Repeat liver blood tests with split bilirubin and FBC

Consider: reticulocyte and LDH if haemolysis

Most commonly due to Gilbert’s syndrome (unconjugated hyperbilirubinaemia)

Less commonly due to haemolysis (consider reticulocyte count, LDH, haptoglobin)

**Liver blood tests including AST, GGT &FBC +**

**Ultrasound +**

**Liver aetiology screen** (autoantibodies & immunoglobulins, Ferritin & Transferrin saturation)

**NAFLD Fibrosis algorithm**

ERS for advice & guidance

or

Refer for further diagnostic evaluation

ALT & AST remain abnormal

**Response to Abnormal Liver Blood Tests**

(Based on BSG guidance published November 2017:

Newsome, PN et al. (2017). Guidelines on the management of abnormal liver blood tests. *British Society of Gastroenterology.* [online]. Available at <https://www.bsg.org.uk/resource/guidelines-on-the-management-of-abnormal-liver-blood-tests.html> )

Refer for further specialist management/ investigation as defined by tests

or

ERS for advice & guidance

Normal USS and negative liver aetiology screen

ALP & GGT remain abnormal

Elevated ALK PHOS? Consider possible bone/kidney origin

Suspected alcohol risk

**ARLD algorithm**

**Urgent Referral**

Urgent ultrasound and/or consider urgent referral to secondary care or admission

**Synthetic failure:** Jaundice, low albumin, prolonged INR

**OR**

**Suspected malignancy:** weight loss, marked cholestasis

Abnormal USS and/or positive liver aetiology screen

Isolated **Cholestatic** liver enzymes

Sustained ↑ ALP & GGT

**Liver blood tests including AST, GGT &FBC +**

**Ultrasound +**

**Liver aetiology screen** (Hepatitis B/C, autoantibodies & immunoglobulins, Ferritin & Transferrin saturation, Hba1c)

**History & Clinical Pattern Recognition**

Alcohol, metabolic syndrome, BMI, drug history, viral hepatitis, family history, comorbidities

Normal USS Negative liver aetiology screen No NAFLD risk-factors

**NAFLD**

T2DM

BMI > 25

Dyslipidaemia

Hypertension

**Hepatitic** liver enzymes

Sustained ↑ ALT or AST

**Gilbert’s Syndrome** confirmed then inform patient and provide information

**Isolated raised Bilirubin** with otherwise normal liver blood tests

**SUPPORTING NOTES TO ABNORMAL LIVER BLOOD TEST PATHWAY**

# **Key Messages**

* Liver Disease is under diagnosed;
* It’s increasing and 3rd most common cause of premature death;
* Traditional LFT’s do not measure Liver Function;
* Abnormal LFTs do need investigating;
* Normal LFTs DO NOT exclude advanced liver disease - BE SUSPICIOUS
* Most patients are asymptomatic until the end stages. “All roads (causes) lead to cirrhosis”
* INTERVENE: 90% is preventable (long lead time – 10yrs) but most patients are asymptomatic. (Commonest causes are ALL preventable - NAFLD (now the most common), alcohol (with the worst disease trajectory) and Viral.

# **Pathway Aim**

* To help the clinician to identify at risk patients (ALCOHOL, FAT, VIRAL), prevent disease, allow earlier diagnosis/staging Liver conditions and make targeted interventions to reduce disease burden and lost early adult life years.
* To improve patient outcomes through education, understanding and self-management and through behavioral/lifestyle advice and treatment/follow up where appropriate.
* REFER as per Pathway:
	+ Emergency/D/w duty if synthetic failure or > 10xNormal
	+ TWR according to Guidelines
	+ Repeat Bloods within few days if >5x normal or weeks if <5xNormal, with further Liver Screen/CVS Bloods and appropriately timed USS.
	+ eRS advice/guidance or refer onwards Urgent/Routine

# **References/Tools**

NICE:

* [Cirrhosis in over 16s: assessment and management (NG50).](https://www.nice.org.uk/guidance/ng50)
* [Non-alcoholic fatty liver disease (NAFLD): assessment and management (NG49](https://www.nice.org.uk/guidance/ng49)).
* [Liver Disease (QS152).](https://www.nice.org.uk/guidance/qs152)

BSG:

* [‘Guidelines on the management of abnormal liver blood tests’, (2017).](https://www.bsg.org.uk/resource/guidelines-on-the-management-of-abnormal-liver-blood-tests.html)

RCGP:

* <http://www.rcgp.org.uk/clinical-and-research/resources/toolkits/liver-disease-toolkit.aspx>

# **Liver Disease**

* Hx/Ex: - asymptomatic to advanced disease (malaise, nausea, pruritus, LoA, wt loss, bruising, RUQ pain, jaundice, peripheral oedema, ascites). Assess signs/BMI/ decompensation.
* Range from acute insult with some reversibility in function/reserve ——> progressive cirrhosis.
* Significant increased risk progression if 2 of Risk factors: Hep B/C, Alcohol XS (months only), Obesity/Type2 DM, Other liver conditions, Medications (e.g. MTX, Tamoxifen, Amiodarone, Antiepileptic’s, Statin - only stop latter if 2x^ in 3months).
* Identify abnormal LFT, estimate fibrosis risk through FIB4 and refer if appropriate for consideration of Fibroscan elastography/ELF (when available) as a proxy measure of fibrosis/cirrhosis.

