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| **Course:** | SR Rounds, Tox II | | | | | |
| **Case Title:** | Bupivicaine Overdose | | | | | |
| **Brief Case Description** | | | | | | |
| **An 87 year old woman presents to the ED with multiple lacerations, where a junior resident inadvertently overdoses the patient on Bupivicaine (a local anestheitc).**  **The patient proceeds to have seizures, and a VF cardiac arrest.**  **The students must utilize Lipid Emulsion and sodium bicarbonate to resuscitate the patient successfully** | | | | | | |
| **Searchable Keywords:** | | | | | | |
| 1. **Bupivicaine** 2. **Intralipid** | | | | | | |
| **Target Audience:** | SR Residents | | | | | |
| **Number of Participants:** | 5 | | | | | |
| **CanMeds Roles :** |  | Medical Expert |  | Manager |  | Scholar |
|  |  | Communicator |  | Collaborator |  | Professional |
|  |  | Health Advocate |  |  |  |  |
| **Objectives:** |  | | | | | |
| * **Knowledge** | To know the toxic dose of bupivacaine  To know the dose of intralipid, and understand its use as an antidote to bupicvicaine toxicity | | | | | |
| * **Skills** |  | | | | | |
| * **Behaviour** |  | | | | | |

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| **Stem:** *Detailed description of exercise* | |
| **Florence is an 87 year old woman who presents to the ED with multiple lacerations following a fall through a broken glass door. These lacerations require repair, and a junior resident uses bupivacaine as the local anesthetic. The patient is inadvertently overdosed, and subsequently has a generalized seizure, and then progresses to a VT with a pulse, then to VF arrest.**  **The students must administer Intralipid (lipid emulsion) at a dose of 1.5 ml/kg bolus (100cc). This bolus can be repeated during periods of cardiac instability. Then an infusion of 0.25ml/kg/min for 60 minutes.**  **If an ECG is performed, the initial ECG will show NSR with a markedly widened QRS (Na channel blockade). This should be treated with ampules of sodium bicarbonate.** | |
| **Roles:** |  |
| **Script (for each role):** | JR: [Runs into the room to get the attending]  “Help, Mrs. Jones is having a seizure!  I was suturing her wounds when she started to complain of feeling unwell, then she went unresponsive and is having a seizure”  [When asked how much Marcaine/Bupivaciane they used:]  “I used a lot. There were so many lacerations. I think I’m onto my 4th bottle” |
| **Scenario Tips:**   * *Tips to future instructors to keep the scenario flowing.* * *Anticipated difficulties* |  |

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| **Scenario Details:** | |
| **Demographics:**   * Name: * Age: * Sex: * BMI | Florence Jones  87  female  18 |
| **Chief Complaint:** | Lacerations to her abdomen, arms, and legs after falling through a glass door that broke during the fall.  After receiving Marcaine, she suffers a seizure and then cardiac arrest |
| **Past Medical History:** | Hypertension  Early dementia – still active, and lives independently. Completely independent of her ADL/s |
| **Medications:** | HCTZ 25 mg po OD  ASA 81 mg po OD |
| **Allergies:** | None |
| **Lab data:** (provided if requested) | *Link* |
| **Imaging:** (provided if requested) | *Link* |
| **ECG:**  (provided if requested) | *NSR with Wide QRS Complex – Indicative of sodium channel blockade* |

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| **Initial Physical Examination Findings: (Normal if left blank)** | |
| **Vital signs:** | |
| Temperature | **36.7** |
| HR | **95** |
| BP | **84/40** |
| RR | **18** |
| O2 saturation | **90%RA** |
| Finger stick glucose | **8.7** |
| Weight (kg) | **46 kg** |
| **Cardiovascular:** | |
| Heart rate/rhythm | **NSR** |
| Heart sounds | **Normal** |
| JVP | **Normal** |
| Peripheral pulses | **Normal** |
| Evidence of cyanosis? | **No** |
| Diaphoresis | **No** |
| Other |  |
| **Respiratory:** | |
| Respiratory rate/pattern | **Normal** |
| Accessory muscle use? | **No** |
| Lung sounds | **Normal** |
| Evidence of fatigue? | **No** |
| Other |  |
| **Abdominal:** | |
| Visible signs of pathology? | **No** |
| Bowel sounds | **Normal** |
| Peritoneal signs? | **No** |
| Tenderness? | **No** |
| Hepatosplenomegaly? | **No** |
| Signs of ascites? | **No** |
| Other |  |
| **Neurological:** | |
| Level of consciousness & Behaviour | **Altered LOC, generalized seizure** |
| Muscle tone | **Generalized tonic/clonic seizure** |
| Motor |  |
| Sensory |  |
| Reflexes |  |
| Other |  |
| **Head/Ears/Eyes/Nose/Throat/Skin:** | |
| Visible abnormalities | **no** |

