Critically Ill Returned Traveller

Section I: Scenario Demographics

Scenario Title:	Critically Ill Returned Traveller
Date of Development:	(01/01/2022- Revised)
Target Learning Group:	Juniors (PGY 1 – 2) Seniors (PGY ≥ 3) All Groups

Section II: Scenario Developers

Scenario Developer(s):	Dr Andrew Kestler
Affiliations/Institution(s):	UBC
Contact E-mail (optional):	

Section III: Curriculum Integration

Learning Goals & Objectives	
Educational Goal:	To provide learners with the opportunity to develop reasoning skills for and manage the presentation of illness in a returning traveller
CRM Objectives:	
Medical Objectives:	Recognise high risk groups for malaria Establish a definitive or presumptive diagnosis of malaria Establish basic differential diagnosis of malaria Establish basic differential diagnosis for critically ill returned traveller and presumptively treat life threats Identify and treat the complications of severe malaria Identify resources for assistance in the management of malaria and other tropical diseases Recognise hypoglycaemia, severe acidosis, renal failure, ARDS and seizures as complications of severe malaria

Case Summary: Brief Summary of Case Progression and Major Events
Learners are called by nurse to evaluate a 34-year-old woman to rule out sepsis. On taking a full history it is determined that they have recently returned from a trip to rural Ghana. Patient is acutely unwell with fever, headache, stiff neck. The learners are expected to construct carryout appropriate initial investigations and empirical management for sepsis and meningitis with appropriate antibiotic cover. The patient will deteriorate and have a tonic-clonic seizure. The learners are expected to manage this appropriately and arrange appropriate aftercare.

References

1. Trampuz A, Jereb M, Muzlovic I, Prabhu RM. **Clinical review: Severe malaria.** Critical Care 2007; 7(4):315-23, 2003.
2. WHO, Management of Severe Malaria: A practical Handbook, Third Edition, Geneva 2012.
3. Initial therapy and prognosis of bacterial meningitis in adults https://www.uptodate.com/contents/initial-therapy-and-prognosis-of-bacterial-meningitis-in-adults#H1437327070 Accessed 14.07.22
4. Rapid sequence intubation in adults. UpToDate. Accessed on Dec 5, 2014 from http://www.uptodate.com/contents/rapid-sequence-intubation-in-adults
5. Succinylcholine: Drug information. UpToDate. Accessed on Dec 5, 2014 from http://www.uptodate.com/contents/succinylcholine-suxamethonium-drug-information?source=see_link#F223434
6. Rocuronium: Drug information. UpToDate. Accessed on Dec 5, 2014 from http://www.uptodate.com/contents/rocuronium-drug-information?source=see_link

Section IV: Scenario Script

A. Clinical Vignette: To Read Aloud at Beginning of Case

A nurse has called you to bed 1 for a "rule out sepsis". The patient is a 34-year-old woman.

B. Scenario Cast & Realism

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Patient:	**Computerized Mannequin**	Realism:	**Conceptual**
	Mannequin	*Select most important dimension(s)*	Physical
	Standardized Patient		Emotional/Experiential
	Hybrid		Other:
	Task Trainer		N/A

Confederates	Brief Description of Role
RN	Acts as an experienced RN and supports the team.
Patient's husband	Will offer additional history in stage 2.

C. Required Monitors

EKG Leads/Wires	**Temperature Probe**	Central Venous Line
NIBP Cuff	Defibrillator Pads	**Capnography**
Pulse Oximeter	Arterial Line	Other:

D. Required Equipment

Gloves	**Nasal Prongs**	Scalpel
Stethoscope	**Venturi Mask**	Tube Thoracostomy Kit
Defibrillator	**Non-Rebreather Mask**	Cricothyroidotomy Kit
IV Bags/Lines	**Bag Valve Mask**	Thoracotomy Kit
IV Push Medications	**Laryngoscope**	Central Line Kit
PO Tabs	**Video Assisted Laryngoscope**	Arterial Line Kit
Blood Products	**ET Tubes**	Other:
Intraosseous Set-up	**LMA**	Other:

E. Moulage

F. Approximate Timing

Set-Up:	5 min	Scenario:	30 min	Debriefing:	20 min

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Section V: Patient Data and Baseline State

A. Patient Profile and History			
Patient Name: Beatrice Mensah	Age: 35	Weight: 60kg	
Gender: M **F**	Code Status: Full		
Chief Complaint: Fever			
History of Presenting Illness: 3-day history of fever. Has been brought in by husband after developing a severe headache and stiff neck they have rigors, sweats and myalgia.			
Past Medical History:	Childhood asthma	Medications:	Tylenol
			Ibuprofen
			Gravol
Allergies: None known			
Social History: Works as accountant, non-smoker, non-drinker, no drugs, no traditional medicines. **Travel history not offered unless asked: Returned 4 days ago from family wedding in rural Ghana.**			
Family History: None known.			

