

Section I: Scenario Demographics

Scenario Title:	Thyroid Storm/CHF	
Date of Development:	(16/02/2022)	
Target Learning Group:	Seniors (PGY \geq 3)	All Groups

Section II: Scenario Developers

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Section III: Curriculum Integration

Learning Goals & Objectives	
Educational Goal:	Recognition of signs and symptoms of thyrotoxicosis/ CHF
CRM Objectives:	Situational awareness, Shared Mental Model, Call for Help/Consult early. Avoiding fixation error and maintaining a broad differential diagnosis
Medical Objectives:	Treatment of thyrotoxicosis and CHF. Management of atrial fibrillation in thyrotoxicosis

References

Choudhury RP & MacDermot J. (1998). Heart failure in thyrotoxicosis, an approach to management. *British journal of clinical pharmacology*. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1873689/>



Section V: Patient Data and Baseline State

Scenario States, Modifiers and Triggers

Patient State	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	
1. Baseline State Rhythm: sinus HR: 115 /min BP: 135 /90 RR: /min O ₂ SAT: 95 % T: 38 °C	Patient initially not on a monitor. Appears anxious and slight tachypnea.	<u>Learner Actions</u> -IV/Monitor/ Primary Survey shows decreased air entry to left base with mild crackles on the right. - Proceed with more detailed history -Proceed with secondary survey and trigger at this time that patient has scleral icterus. -If learner asks then provide details about elevated JVP -If legs are examined then provide that they have bilateral swelling, mild edema. -non tender abdomen -ECG/LAB/CXR ordered	-If bedside US, then shows left pleural effusion, no pericardial effusion, FAST negative (if actually does, no DVT) - ECG shows sinus tachycardia - CXR shows pleural effusion on the left - <u>Broad differential</u> -May pick up on CHF/Hyperthyroidism at this point and order TSH/BNP -Differential still includes PE/Sepsis/Infection/malignancy - Can start with fluid bolus but should have picked up on concern of CHF signs.
2. Change to atrial fibrillation: - Patient starts to feel more “nervous”, “I can’t breathe” -cardiac monitor should switch to atrial fib, rate=150 BP: 100/70 O ₂ sat’n: 94%		<u>Learner Actions</u> -Repeat ECG shows A fib -Avoid more fluid -Add TSH to lab -Consider agent to rate control: Metoprolol 5mg IV, repeat x 3 q 5 min. (can also use propranolol 0.5-1mg IV push to effect q 15 min if available) -Recognizes CHF signs/symptoms, gives Lasix 40mg IV	<u>Modifiers</u> --IF not recognizing hyperthyroidism signs or asking for symptoms and gives diltiazem, then make hypotensive. -If doesn’t recognize CHF, then make sat’n decrease and patient becomes more tachypneic. Can proceed to intubation if does not address signs of CHF and atrial fibrillation - -If cardioversion is going to be attempted, then provide TSH result. If cardioversion goes ahead, then not successful. - -
3. Provide TSH Results= <0.1		-Learner should recognize that cardioversion unlikely to be successful if profoundly hyperthyroid and should consult cardiology and endocrinology	



<p>3. Recognition of thyrotoxicosis</p>		<p><u>Learner Actions</u> -Hydrocortisone 100mg IV -Methimazole 20mg PO or propylthiouracil 200mg- 600mg PO -Verbalize that 1 hour post treatment above to give Potassium Iodide (Lugol's sol'n) 5-8 drops PO - - - -</p>	<p><u>Modifiers</u> - - - - <u>Triggers</u> - -</p>
<p>4.</p>		<p><u>Learner Actions</u> - - - - - -</p>	<p><u>Modifiers</u> - - - - <u>Triggers</u> - -</p>



Section VIII: Debriefing Guide

General Debriefing Plan			
Individual	Group	With Video	Without Video
Objectives			
Educational Goal:	Recognize signs and symptoms of thyrotoxicosis		
CRM Objectives:	In this case, trying to keep a broad differential, avoiding fixating on infection/sepsis as an only diagnosis. Recognizing that patient had right and left sided heart failure, treating the failure but recognizing the signs and symptoms of thyrotoxicosis.		
Medical Objectives:	<ol style="list-style-type: none"> 1) Recognizing and treating CHF 2) Management of Atrial Fibrillation with thyrotoxicosis 3) Consulting cardiology/endocrinology and initiating treatment of thyrotoxicosis. 		
Sample Questions for Debriefing			
Key Moments			
Recognition of CHF, scleral icterus secondary to right sided heart failure			
Repeating vitals and second ECG to determine atrial fibrillation			
Recognition of hyperthyroidism precipitating CHF/Atrial Fib and managing appropriately.			