# **Cirrhosis**

* REFER HEPATOLOGY: for MELD Score (model for end stage disease) rate progression, F/up surveillance for complications e.g. HCC/Varices/prophylactic antibiotics if cirrhosis/ascites, shunts.
* Complications: Portal HT, varices, coagulopathy, HCC, encephalopathy.
* N.B. Low sodium associated with poor prognosis.

**NAFLD**

* Spectrum. 20% population prevalence of NAFLD (FAT storage =Hepatic Steatosis) , 2% with progressive inflammation to NASH (Steato-Hepatitis) and 12% of these with advanced irreversible fibrosis and then Cirrhosis.
* Diagnosed with abnormal USS AND exclusion other causes.
* Associated metabolic syndrome. (90% obese DM patients have NAFLD).
* SENTINEL condition i.e. consider poor poly-outcome e.g. CV, DM, Cancer.
* Rx Refer for Intensive diet/exercise/alcohol/smoking cessation, Co-factor management and QRisk.
* CVD commonest cause of death for this cohort.
* N.B. NO pharmacological treatment. Recommend vaccinate against Hep A/B.
* N.B. 38% of obese kids have NAFLD.
* REFER if abnormal USS/LFT/high scores adults and children and recommend 2 yrly USS in children with type2 DM.

# **Alcohol**

* Increasing prevalence and increasing Mortality Rate. Associated socio-economic/deprivation. Wider complications e.g. CVS, Neuropathy, Dementia.
* CONSIDER IN PRESENTATIONS e.g. Risk Taking, Forensic, Absenteeism, Accidents, Memory, Mental Health, CVS, ED, Gout, Acne, Cancers……
* FAST screening (Freq: often 8+Male/6+Female, Amnesia, Social let down/ responsibilities, Told by others) or 3+ drinks and frequency. N.B. Poor self-assessment accuracy.
* Harmful Drinking (24% population prev.) —> Dependence (6% pop prev.)
* Brief Intervention: FRAMES: Feedback personal risk, Responsibility personally, Advice/Abstain, Menu (offer alternative/targeted support), Empathy (explore their reasons for change), Self-efficacy (support their belief in their ability to change).
* AFLD N.B. 2-3 months of XS drinking causes damage which can reverse within 6 week abstain.
* AUDIT C, Bloods for Baseline, Consider Fibroscan if risk significant.
* Rx: Mild (no assistance needed with withdrawal), Moderate (Community withdrawal), Severe (Assisted withdrawal, Acamprosate, Thiamine).
* Withdrawal advice id sx of chemical dependence - expect shake/sweat/ diarrhoea, temporary sleep change. Must eat and drink regularly.

# **Hep B**

* Risk Factors: Migrant (Africa, Asia, Mid-East), Vertical transmission/Blood: blood (e.g. IVDU, Tattoos, close contacts)/Mucosal e.g. sex workers.
* 90% acute asx and self-resolve (1%fulminant). 5-10% Chronic Hep B (HBSAg+ at 6m).
* Incubation 6wk-6m!! Repeat testing later to check.
* Diagnose HBsAg+ (virus present acute or chronic, HBeAg + chronic infection. N.B.

^Risk Cirrhosis/HCC depends on individual host and viral factors).

* N.B AntiHepBsABody shows recovered or vaccinated -> Lifelong Immunity. AntiHepBCore Abody + past or current infection!
* Counsel: +result share with Contacts, Family and Secondary Care.
* Mx: Immunise Hep A, Annual Flu, Reduce alcohol/weight, Reduce risk co-infection.
* REFER Hepatology +/- Antiviral Treatment/Intreferon.
* N.B. HepD superadded infection assoc ^fulminant risk/worse progression.

# **Primary Care - CONSIDER:**

* **Record alcohol** (1. Screen at risk 2. routine and opportunistic checks and if relevant conditions) AUDIT-C. If > Recommended:
* **Code/register**of those identified as XS intake/heavy or dependent, brief intervention, refer/decline in depth alcohol/lifestyle support, further lx as appropriate pathway. RECALL!
* **Identify those at risk of chronic viral B/C**
* Search/Identify (e.g. IVDU, Transfusion, Occupation, and Ethnicity/Travel).
* Test - IMMUNISE/ Refer.
* **HEP B:**
* Immunise those at risk of transmission e.g. CLD, CKD, Contacts, IVDU, Travel, frequent partner change.
* HB+ve: annual flu vaccination, check Hep A immunity, reduce other RF e.g. weight/etoh.
* **NAFLD**
* CODE ^BMI, Brief intervention, Refer/decline exercise/diet? BARIATRIC, consider Risk.
* CHILD Liver Disease/Obesity.
* **Liver diseases** e.g. PBC, Hemochromatosis

**Extra**

* Remember other causes ^ALT e.g. non-hepatic Thyroid, MSK, Coeliac.
* ALT<3x N and normal Ix Liver screen: no action needed – monitor.
* ALP^ and normal GGT: consider Vit D/Bone/Preg (N.B. 3rd Trimester associated with poor prognosis)
* ALP^ <2x normal and normal Ix: Incidental.
* ALP^ and GGT <100 and other Ix normal: Incidental.