WELCOME TO THIS EMS ECHO SESSION

Presented at the 11th EMS ECHO Session

Electrolytes in Emergencies

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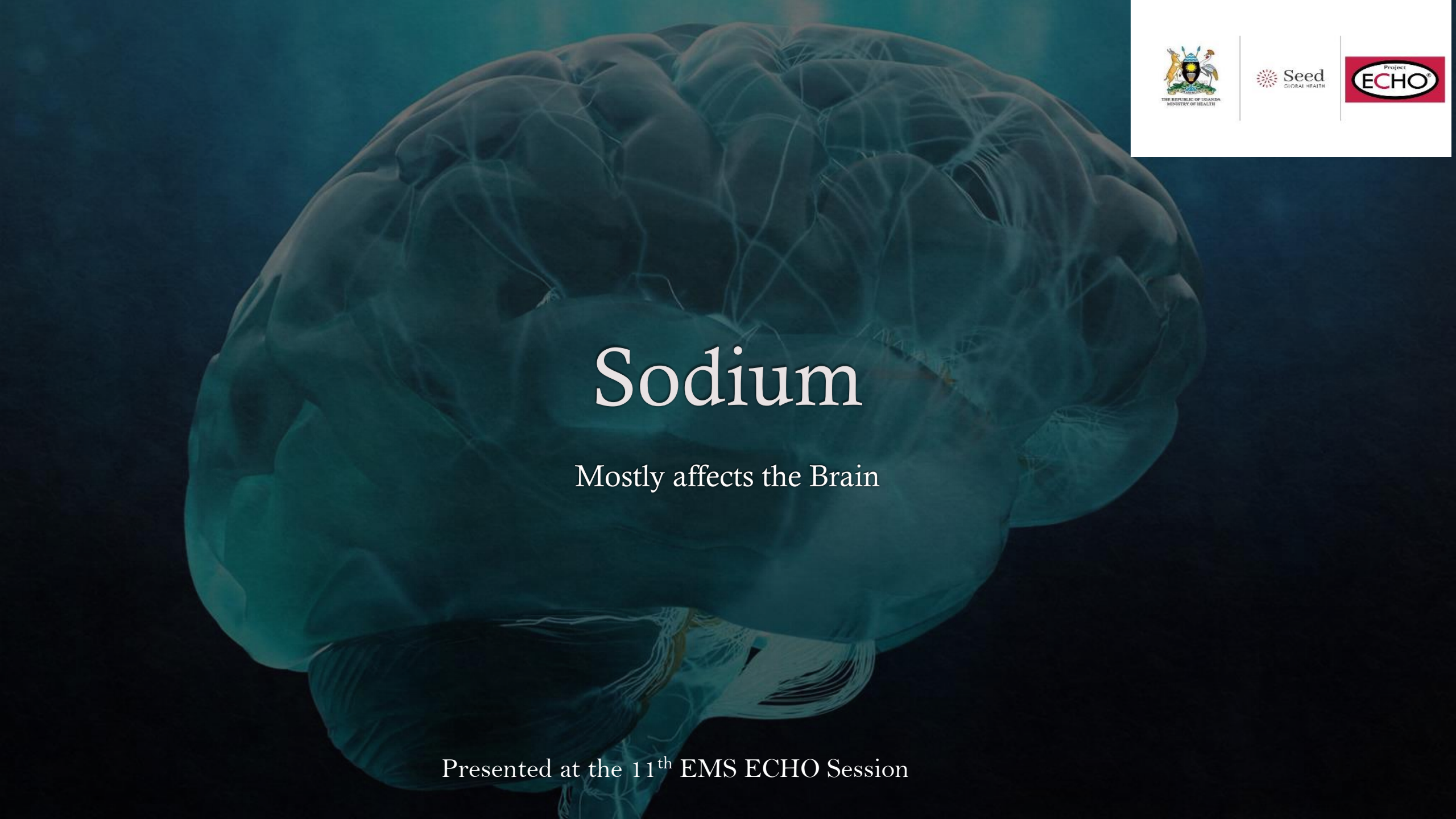
Major Electrolytes