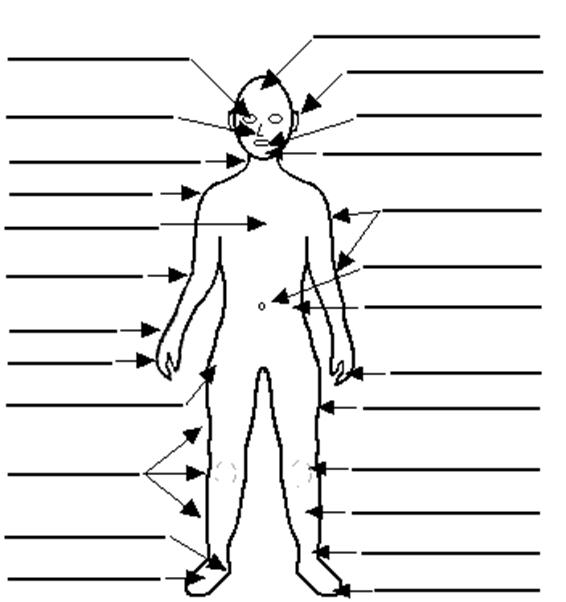
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| **Flow Table:** | | | | | | | |
| **Time or Stage:** | 0:00 | After NRB | After BZD/Propofol | After intubation | 5 minutes | 7 Minutes | After Intralipid & Defib |
| **Heart rhythm:** | NSR |  |  |  | VT | VF | NSR |
| **Heart rate:** | 95 |  |  |  | 130 | 0 | 118 |
| **Heart Sounds:** | Normal |  |  |  | Normal |  |  |
| **Blood pressure:** | 84/40 |  |  |  | 68/30 | 0 | 70/40 |
| **Respiratory rate:** | 18 |  |  |  | Vent |  |  |
| **Respiratory Pattern:** | Normal |  |  |  |  |  |  |
| **O2 saturation:** | 90%RA | 93% NRB |  | 98% | 98% | 0 |  |
| **Temperature:** | 36.7 |  |  |  |  |  |  |
| **Glucose** | 8.7 |  |  |  |  |  |  |
| **Eyes:** | Closed |  | Closed |  |  |  |  |
| **Pupils:** | Normal |  | Normal |  |  |  |  |
| **Specific simulator dialogue:** | None |  | Unresponsive |  |  |  |  |
| **Other:** | Seizure |  | Abort Seizure |  |  |  |  |

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| **Flow Diagram:** |
| Insert specific scenario flow diagram showing pathways for anticipated actions. Each section of the diagram should correspond to a column on the Flow Table above.  example |

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| **Simulator Requirements:** |  | |
| **Environment:** |  | ER |
|  |  | Hospital Ward |
|  |  | ICU |
|  |  | Other |
| **Required simulator capabilities:** |  | Adult |
|  |  | Child |
|  |  | Ability to talk |
|  |  | Ability to open and close eyes |
|  |  | Ability to change pupil size |
|  |  | Output of basic cardiorespiratory rhythms |
|  |  | Ability to change vital signs |
|  |  | Ability to perform CPR |
|  |  | Ability to deliver energy via LifePack |
|  |  | Ability to gain IV access |
|  |  | Ability to gain IO access |
|  |  | Ability to get 12 and 15 lead EKG’s |
|  |  | Ability to deliver drugs |
|  |  | Ability to ventilate |
|  |  | Ability to intubate |
|  |  | Ability to catheterize |
|  |  | Ability to needle decompress |
|  |  | Ability to insert chest tube |
|  |  | Ability to seize |
|  |  | Ability to simulate cyanosis |
|  |  | Other: |
| **Task trainers required:** |  | IV access trainer |
|  |  | IO access trainer |
|  |  | Lumbar puncture trainer |
|  |  | Central line access trainer (IJ, femoral, subclavian) |
|  |  | Chest tube trainer |
|  |  | Cricothyrotomy trainer |
|  |  | Pericardiocentesis trainer |
|  |  | Thoracotomy trainer |
|  |  | Other: |
| **Communications Equipment:** |  | One way wireless (confederate) |
|  |  | Two way wireless (confederate) |
|  |  | Overhead Speakers |
|  |  | Telephone |
|  |  | Pager |
|  |  | Other: |

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| **Moulage:** |

*Describe any scenario-specific moulage on the diagram below:*



|  |  |
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| **Mannequin Clothing** | |
|  | Hospital gown |
|  | Formal work attire |
|  | Casual attire |
|  | Athletic clothing |
|  | Other: |

