Please specify what info here and below must be asked vs what is volunteered by patient or other participants</i>	<ul style="list-style-type: none"> - 40 y/o female who presents by private vehicle for 3 hours of upper abdominal pain at 10pm. She was out at dinner with family when pain started after she finished dinner (volunteered) - Pain is located in RUQ, epigastric region (asked) - Started after eating dinner (asked) - Pain in 8/10, started at 4/10 but worsened over the night (asked) - Patient is without fevers but has been having increased chills over the last hours (asked) - Pain worse with deep breath (asked) - Social drinker, no smoking (asked) - Has had 1 previous episode of similar pain 2 weeks ago but resolved - Omeprazole and ibuprofen taken prior to arrival without any relief of pain (asked) - Not on birth control (asked) - No history of DVT/PE (asked) 		
Past Medical/Surg History	Medications	Allergies	Family History
HLD, obesity, GERD; no surgical history	Omeprazole, Lipitor	NKDA	HTN, HLD, CAD

Physical Examination	
General	Moderate pain distress
HEENT	PERRL, NCAT
Neck	FROM, supple
Lungs	CTAB, no wheezing
Cardiovascular	Tachy, RR, no m,r,g
Abdomen	Soft, TTP in RUQ with voluntary guarding
Neurological	A and O x 3, MAE x 4
Skin	Warm, dry
GU	No vaginal discharge, no adnexal TTP
Psychiatric	appropriate

SCENARIO STATES, MODIFIERS AND TRIGGERS

This section should be a list with detailed description of each step than may happen during the case. If medications are given, what is the response? Do changes occur at certain time points? Should the nurse or other participant prompt the learners at given points? Should new actors or participants enter, and when? Are there specific things the patient will say or do at given times?

PATIENT STATUS	LEARNER ACTIONS, MODIFIERS & TRIGGERS TO MOVE TO THE NEXT STATE	
1. Baseline State Rhythm: HR: 110 /min BP: 130 /90 RR: 16 /min O ₂ SAT: 94 % T: 37.4 °C	<u>Learner Actions</u> <ul style="list-style-type: none"> • Place patient on monitor • Recognize abnormal vital signs • Administer fluid bolus • Give pain medication 	<u>Modifiers</u> Fluids will transiently decrease HR to 104 Pain meds will decrease pain from 8/10 to 4/10 <u>Triggers</u> Learner verbalizes administration of IV fluid bolus and pain meds
2. Rhythm: HR: 104 /min BP: 110 /84 RR: 16 /min O ₂ SAT: 94 %	<u>Learner Actions</u> <ul style="list-style-type: none"> • Identify physical exam findings of focal RUQ pain on exam 	<u>Modifiers</u> Pt may say that pain worsens with deep breath Pt states that palpation of deep area of RUQ worsens pain <u>Triggers</u> Learner verbalizes location of pain and concern for abdominal vs respiratory source

		Learner verbalizes risk factors of PE given patient has pain with taking deep breath (simulated patient will have no risk factors for PE)
3. Rhythm: HR: 102 /min BP: 115 /92 RR: 16 /min O ₂ SAT: 95%	<u>Learner Actions</u> Order diagnostics (CBC, BMP, LFTs, Lipase, CXR, EKG, urinalysis, pregnancy, +/- dimer)	<u>Modifiers</u> WBC 13.1 EKG: sinus tachycardia K: 3.2 CXR no abnormality LFTS, lipase pending Preg neg <u>Triggers</u> Learner verbalizes needing diagnostics to look for gallbladder pathology
4. Rhythm: HR: 110 /min BP: 130 /92 RR: 16 /min O ₂ SAT: 95%	<u>Learner Actions</u> <ul style="list-style-type: none"> • Performs bedside ultrasound out of concern for cholecystitis • Verbalize that likely source is likely GB 	<u>Modifiers</u> Patients pain will worsen again If learner asks for formal US, tech is not available in middle of night LFTS, lipase still pending. Lab is re-running blood. Learner may perform FAST exam <u>Triggers</u> Ultrasound findings interpreted by learner as acute cholecystitis (gallstones, pericholecystic fluid, thickened GB wall, dilated CBD)
5. Rhythm: HR: 108 /min BP: 128 /82 RR: 18 /min O ₂ SAT: 96%	<u>Learner Actions</u> <ul style="list-style-type: none"> • Consult general surgery • Start antibiotics 	<u>Modifiers</u> <u>Triggers</u>

SUPPORTING DOCUMENTS, LAB RESULTS AND MULTIMEDIA

Lab Results	CBC: WBC 13.1, Hg 14.1, Hct 40, Plt 400, BMP: Na 132, K 3.2, Co2 18, BUN 22, Cr 1.1, Glu 212, Ca 8.3 Troponin 0.01 Pregnancy neg UA: 0-5 WBC, 0-5 RBC, no LE, no nitrites
EKG	sinus tachycardia, no ST changes
CXR CT imaging	CXR: no pna, no ptx, no fluid
Ultrasound Video Files	

SAMPLE QUESTIONS FOR DEBRIEFING
<ol style="list-style-type: none"> 1) What is on your differential when a middle aged female presents with abdominal pain? 2) What clinical exam findings support your diagnosis of cholecystitis? 3) What are the findings on bedside ultrasound that help confirmed your diagnosis of cholecystitis?

Ideal Scenario Flow

Provide a detailed narrative description of the way this case should flow if participants perform in the ideal fashion.

For example:

The learners enter the room to find a patient in respiratory distress. They immediately place the patient on bedside monitors and recognize that the patient is hypoxic and hypotensive. Supplemental oxygen is provided and an IV fluid bolus is ordered. The patient’s respiratory distress improves but does not resolve, and hypotension is refractory to IV fluids. After completing a physical examination and obtaining an appropriate history, the providers note that

the patient's respiratory status has continued to worsen and ultimately endotracheal intubation is required. Successful intubation permits further evaluation of the patient with diagnostic studies. Chest x-ray is normal, laboratory studies (if obtained) demonstrate an elevated D-dimer and a mildly elevated troponin level, EKG is sinus tachycardia with an S1-Q3-T3, and a CT scan of the chest reveals the diagnosis of a massive saddle pulmonary embolism. The patient remains hypotensive and the pulse oxygenation is 92% on 100% oxygen via ventilator. The providers administer thrombolytics and arrange for patient admission to the medical ICU.

Anticipated Management Mistakes

Provide a list of management errors or difficulties that are commonly encountered when using this simulation case.

For example:

- 1. Difficulty with bedside monitors: We found when using this case with medical students that many of our learners did not know how to properly connect EKG leads to the bedside monitor. We modified our sessions to include an introduction to simulation cases that includes a tutorial for connecting patients to bedside monitoring.*
- 2. Failure to recognize the need for intubation: Some of our learners did not immediately recognize that the patient required airway management, leading to delay in diagnosis. We found it helpful to allow the pulse oxygenation to continue to drop despite supplemental oxygen to prompt the need for intubation.*
- 3. Uncertainty about indications for thrombolysis: Many of our learners were unfamiliar with the indications for the use of thrombolytics in acute pulmonary embolism. We created specific debriefing materials to cover this information.*