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| **Case Title**  | Renal Failure/Hyperkalemia/Digoxin Toxicity |
| **Scenario Name** | Renal Failure/Hyperkalemia/Digoxin Toxicity |

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| **Learning Objectives -** [**Use action words**](http://ubccpd.ca/sites/ubccpd.ca/files/Accreditation_Learning%20Objectives_%20Verbs.pdf) |
| **Knowledge:**1. Summarize management of hyperkalemia, renal failure, rhabdomyolysis, and digoxin overdose
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| **Skills:**1. Demonstrated management of hyperkalemia, renal failure, rhabdomyolysis, and digoxin overdose
 |
| **Attitude/Behaviours:**1. Demonstrate Team skills
2. Demonstrate Situational awareness
3. Demonstrate Graded Assertiveness
 |
| **Scenario Environment** |
| **Location** | ED |
| **Monitors** | Bedside monitor |
| **Props/Equipment** |  |
| **Make-up/Moulage** |  |
| **Potential Distractors** |  |

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| **Case Introduction:** |
| 68 yo male found down at home. Brought in by EMS after family was unable to reach patient today. Found in own home on floor. No signs of trauma. Patient has history of chronic pain. Over past week increasing pain therefore using more oxycodone,? gabapentin inappropriately, ?more clonazepam. Poor appetite and fluid intake therefore progressive dehydration resulting in renal failure, hyperkalemia, and chronic digoxin toxicity. |

| **Patient Parameters** | **Effective Management** | **Notes** |
| --- | --- | --- |
| **Phase 1: Presentation****Condition:** **Initial Assessment*** **Heart Rhythm:** Irregular
* **HR:** 27
* **BP:** 90/65
* **RR:** 16
* **SP02:** 96%
* **T:** 37.5
* **Glucose:** 6.9 *(provide when asked)*
* **CNS:** GCS 9 (E=2, V=2, M=5)
* **Chest:** clear
* **CVS:** Bradycardia. Weak pulses
* **GI:** Normal
* **GU:** Decreased u/o
 | 1. **Take a focused history** (see Notes column)
2. **Medical Management**
* ABC’s
* IV, O2, monitor
* Fluid bolus 1-2 L N saline
* Order ECG
* Order BW
	+ Lytes, dig level, CBC, renal/liver fx, glucose
 | 1. **Focused history**
* Patients family last saw yesterday. Lives alone. Feeling more weak over last few days. Increasing back pain (acute on chronic). No history of falls. EMS called today. Attempted to place oral airway but resisted. Moaning but not comprehensible. Not currently depressed.

**PMHx*** Complex back pain
* Dyslipidemia
* MI
* Mood disorder
* Migraines

**Meds*** Triamterene HCT 50/25mg daily
* Oxycodone 10mg q6h pm
* Lipitor 40mg po daily
* Gabapentin 600mg tid (300mg 2 tabs po tid)
* Clonazepam 0.5mg pm
* Digoxin .125 mg po daily

**Allergies*** NKA
 |
| **Phase 2: Review and Treatment****Condition:** no changes | 1. **Patient Reassessment** (see Notes column)
2. **Medical Management**
* Bradycardia
	+ Standard measures unlikely to be effective (atropine/pacing) 🡪need to correct underlying electrolyte abnormalities
* Hyperkalemia
	+ Cardiac stabilization: calcium gluconate or chloride (avoid with digoxin)
	+ Shift
		- Insulin (humulin R 10 unit) plus glucose (50gm)
		- Ventolin
		- NaHCO3
	+ Eliminate
		- Stool: kayexalate 30gm
		- Urine: lasix 20 – 40 mg IV
		- Dialysis
* Digoxin toxicity
	+ Digibind indications: level >13, hypotension and bradycardia, ventricular arrhythmia, K >5.5
	+ Digibind: dosing poison control;
	+ estimate = number of vials=

 serum dig level x weight (kg) 100 | 1. **Patient Reassessment**

**Airway*** No changes

**Breathing** * No changes

**Circulation*** Review ECG – changes of hyperkalemia
	+ Sine wave
	+ QRS widening, loss of p wave
	+ Peaked T, prolonged PR, short QT
* Review lab work – dig toxicity
 |

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

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

**References:**

**X-RAYS – Click** [here](https://extranet.interiorhealth.ca/IHUBCFaculty/Diagnostics/Forms/AllItems.aspx?RootFolder=%25252FIHUBCFaculty%25252FDiagnostics%25252FX%25252Drays&View=%25257bFD97E2FE-FD01-433F-B9CB-D75A4195924E%25257d)

**LABS – click** [here](https://extranet.interiorhealth.ca/IHUBCFaculty/Diagnostics/Forms/AllItems.aspx?RootFolder=%25252FIHUBCFaculty%25252FDiagnostics%25252FLabs&View=%25257bFD97E2FE-FD01-433F-B9CB-D75A4195924E%25257d) **OR fill out below**

LABORATORY \*LIVE\* Lab Summary Report

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | **DATE/TIME here** | **Flag** (H or L) | **Reference** |
| **CBC** |
| WBC |  |  | 3.5 – 10.8 10^9/L |
| RBC |  |  | 4.3 – 5.7 10^12/L |
| Hgb |  |  | 130 – 170 g/L |
| HCT |  |  | 0.37 – 0.47 L/L |
| MCV |  |  | 84.0 – 98.0 fL |
| MCH |  |  | 28.3 – 33.5 pg |
| MCHC |  |  | 329 – 352 g/L |
| RDW |  |  | 12.0/15.0 % |
| Platelets |  |  | 150 – 400 10^9/L |
| D-Dimer |  |  | <250 mcg/L |
| **Chemistry** |
| Na |  |  | 137 – 145 mmol/L |
| K |  |  | 3.5 – 5.0 mmol/L |
| Cl |  |  | 98 – 107 mmol/L |
| HCO3 |  |  | 22-26 mmol/L |
| Urea |  |  | 2.5 – 6.1 mmol/L |
| Creat |  |  | 62 – 106 umol/L |
| GFR Est |  |  | > 60 ml/min |
| Glucose - Random |  |  | 3.0 – 11.0 mmol/L |
| Lactate |  |  | 0.9 – 1.8 mmol/L |
| CK |  |  | 5 – 130 U/L |
| Troponin |  |  | <0.03 mcg/L |
| **Coags** |  |  |  |
| INR |  |  | 0.9 – 1.2 |
| PTT |  |  | 28 – 38 s |
| **ABGs** |
| **Arterial** |
| pH |  |  | 7.35- 7.45 |
| pCO2 |  |  | 35 – 45 mmHg |
| PO2 |  |  | 80-100 mmHg |
| BE |  |  | -2.0 to +2.0 mmol/L |
| HCO3 |  |  | 22 – 26 mmol/L |
| O2 Sat |  |  | 95 – 100% |

**EKGs – click** [here](https://extranet.interiorhealth.ca/IHUBCFaculty/Diagnostics/Forms/AllItems.aspx?RootFolder=%25252FIHUBCFaculty%25252FDiagnostics%25252FECGs&View=%25257bFD97E2FE-FD01-433F-B9CB-D75A4195924E%25257d) **or paste**