Review of Systems:				
	CNS:	Headache		
	HEENT:	Stiff neck		
	CVS:	Nil		
	RESP:	Shortness of breath, no cough		
	GI:	Diffuse mild/moderate abdominal pain. Vomiting x3, no diarrhoea		
	GU:	Dark urine. No PV bleeding, No PV discharge, No dysuria, No frequency.		
	MSK:	Myalgia	INT:	Nil

B. Baseline Simulator State and Physical Exam			
No Monitor Display	Monitor On, no data displayed	Monitor on Standard Display	
HR: 120/min	BP: 102/74	RR: 34/min	O_2SAT: 96%
Rhythm: sinus tachycardia	T: 38.7 ^oC	Glucose: 3.2 mmol/L	GCS: 15 (E4 V5 M6)
General Status: Confused, Orientated x1, able to answer basic questions			

CNS:	No focal neurology		
HEENT:	Stiff neck		
CVS:	Tachycardic, normal heart sounds		
RESP:	Lungs clear		
ABDO:	Soft, mild diffuse tenderness		
GU:	Dark urine, nil else.		
MSK:	Myalgia	SKIN:	No rash, no lymph nodes

Section VI: Scenario Progression

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Scenario States, Modifiers and Triggers			
Patient State	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	
1. Baseline State Rhythm: NSR HR: 120/min BP: 102/74 RR: 34/min O_2SAT: 96% T: 38.7°C oral	Confused (orientated x1), able to answer basic questions	Learner Actions 1. Check vital signs 2. Take history including travel history- not to be freely given. 3. Complete physical exam 4. Order appropriate tests: *CBC, lytes, renal function, LFTs, blood Cx, malaria smear, rapid falcip malaria antigen test (automatically ordered with smear at SPH & VGH) pregnancy, urine, ECG, CXR, lactate, venous gas* 5. Iv fluids 6. Empirical antibiotics for sepsis & meningitis *[3]Ceftriaxone 2g IV every 12 h*	Modifiers *Changes to patient condition based on learner action* Triggers *For progression to next state* - If all actions complete or >10 minutes -> **2. Seizure**
2. Seizure Post seizure physical exam: Unchanged, except for the following VS: BP 98/66. HR: 124 RR: 18 Temp: 39.0 (rectal) Pox 86% Monitor: Sinus Tach General: Unresponsive Resp: **Gurgling respirations, bilateral rales** Neuro: Pupils 5 mm, minimally responsive Upgoing toes bilaterally No spontaneous movement Moans and non-purposeful	Patient becomes unresponsive and has tonic-clonic movements Patient stops seizing with standard seizure management but has depressed consciousness	Learner Actions 1. Follow standard management of seizures, including addressing hypoglycaemia 2. Follow standard management of respiratory distress *Depressed consciousness and rancorous breathing will indicate the need for airway management.* *Rapid Sequence Intubation: ([4]wait 45 sec if Succ used or 60 sec if Roc used before laryngoscopy)* *[5,6]Pre-oxygenation* *[5]Ketamine 70-140mg IV (1-2 mg/kg) or Etomidate 21mg IV (0.3 mg/kg)* *[6]Succinylcholine 70-105 mg IV (1-1.5mg/kg) or [7]Rocuronium 42-84 mg IV (0.6-1.2 mg/kg).*	Modifiers - Give lab results (blood glucose and pH only) to prompt recognition of hypoglycaemia and acidosis → **patient to seize a second time if hypoglycaemia not addressed. Acidosis will worsen unless high minute ventilation** - Husband to arrive and state her BP usually runs low. **If travel history does not given in stage 1 to be given by husband.** - Patient too unstable to permit LP. Nurse to intervene "don't you think we should wait until they are a bit more stable" if requested. Triggers - If all stages complete or more than 10 minutes -> **Stage 3.**