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| **Equipment Required:** | |  | |  | | Quantity Required | | Sizes Required  *(if applicable)* |
| **Diagnostic/Monitoring:** | |  | | Portable monitor | |  | |  |
|  | | Thermometer | |  | |  |
|  | | NIBP | |  | |  |
|  | | Defibrillator | |  | |  |
|  | | EKG | |  | |  |
|  | | CXR | |  | |  |
|  | | O2 saturation probe | |  | |  |
| **Airway:** | |  | | Bag valve mask | |  | |  |
|  | | Peak flow meter | |  | |  |
|  | | Nasal cannula | |  | |  |
|  | | Nebulizer | |  | |  |
|  | | Non-rebreather mask | |  | |  |
|  | | Mechanical ventilator | |  | |  |
|  | | Oropharyngeal airway | |  | |  |
|  | | Nasopharyngeal airway | |  | |  |
|  | | Non-invasive positive pressure ventilation | |  | |  |
|  | | Laryngoscope | |  | |  |
|  | | Endotracheal tube | |  | |  |
|  | | Syringe | |  | |  |
|  | | Stylet | |  | |  |
|  | | End tidal CO2 detector (colorimetric) | |  | |  |
|  | | End tidal CO2 detector (capnographic) | |  | |  |
|  | | Bougie | |  | |  |
|  | | Glidescope | |  | |  |
| **Vascular access:** | |  | | Peripheral IV | |  | |  |
|  | | Arterial line | |  | |  |
|  | | Central line | |  | |  |
|  | | PICC line | |  | |  |
|  | | Swan Ganz catheter | |  | |  |
|  | | Dialysis catheter | |  | |  |
| **Resuscitation:** | |  | | Crash cart | |  | |  |
|  | | Trauma cart | |  | |  |
|  | | Difficult airway cart | |  | |  |
|  | | Cricothyrotomy tray | |  | |  |
|  | | Chest tube tray | |  | |  |
|  | | Pericardiocentesis tray | |  | |  |
|  | | Chest tube tray | |  | |  |
|  | | Urinary catheter tray | |  | |  |
| **Other:** | |  | |  | |  | |  |
| **Fluids and Drugs** |  | |  | | Volume, Concentration or Dose Required | | Number of Units Required | |
| **IV Fluids:** |  | | NS | |  | |  | |
|  | | 0.45% NS | |  | |  | |
|  | | 3% NS | |  | |  | |
|  | | 2/3 1/3 NS | |  | |  | |
|  | | D5W | |  | |  | |
|  | | D5 ½ NS | |  | |  | |
|  | | Ringer’s lactate | |  | |  | |
|  | | Pentaspan | |  | |  | |
|  | | Other: Intralipid (100mL minibag filled with milk) | | 100 cc | | 2 | |
| **Blood products:** |  | | 25% albumin | |  | |  | |
|  | | 5% albumin | |  | |  | |
|  | | pRBC’s | |  | |  | |
|  | | Platelets | |  | |  | |
|  | | Fresh Frozen Plasma | |  | |  | |
|  | | Cryoprecipitate | |  | |  | |
|  | | Factor VIII concentrate | |  | |  | |
|  | | Factor IX concentrate | |  | |  | |
|  | | Other: | |  | |  | |
| **Pre-filled drugs:** |  | | D50W | |  | |  | |
|  | | Epinephrine | |  | |  | |
|  | | Bicarbonate | |  | |  | |
|  | | Calcium chloride | |  | |  | |
|  | | Lidocaine | |  | |  | |
|  | | Atropine | |  | |  | |
|  | | Adenosine | |  | |  | |
|  | | Other: | |  | |  | |
| **Other drugs:** |  | | Fentanyl | |  | |  | |
|  | | Midazolam | |  | |  | |
|  | | Propofol | |  | |  | |
|  | | Etomidate | |  | |  | |
|  | | Ketamine | |  | |  | |
|  | | Succinylcholine | |  | |  | |
|  | | Roccuronium | |  | |  | |
|  | | Glucagon | |  | |  | |
|  | | Digoxin | |  | |  | |
|  | | Lasix | |  | |  | |
|  | | Nitrogylcerin | |  | |  | |
|  | | Labetelol | |  | |  | |
|  | | Other: | |  | |  | |

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| **Audiovisual Needs:** |  |
| **Imaging:** | *(link to x-rays, CT scans, ultrasounds, MRI’s)* |
| **Bloodwork:** | *(link to bloodwork here)* |
| **EKG’s:** | *(link to EKG’s here)* |
| **Short didactic presentation:** | *(link to short presentation here – max 5 minutes)* |
| **Handouts:** | *(link to handouts here)* |
| **Simulator exercise file:** | *(link to simulator exercise file here)* |
| **References:** |  |
| **Required reading:** | *(link to required reading here)* |

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| **Debriefing points:** |  |
| * **Knowledge** | *Link from objectives* |
| * **Skills** | *Link from objectives* |
| * **Behaviour** | *Link from objectives* |

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| **Assessment:** |  | | | | |
| * **Knowledge**   + Objective 1   + Objective 2   + Objective 3 | 1  1  1 | 2  2  2 | 3  3  3 | 4  4  4 | 5  5  5 |
| * **Psychomotor**   + Objective 1   + Objective 2   + Objective 3 | 1  1  1 | 2  2  2 | 3  3  3 | 4  4  4 | 5  5  5 |
| * **Behaviour**   + Objective 1   + Objective 2   + Objective 3 | 1  1  1 | 2  2  2 | 3  3  3 | 4  4  4 | 5  5  5 |
| **Global performance:** | 1 | 2 | 3 | 4 | 5 |
| * **Critical action:** |  | | | | |
| * **Critical errors:** |  | | | | |
| * **Participants’ evaluation:** | *Link to evaluation for the session to be filled out by the participants* | | | | |