Na+ 135 – 145 mmol/L

K+ 3.5 – 5.0 mmol/L

Cl- 95 – 108 mmol/L



Sodium

Mostly affects the Brain

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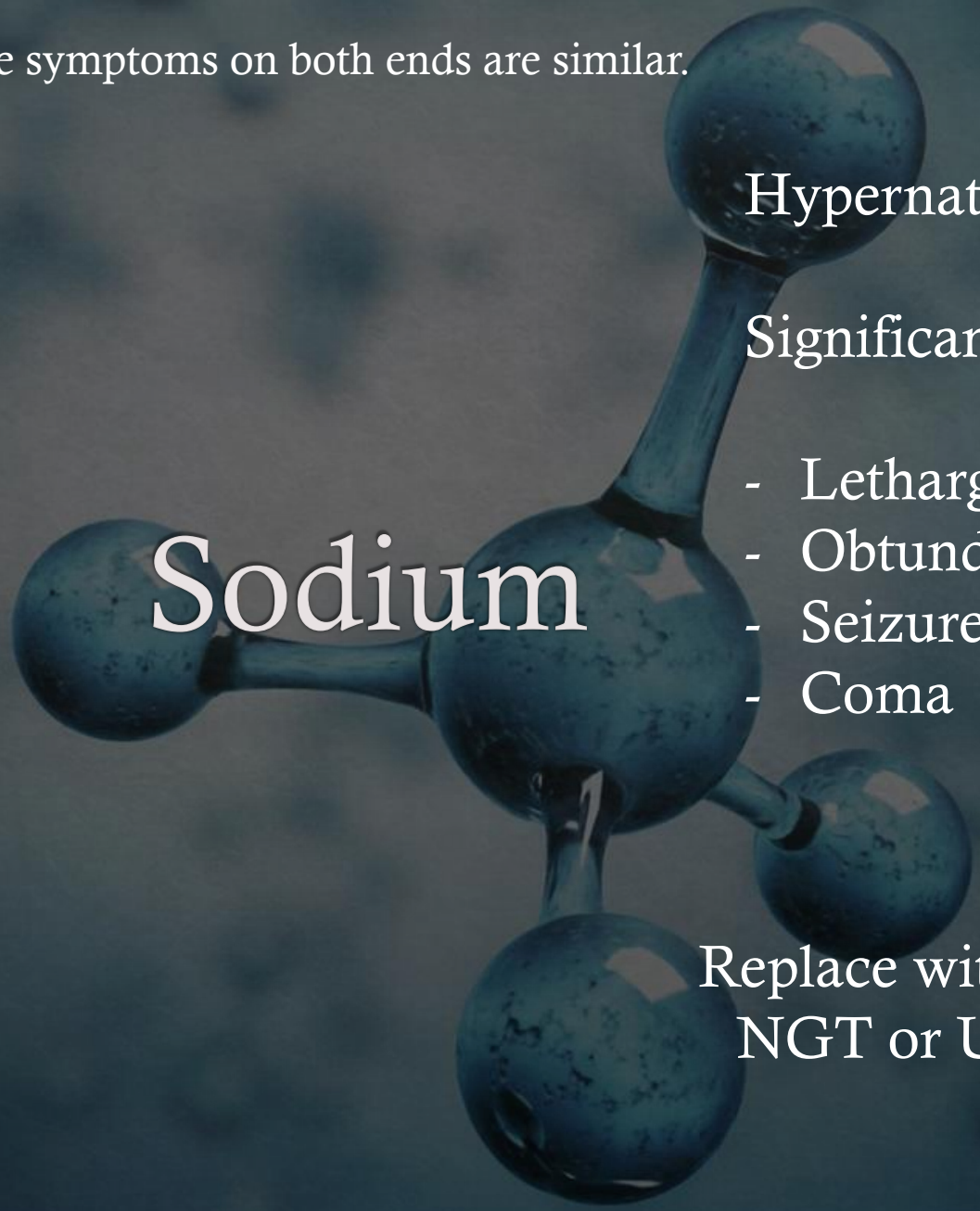
The symptoms on both ends are similar.