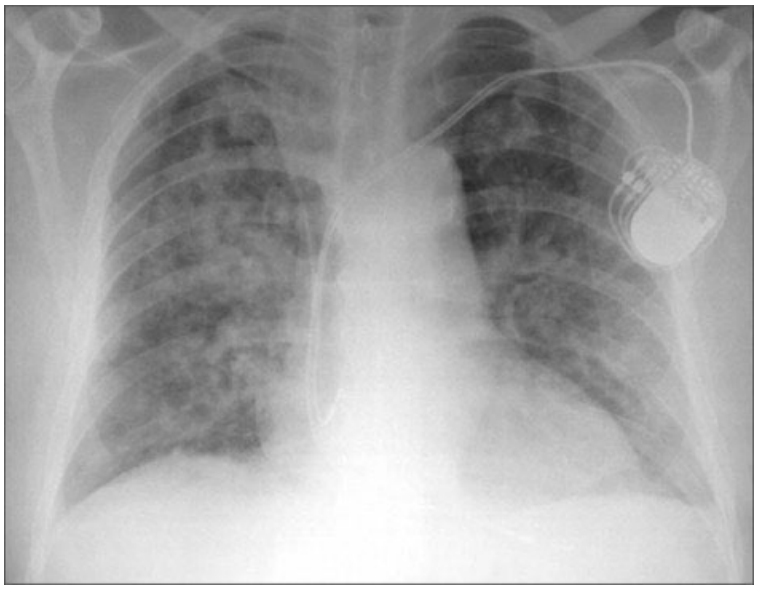
movement with painful stimulation		3. Recognise acidosis, high minute ventilation needed when on vent	
3. Patient intubated no longer seizing HR:140	Intubated	Learner Actions - Broaden Differential - Expand empirical treatment *Consider adding doxycycline to cover plague, typhus, relapsing fever, and partial activity against malaria until IV anti-malarias are secured. Clindamycin also has anti-malarial activity.* - Get help: Call ID, ICU, Access appropriate electronic resources *NB 1st line antimarials artesunate & quinine only available through VGH ID* - Respond to labs appropriately	Modifiers Triggers - If all actions complete or >10 minutes **end scenario.**

Section VII: Supporting Documents, Laboratory Results, & Multimedia

Laboratory Results								
RMP	Na: 133	K: 4.9	Cl: 106	HCO_3: 7	Lactate: 6.0	Cr: 150	Glu: 3.2	pH: 7.20
AST: 54		ALT:57		T.Bili: 50		Coagulation: normal		
ABG (post-seizure)	pH: 7.10		PCO_2: 40	PO_2: 75		HCO_3: 12		Lactate:
WBC: 4.1		Hg: 11.2		Hct: 33%		Plt: 125		
Blood smear and rapid test (not immediately available): Falciparum rapid test +, multiple intra-cellular ring forms. Parasitemia 12%								
Urine dip: +2 haemoglobin, +1 bilirubin, +1 ketones, 0 Nitrite, 0 leukocytes								
Urinalysis: 0-5 RBCs on microscopy, preg: negative								

Images (ECGs, CXRs, etc.)

CXR: ARDS malaria



From: https://www.thelancet.com/journals/laninf/article/PIIS1473309908701531/fulltext accessed14/07/2022

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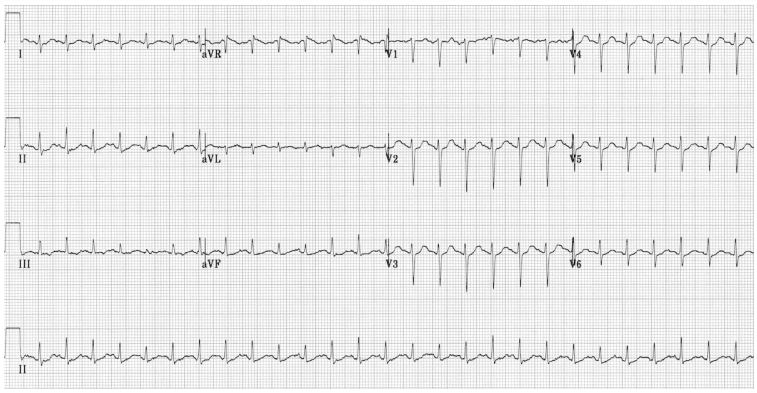
ECG: Sinus tachycardia



From: https://litfl.com/sinus-tachycardia-ecg-library/ Accessed 14/07/2022

Ultrasound Video Files (if applicable)	

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Section VIII: Debriefing Guide

General Debriefing Plan			
Individual	Group	With Video	Without Video

Objectives	
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Sample Questions for Debriefing

What are the important diseases to consider in a returning traveller?
What was your top differential for this scenario?

Learner should be able to discuss differential: in addition to standard meningitis and common bacterial sepsis includes:

1) *Malaria*
2) *Typhoid*
3) *Plague*
4) *leptospirosis*
5) *Typhus*
6) *Relapsing fever (would be unusual to present so early)*
7) *Dengue (no specific treatment)*
8) *Chickungunya*
9) *NOT EBOLA.*
10) *NOT TB: would be very unlikely time course for TB presentation*

What prophylaxis should this traveller have been offered?
What are the main complications of Malarial infection?
What are the principals of seizure management?
Why was high minute ventilation required?

Key Moments

Eliciting travel history and adjusting differential accordingly

Treating for meningitis and sepsis with appropriate antibiotic cover

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Seizure and respiratory distress management