**SIMULATION SCENARIO**

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| **CASE TITLE:** | Hypertension Emergencies: Autonomic dysreflexia |

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| **TARGET LEARNING GROUP:** | 3-5yr Emergency Medicine Residents” |

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| **LEARNING OBJECTIVES:** |  |  |
| ***Knowledge:***  1. Diagnosis/understand pathophysiology of autonomic dysreflexia  2. treatment of autonomic dysreflexia | |  |
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| ***Attitudes/Behaviours:***  1. organization of team | |  |

**SCENARIO ENVIRONMENT:**

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| ***Location*** | * Emergency department resuscitation room |
| ***Monitors*** | * Typical section A resuscitation equipment |
| ***Props/Equipment*** | * If possible, patient presents in wheelchair; they must move him into the bed; put sticker on anal area that says “fecal impaction” |
| ***Make-Up/Moulage*** | * Very sweaty from shoulders up; dry below shoulders; flushed face (?makeup); runny nose (Vaseline at nose) |
| ***Multi-Media*** | * ECG, CXR, labs, |
| ***Personnel*** | * Nurse (doesn’t want to get him out of the chair). |
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**INITIAL SIMULATOR SETUP:**

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| ***Mannikin Position*** | Sitting in wheelchair. In street clothes. |
| ***Pupils***  *Size:*  *Reactivity:*  *Blinking:* | **8mm**  **normal**  **normal** |
| ***Breathing***  *Resp Rate:*  *Resp Pattern:*  *Chest Rise:*  *Breath Sounds:*  *Airway Sounds:*  *% Cyanosis:*  *Oxygen Saturation:* | **20**  **normal**  **normal**  **normal**  **normal**  **none**  **96%** |
| ***Cardiovascular***  *Heart Rate:*  *Cardiac Rhythm:*  *Blood Pressure:* | **70 (intermittently goes sinus brady to 50/min every 3-4 minutes for 30 secs)**  **sinus rhythm**  **270/150 (when patient supine); 250/140 (when sitting upright)** |
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**SCENARIO PROGRESSION:**

***Case Introduction:*** *(initial information provided to participants)*

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| * 27 yo man quadriplegic man presents with throbbing, pulsatile headache, diaphoresis progressing over last 2 hours. * Nurse says BP is 230/140, HR 70 when patient in chair. |

***Available Collateral Information:*** *(information given if requested)*

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| * C7 spinal cord injury while snowboarding 2 years ago; have movement and feelings in arms; no fine motor in hands * Recently well, no new medications * Just feels sweaty, severe pulsatile headache, slow onset; vision a little blurry; nose is runny; anxious/restless * Does in/out catheters twice daily * Has a regular bowel routine * Meds: Baclofen, Colace, senokot, dulculux supps PRN * Lives alone; works at St. Lawrence College in graphic design department * Has PSW support once daily * BP is normally quite low since the injury: 100/60, rarely gets above 110.   Expect participants to get patient undressed and into the bed for full vitals.  Identify BP as a problem, and do appropriate exam (cardiovascular, neuro/eye exam)  Expect initiate dropping BP to 200/100 level if unsure of origin, even while pursuing diagnosis.  Hope they will identify cause based on history, and treat BP appropriately, while looking for cause.  Appropriate Rx:   1. sit person upright 2. remove snug clothing 3. Iv access 4. Give direct vasodilator (GTN, NTP, hydralazine, ?nifedipine, ?labetolol) 5. Beta-blocker alone not a good idea (unopposed alpha!) 6. Look for cause. Check bladder/rectal/sores etc.   If participant gives beta-blocker: BP will paradoxically go up 20-30 points, HR drops about 10 beats/min  If does disimpaction/foley without xylocaine, get jump in BP about 20-30 points and HR to 45-50 until painful stimulus stops  Once patient is disimpacted, BP comes down to 105/70, HR to 80; patient feels better |

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

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| **Scenario Transitions**  **& Evolution** | **Effective Management** | **Ineffective Management** | **Notes** |
| 1.  Sit upright | BP drops to 250/140  BP 270/150 is supine |  |  |
| 2.  if gives beta-blocker | HR drops to 50, BP 290/170  -need to give direct vasodilator | Give more beta blocker |  |
| 3.  if gives direct vasodialtor | -BP drops to 160/100 gradually | Not give vasodilator |  |
| 4.  if does painful stimulus without analgesia/xylocaine (eg. Foley/disimpaction) | BP goes up 30 points, HR to 45-50  Goes back to baseline once painful stimulus stops | Continue painful stimulus with disregard to BP/HR |  |
| 5.  disimpaction completed | Patient symptomatically better  BP 110/70, HR 80/min |  |  |

**SUGGESTIONS FOR DEBRIEFING:**

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| ***Knowledge:***  1. What is the pathophysiology of autonomic dysreflexia?  2. How do you manage it?  3. What are the common causes of autonomic dysreflexia? |

Common Causes:

-Irritation of bladder wall, urinary tract infection

-Blocked catheter

-Overfilled collection bag

-Over-distended or irritated bowel

-Constipation/impaction

-Hemorrhoids or anal infections

-Skin infection or irritation, cuts, bruises, abrasions

-Pressure sores (decubitus ulcer)

- Ingrown toenails

-Burns (including sunburn, burns from using hot water)

-Tight or restrictive clothing

-Sexual activity

-Menstrual cramps

-Labor and delivery

-Abdominal conditions (gastric ulcer, colitis, peritonitis)

-Bone fractures