Sodium



Hyponatremia

Significant symptoms <120

- Lethargy
- Obtundation
- Seizures
- Coma

Replace with 3% NaCl 100ml over 20min - if Neurological symptoms present
Repeat twice if symptoms persist

Hypernatremia

Significant symptoms ≥ 160

- Lethargy
- Obtundation
- Seizures
- Coma

Replace with Free Water via NGT or Use IV D5 route

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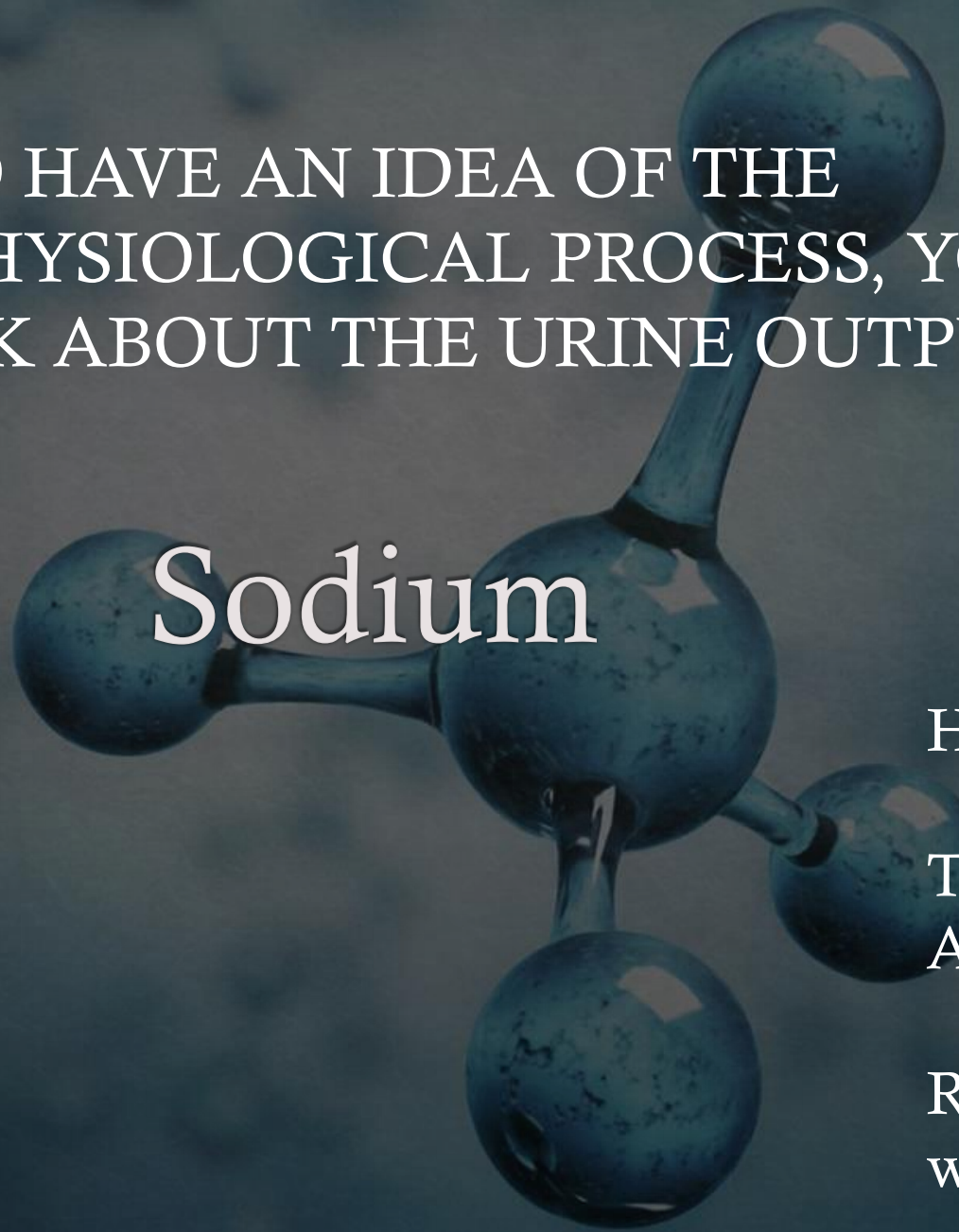
TO HAVE AN IDEA OF THE PATHOPHYSIOLOGICAL PROCESS, YOU MUST ASK ABOUT THE URINE OUTPUT?

