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| **Case Title**  | TCA Intoxication – Tachyarrhythmia |
| **Scenario Name** | TCA Intoxication – Tachyarrhythmia |

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| **Learning Objectives -** [**Use action words**](http://ubccpd.ca/sites/ubccpd.ca/files/Accreditation_Learning%20Objectives_%20Verbs.pdf) |
| **Knowledge:**1. Identify symptoms and signs of TCA intoxication
2. Identify tachyarrhythmia secondary to TCA intoxication
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| **Skills:**1. Demonstrate effective management of TCA intoxication with appropriate supportive and therapeutic interventions
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| **Attitude/Behaviours:**1. Demonstrate Team skills
2. Demonstrate Situational awareness
3. Demonstrate Graded Assertiveness
 |
| **Scenario Environment** |
| **Location** | ED  |
| **Monitors** | Bedside |
| **Props/Equipment** | * Cardiopulmonary monitor with tracing of tachycardia with prolonged QRS segments
* ECG: QRS prolongation with sinus tachycardia, with progressive QRS widening
* ECG: Ventricular tachycardia
* CXR : post intubation
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| **Make-up/Moulage** |  |
| **Potential Distractors** |  |

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| **Case Introduction:** |
| 3 yr old boy brought by parents. Found extremely sleepy after dinner, slumped over on couch, minimally responsive. No fever, no antecedent illness; previously well. No allergies, no medication needs. “He looked warm, and his heart was beating fast – does he have meningitis?” Upon arrival in the ED, you are asked to see the child immediately. |

| **Patient Parameters** | **Effective Management** | **Notes** |
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| **Phase 1: Presentation****Condition:** Appears flushed**Initial Assessment*** **Heart Rhythm:** sinus
* **HR:** 150
* **BP:** 85/50
* **RR:** 24
* **SP02:** 98% RA
* **T:** 37.5 oral
* **CNS:** PERL 5 mm sluggish/eyes closed/open intermittently with stimulation, moans and vocalizes with stimulation, Localizes to painful stimuli/no spontaneous movement
* **Chest:** spontaneous respirations, no abnormal air entry or breath sounds
* **CVS:** palpable pulses, slightly cool extremities, normal heart sounds, tachycardia
* **GI:** No BS
* **GU:** Palpable full bladder
* **Integ:** No rashes
* **Weight:** 15 kg
 | 1. **Take a focused history** (see Notes column)
2. **Medical Management**
* Talk to patient
* Expose the patient to assess
* Identify abnormality of monitor tracing – order 12 lead
* Order BW

**Airway*** Talk to the patient – moans a bit with being shouted at
* Optimize airway position – doesn’t resist chin lift, moans with oral airway, but doesn’t spit it out

**Breathing** * Check oxygen saturation
* Apply monitors – “funny looking tracing, doc”
* Provide oxygen delivery – no change in clinical appearance
* Auscultate chest - no findings

**Circulation*** Monitors (if not done yet)
* Check pulse, cap refill, BP – HR 150 (tachycardia identified), skin feels warm and dry, slightly diminished pulse filling
* Show strange looking ECG tracing
* Start IV
 | 1. **Focused history**
* No sick contacts
* No prior history of seizure
* No family history of seizure
* No indications of trauma, no prior trauma
* Supervised by mother all day
* Grandparents arrived from England just before dinner
* Not sure if there are prescription medications in the home

**PMHx*** Healthy

**Meds*** Nil

**Allergies*** None
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| **Phase 2: Worsening LOC****Condition:** Declining LOc, still flushed**Physical Examination*** **Heart Rhythm:** sinus
* **HR:** 150
* **BP:** 85/50
* **RR:** 24
* **SP02:** 98% RA
* **T:** 37.5
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Sodium bicarbonate, 1-2 mEq/kg IV bolus – narrows QRS interval, BP 90/55
* Aim for arterial pH 7.45-7.55
* Glucometer: 6.0
* CBC, differential
* Electrolytes, BUN, Cr
* Urine toxicology screen
* Serum TCA level
* Serum APAP, ASA levels
* Need arterial line for monitoring
* Continuous ECG monitoring
* Call for ICU
 | 1. **Patient Reassessment**
* Few twitches of right, then left arm, in flexion at the elbow
* LOC worsening, eyes completely closed, less verbalization, moans only to painful stimuli
* No other change in examination
* Parent calls on telephone – grandmother has 20-30 missing antidepressant pills from her medication cabinet

**Airway*** Prepare equipment for intubation
* Prepares medication for RSI

**Breathing** * Reassessment breathing, auscultation – no change
* Apply 100% oxygen – no change in clinical appearance

**Circulation*** Reassess HR, pulse, BP
* Consider giving fluid bolus 20 cc/kg NS – no change in vital signs
 |
| **Phase 3: Rapid Deterioration****Condition:** rapid deterioration – more twitches, rhythm changed to ventricular tachycardia. Seizure activity**Physical Examination*** **Heart Rhythm:** VTach (pulse)
* **HR:** 150
* **BP:** 85/40
* **RR:** 24
* **SP02:** 98% RA
* **T:** 37.5
* **CVS:** cap refill 2 sec
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Amidarone 5mg /kg IV over 20-60min
* Consider Cardio version:o.5-1J/Kg
* If no response increase to 2J/kg
* Consult Cardiology
* Treat seizure (diazepam,Phenytoin)
 | 1. **Patient Reassessment**
* Flushed
* Few more twitches of arms, now with legs involved
* No other change in examination

**Airway*** Position airway
* OP airway - still in place

**Breathing*** Reassess auscultation, breathing, RR – no change
* Prepares intubation equipment
* Orders RSI medication:
	+ etomidate 0.3 mg/kg OR ketamine 1 mg/kg
	+ succinylcholine 2 mg/kg
	+ ETT size: 4.5 cuffed
	+ Easy intubation, easily bagged

**Circulation*** Reassess HR, pulse, BP, Cap refill
* Repeat bolus NS 20 cc/kg – no change
* ECG – Ventricular tachycardia
 |
| **Phase 4: Intubated and Ventilated****Condition:** intubated and sedated; hypotension. No movement; still flushed**Physical Examination*** **Heart Rhythm:** VTach (pulse)
* **HR:** 150
* **BP:** 75/50
* **RR:** 24 - ventilator
* **SP02:** 98% RA
* **T:** 37.5
 | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Cardioversion for Vtach
* Check blood sugar
* Call ICU (if not done already)
* Prepare for transport after stabilized
 | 1. **Patient Reassessment**

**Airway*** Ensure proper position is maintained

**Breathing*** Intubated

**Circulation*** Give more fluid to 60-80 cc/kg
 |

**Insert more lines if more phases required.**

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| **Expected Patient Management** | **Debriefing Points** |
| 1. **Student**
2. **R1**
3. **Senior IM resident**
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**References:**