**SIMULATION SCENARIO**

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| **CASE TITLE:** | Adrenal Crisis |

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| **TARGET LEARNING GROUP:** | Mid – Sr. Emergency Medicine Residents |

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| **LEARNING OBJECTIVES:** |  |  |
| ***Knowledge:***  1. Describe the DDX of shock  2. Diagnose adrenal crisis  3. Management of adrenal crisis | |  |
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**SCENARIO ENVIRONMENT:**

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| ***Location*** | * Emergency department |
| ***Monitors*** | * Cardiac monitor, pulse oximetry, temperature probe, non-invasive blood pressure cuff |
| ***Props/Equipment*** | * Defibrillator * Resuscitative medications at bedside (epinephrine, calcium, amiodarone, lidocaine, atropine, dextrose, sodium bicarbonate) * Airway equipment – BVM, NRB mask, nasal prongs, facemask, oxygen tubing, O2, oral/nasal airways, laryngoscope, ETT, CO2 detector, stylet, syringe, tape. * IV equipment – catheter, tubing, IV fluids * Glucometer * Otoscope, ophthalmoscope |
| ***Make-Up/Moulage*** | * Tanned skin on hands, neck, shoulders of patient |
| ***Multi-Media*** | * CXR- pneumonia (PPT) * ECG- sinus tachycardia (PDF) * Bloodwork- low cortisol, otherwise normal (PPT) * ED ultrasound- normal (PPT) |

**INITIAL SIMULATOR SETUP:**

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| ***Mannikin Position*** | Lying on side. Vomiting into kidney basin. Partially clothed and wrapped in bedsheet. |
| ***Pupils***  *Size:*  *Reactivity:*  *Blinking:* | 3 mm  reactive  appropriately |
| ***Breathing***  *Resp Rate:*  *Resp Pattern:*  *Chest Rise:*  *Breath Sounds:*  *Airway Sounds:*  *% Cyanosis:*  *Oxygen Saturation:* | 18  normal  normal  decreased on right side  crackles on right side  none  94% |
| ***Cardiovascular***  *Heart Rate:*  *Cardiac Rhythm:*  *Blood Pressure:* | 120  sinus  123/97 |
| ***Other Setup*** | Not connected to monitor, no IV access |
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***Available Collateral Information:*** *(information given if requested)*

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| * Not immediately available. If asked, husband will leave then return with the following additional information:   + Medications: Cortef, Ventolin, Florinef, Synthroid, Flovent, Paroxetine   + Allergies: Penicillins, Codeine |

***The Script:*** *(Scenario flow & management outcomes)*

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| **Scenario Transitions**  **& Evolution** | **Effective Management** | **Ineffective Management** | **Notes** |
| 1. Simulator settings as above | -Focused history and physical exam.  -Obtains collateral history from husband  -Places patient on continuous cardiorespiratory monitoring.  -Obtains IV access and sends appropriate bloodwork.  -Requests bedside glucometer  -Requests CXR and ECG  -Performs bedside US  -Initiates IV fluid boluses  -Provides maintenane dextrose in IV fluid  -Diagnoses adrenal crisis and provides IV steroids  -Recognizes potential for sepsis and provides IV antibiotics  -Identifies critically ill patient and suggests moving patient to “Section A” of ED | -Does not obtain adequete history  -Does not examine patient thoroughly  -Does not order appropriate investigations  -Does not diagnosse adrenal crisis  -Does not check glucose  -Does not initiate IV fluids  -Does not provide IV steroids  -Allows patient to remain in inappropriate ED bed setting | -If glucose is not check or maintenance dextorse is not provided in IV fluids the patient becomes confused due to hypoglycemia  -bedside US results available at this time but nothing else yet |
| 2. Approximately 5 minutes into case patient deteriorates:  Simulator Settings:  70/50, HR 132, RR 30, sats 85%, temp 37.9, pupils 3mm and reactive, worse air entry and crackles to right lung | -Identifies serious episode of decompensation  -Ensures that IV access is obtained, repeats fluid bolus, provides steroids (if not done), considers vasoactive medications  -Provides oxygen to patient and sits them upright in bed  -Interprets CXR as showing pneumonia or pulmonary edema  -Interprets bloodwork and ECG correctly  -States need for admission to ICU | -Does not recognize diagnosis of adrenal crisis  -Does not follow up on previously ordered investigations  -Does not provide appropriate therapies | -Patient’s blood pressure normalizes with fluids and steroids  -Oxgyen levels normalize with 50% oxygen  -If does not provide appropriate therapies, oxygen levels and blood pressure deteriorate until cardiac arrest ensues |

**INSTRUCTIONS FOR PERSONNEL:**

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| ***Personnel A***  *(Patient)* | * You have began vomiting and had diarrhea for the past 24 hours. Your husband recently had a similar illness but has now recovered. You are concerend that you have been unable to take your usual medications, although you cannot recall the names of them. You feel very weak and “sick” and request multiple times that an IV be placed. You are also coughing and have a fever and chills. You have a history of “MEN-2” (multiple endocrine neoplasia) and have had your thyroid and adrenal glands removed because of cancers in each. You have been admitted to the hospital several times before with similar symptoms to today. You can’t rememeber your medications and allergies but your husband “will know them”. |
| ***Personnel B***  *(Husband)* | * You confirm any history provided by your wife but do not have any further information. If asked, you can leave the room to obtain her medication and allergy list (below):   + Medications: Cortef, Ventolin, Florinef, Synthroid, Flovent, Paroxetine, Thyroxine   + Allergies: Penicillins, Codeine |
| ***Personnel C***  *(RN)* | * Follow the directions provided by the physician. |
| ***Personnel D*** (Emerg attending) | * You will let the team leader run the resuscitaiton but will provide assistance and suggestions if requested. |

**SUGGESTIONS FOR DEBRIEFING:**

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| ***Knowledge:***  1. Review the approach to hypotension and shock  2. Discuss the pathophysiology, diagnosis, and management of adrenal crisis |
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| ***Attitudes/Behaviours:***  1. Communication with family member in resuscitation setting |
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