Sodium



Hyponatremia with Low urine output - Water Retention

- Consider diuresis

Hyponatremia with high uop – Increased losses

Hypernatremia

Think of Losses ALWAYS

Replace with free water

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Potassium

Mostly affects the Heart

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Potassium

Critical Values ≤2.5 or ≥6.5

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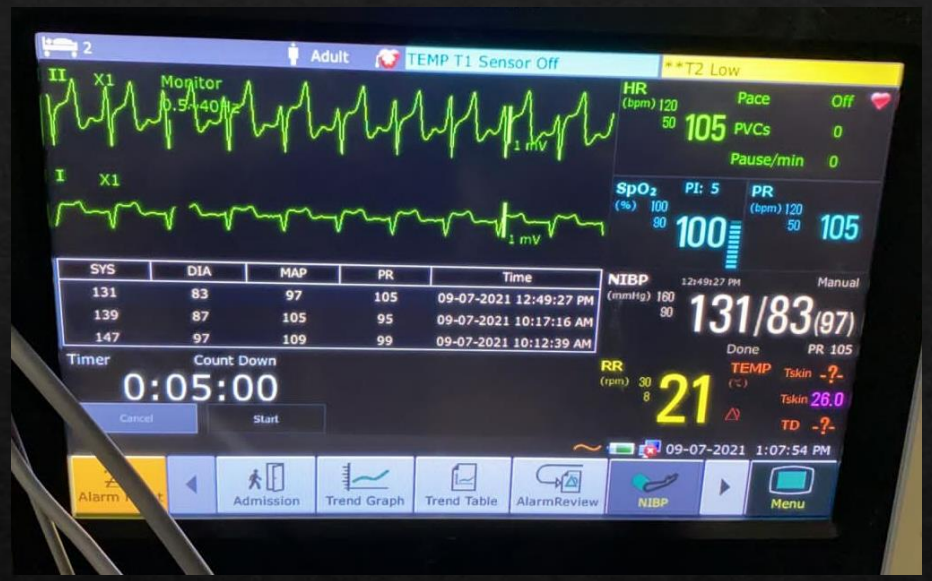
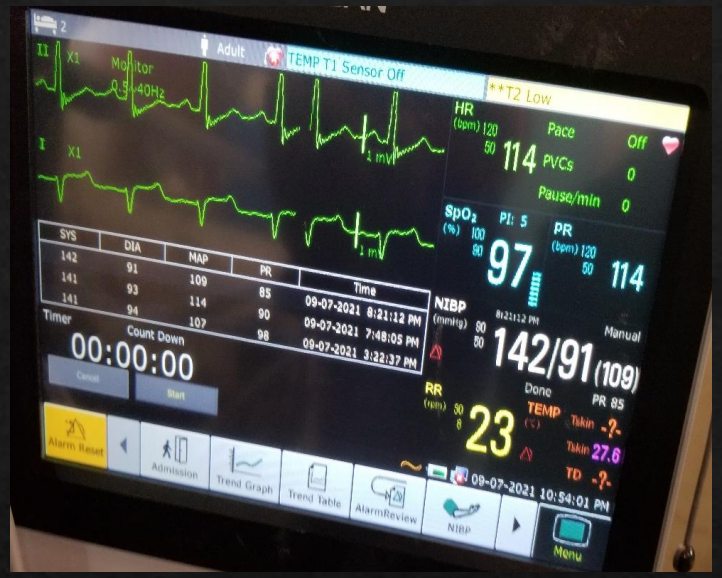
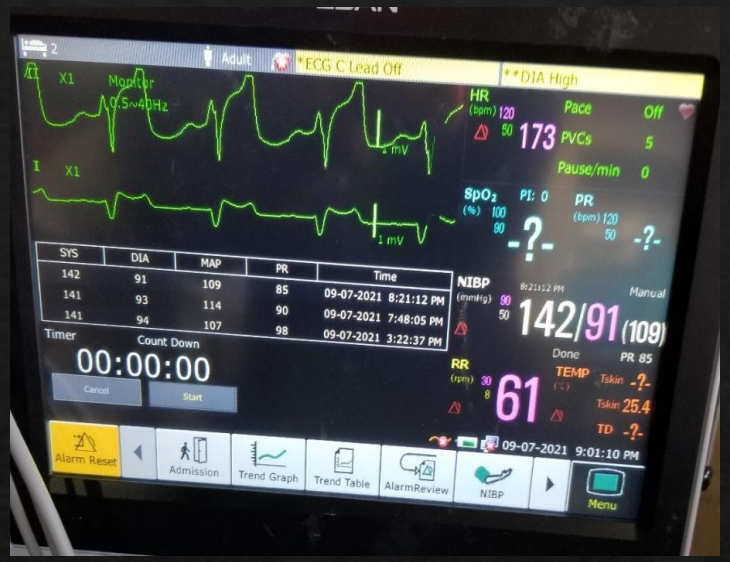
Treamtent of Hypokalemia

