LIVER DEATH ENZYMES (transaminases) Indicate liver parenchyma is involved. LOOK AT WHICH IS THE HIGHEST!

**AST = everywhere** Aspartate aminotransferase
= when AST is the highest, its **ALCOHOLIC LIVER DISEASE**

**ALT = LIVER ONLY** Alanine aminotransferase
= when ALT is the highest, its **VIRAL HEPATITIS** also glandular fever,

**CHOLESTASIS**

**AP = everywhere** (bone, kidney, intestines)
Alkaline Phosphatase
THE MARKER OF POOR BILE FLOW

**GGT = LIVER ONLY:**
Gamma Glutamyl Transpeptidase
Gets elevated in practically all types of liver disease

**LDH = in every tissue**
Increased levels are found in myocardial infarction, liver disease, haemolysis, ineffective erythropoiesis, some malignancies (esp non-Hodgkin’s lymphoma), muscle disease etc...

**BILIRUBIN:** is there too much of it or is it not being disposed of?
i.e ➔ HAEMOLYSIS or LIVER DISEASE / CHOLESTASIS ➔ bilirubin, GGT and AP = cholestasis
Levels greater than 3 mg/dL are usually noticeable as jaundice. Because only conjugated bilirubin appears in urine, the finding of bilirubinuria also implies liver disease

**ALBUMIN:**
A true indicator of liver function: a gauge of its failure, a herald of impending complications.
The half-life of serum albumin normally is 19–21 days,
Thus ➔ shows up **CHRONIC PROBLEMS**
Albumin levels may be diminished due to poor nutritional status, severe illness with protein catabolism, nephrosis, and malabsorption

**Prothrombin Time:** vitamin K factors (2, 7, 9, 10)
May be diminished due to malabsorption
Half life of factors is 1-2 days,
Thus ➔ show up **ACUTE PROBLEMS**

WEIRDO TESTS
Ceruloplasmin for Wilson’s disease (presents as psychiatric problem)
Blood Ammonia tests for hepatic encephalopathy (but EEG is diagnostic!)
Alpha-Fetoprotein is a sensitive marker for hepatocellular carcinoma
Alpha-1 Antitrypsin deficiency of which causes hepatitis and cirrhosis
Anti-mitochondrial Antibody: if you suspect PRIMARY BILIARY CIRRHOSIS
(only other elevated enzyme = AP)