

### 3. Hyperammonaemia

<b>Ward</b>	Medical ward	<b>D.O.B/Age</b>	16/07/1950
<b>Consultant</b>			

Ammonia **251 H**  
 umol/L [11 – 35]

Specimen request form has hepatic encephalopathy written as the diagnosis/reason for request.

Unable to obtain.

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Sodium	143	mmol/L	[136 – 145]
Potassium	4.4	mmol/L	[3.5 – 5.1]
Urea	<b>28.1 H</b>	mmol/L	[2.1 – 7.1]
Creatinine	<b>359 H</b>	umol/L	[64 – 104]
eGFR (MDRD formula)	15	mL/min/1.73 m2	
INR		2.77	
Total bilirubin	<b>54 H</b>	umol/L	[5 – 21]
Conjugated bilirubin (DBil)		<b>36 H</b>	umol/L
			[0 – 3]
Alanine transaminase (ALT)		34	U/L
			[10 – 40]
Aspartate transaminase (AST)		<b>113 H</b>	U/L [15 – 40]
Alkaline phosphatase (ALP)		105	U/L
			[53 – 128]
Gamma-glutamyl transferase (GGT)		33	
		U/L	<68

Unremarkable CMP. Elevated WCC of 11 otherwise normal FBC. Further investigations not requested on Trakcare. ?patient discharge vs transfer vs demise

?Fulminant liver cirrhosis

?End stage liver disease

Most ammonia dealt with by the liver is produced by gut organisms. Protein degradation forms a smaller contribution. Ammonia in high concentrations is neurotoxic. It is detoxified by the liver to urea via means of the urea cycle, and urea is subsequently excreted in the urine. Pre-analytical factors including a delay in sample reception and sample not transported on ice may cause raised ammonia results. Other pre-analytical factors to consider include:

- No smoking by the person collecting the sample or the patient the sample is being collected from.
- Tourniquet should not be applied tightly or for too long (no tourniquet application ideal).
- Collected in an EDTA container.
- Must reach the lab within 15 to 20 minutes of being collected on ice.
- Patient should be fasted.

This patient has mildly deranged liver function tests and a prolonged INR suggesting liver disease which may be contributing to the hyperammonaemia. The unremarkable elevation in the liver enzymes may be due to a decrease of viable hepatocytes.