- Replacement with IV KCl under ECG monitoring
  - Requires deficit calculation
- Sometimes IV MgSO4 50% is added







Hyperkalemia

- Critical value ≥6.5
- BRADYCARDIA is common. Tall-tented T waves too.
- Kidney disease is a common cause
- Blood transfusion

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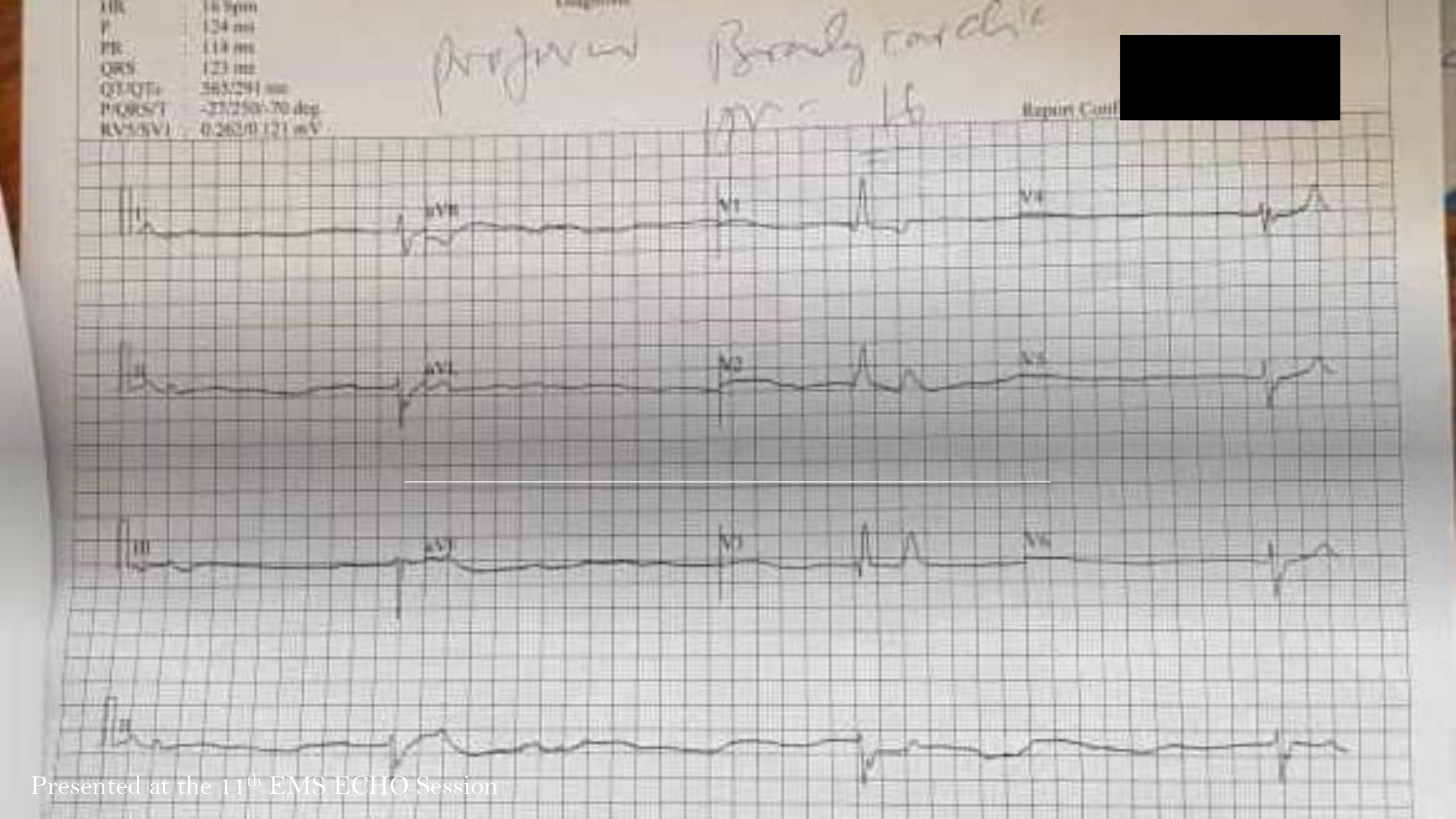
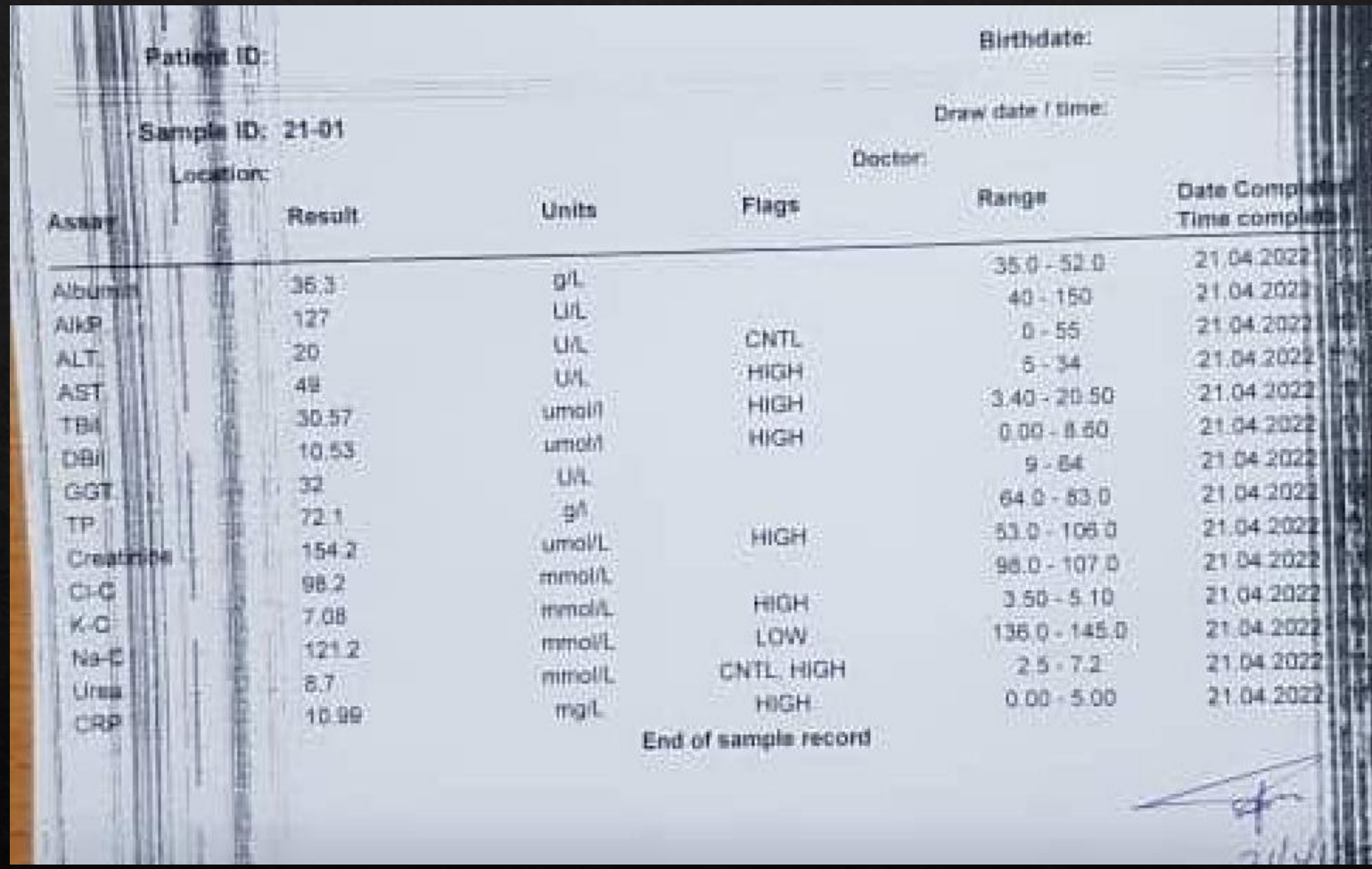
Treatment of Hyperkalemia

- Stabilize Mycocardium IMMEDIATELY
  - IV Calcium Chloride 10% or IV Calcium gluconate 10% over 5min
- Push K+ back into cells
  - Insulin 10IU/d50 50ml over 30min
  - IV NaHCO3 8.4% 0.5-1ml/kg
  - Neb Salbutamol 10-20mg
- Flush out K+ from blood
  - IV Lasix bolus
  - Dialysis
- Reduce K+ Absorption from the gut
  - Kayexalate PO


HR 165bpm
P 134 ms
PR 118 ms
QRS 123 ms
QT/QTc 383/591 ms
P/QRS/T -23/250/-70 deg
RV5/SV1 0.262/0.121 mV
Rapid Conf
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

Case discussion

- A 78Y/F with HTN on amlodpine and digoxin was admitted due to DIB, chest pain and cough for of one day Duration . Significant past history of RBBB
- Vitals: HR 45bpm, SPO2 79%, BP 105/58 , GCS 15/15
- On oxygen supplementation with NP at 5L/min SPO2 increased to 94%
- 16 hrs later during Physician review at the emergency her GCS had dropped to 12/15 , BP 80/unrecordable , HR 27 bpm, RR 22. ECG and ECHO had already been done



Patient ID:
Birthdate:
Sample ID: 21-01
Draw date / time:
Location:
Doctor:

Assay	Result	Units	Flags	Range	Date Comp / Time comp
Albumin	36.3	g/L		35.0 - 52.0	21.04.2022
AlkP	127	U/L		40 - 150	21.04.2022
ALT	20	U/L	CNTL	0 - 55	21.04.2022
AST	48	U/L	HIGH	5 - 34	21.04.2022
TBil	30.57	umol/l	HIGH	3.40 - 20.50	21.04.2022
DBil	10.53	umol/l	HIGH	0.00 - 8.60	21.04.2022
GGT	32	U/L		9 - 64	21.04.2022
TP	72.1	g/l		64.0 - 83.0	21.04.2022
Creatinine	154.2	umol/L	HIGH	53.0 - 106.0	21.04.2022
Cl-C	98.2	mmol/L		98.0 - 107.0	21.04.2022
K-C	7.08	mmol/L	HIGH	3.50 - 5.10	21.04.2022
Na-C	121.2	mmol/L	LOW	136.0 - 145.0	21.04.2022
Urea	8.7	mmol/L	CNTL, HIGH	2.5 - 7.2	21.04.2022
CRP	10.99	mg/L	HIGH	0.00 - 5.00	21.04.2022

End of sample record

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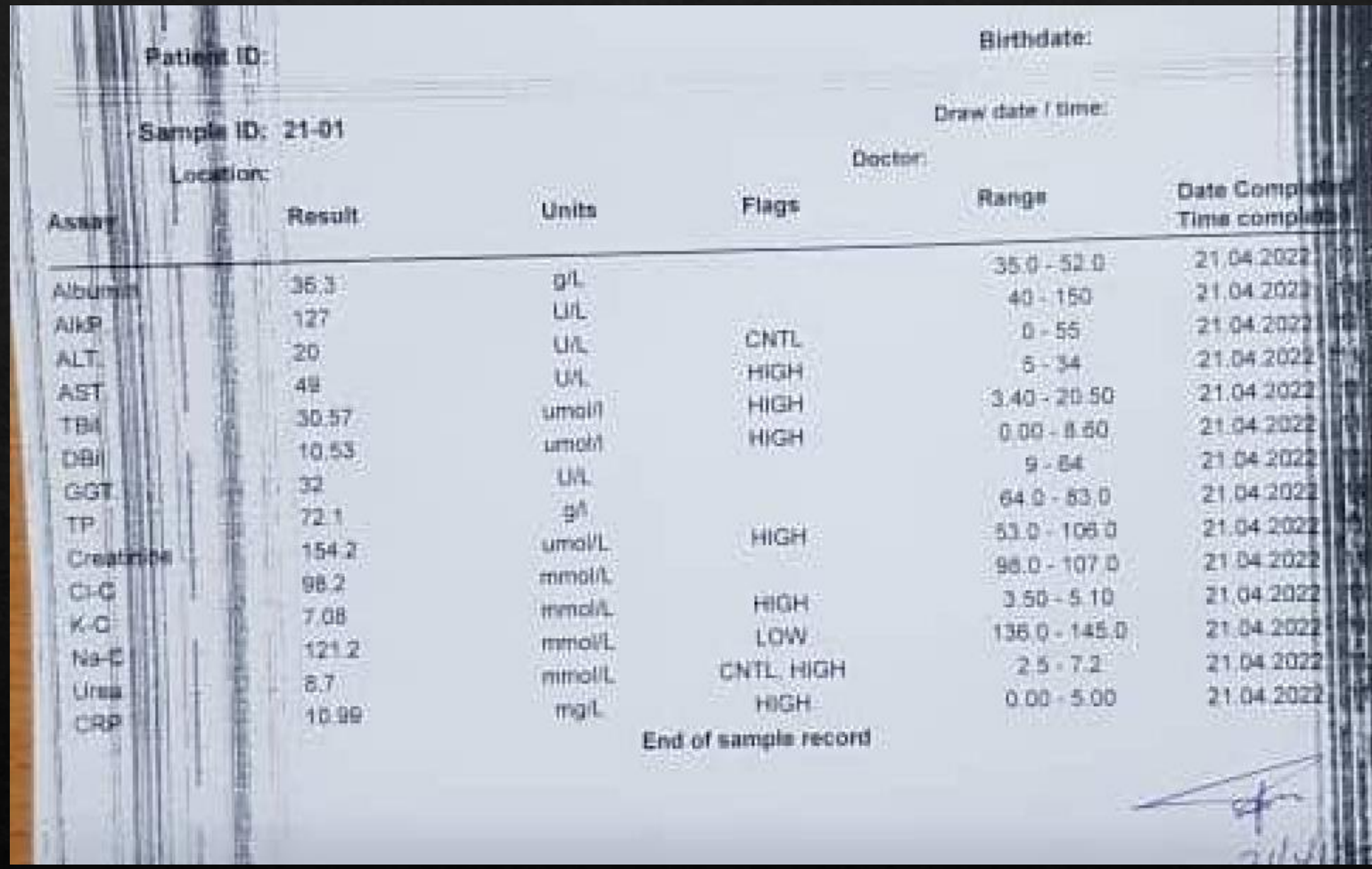
Case discussion

- What electrolyte abnormalities do you see?
- Are the abnormalities consistent with clinical presentation?
- How should we treat the electrolyte abnormalities?



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