

Fatty Liver – NAFLD – NASH

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Also Read: Chronic Liver Disease Signs And Symptoms: Gastroenterologist Tips To Tackle Them

Symptoms of Fatty Liver: To start with, how do we know what are the alarming signs of fatty liver disease? The important thing is that there are no symptoms of the fatty liver at all.

North American Fat and Lazy Disease (NAFLD)




Era of Hips and Waists

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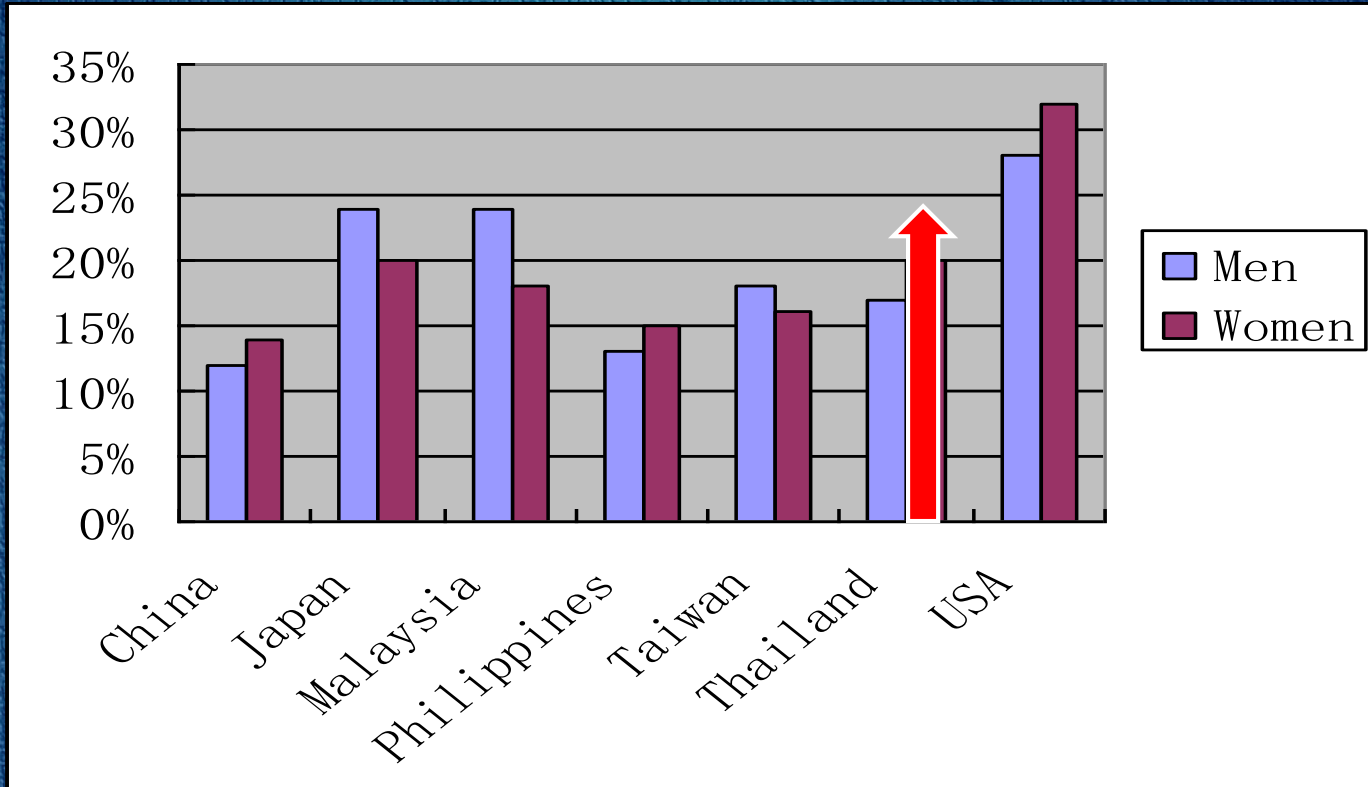


Increasing Importance of NAFLD

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- ▶ 1979 8 papers published
 - ▶ 1998 First NIH conference
 - ▶ 1999 First Clinical Trials
 - ▶ 2002 > papers published
 - ▶ 2004 60 First book on NAFLD/NASH
 - ▶ 2005 > 354 papers published
 - ▶ Today > 1000 papers published

Prevalence Rates of Obesity in Asia



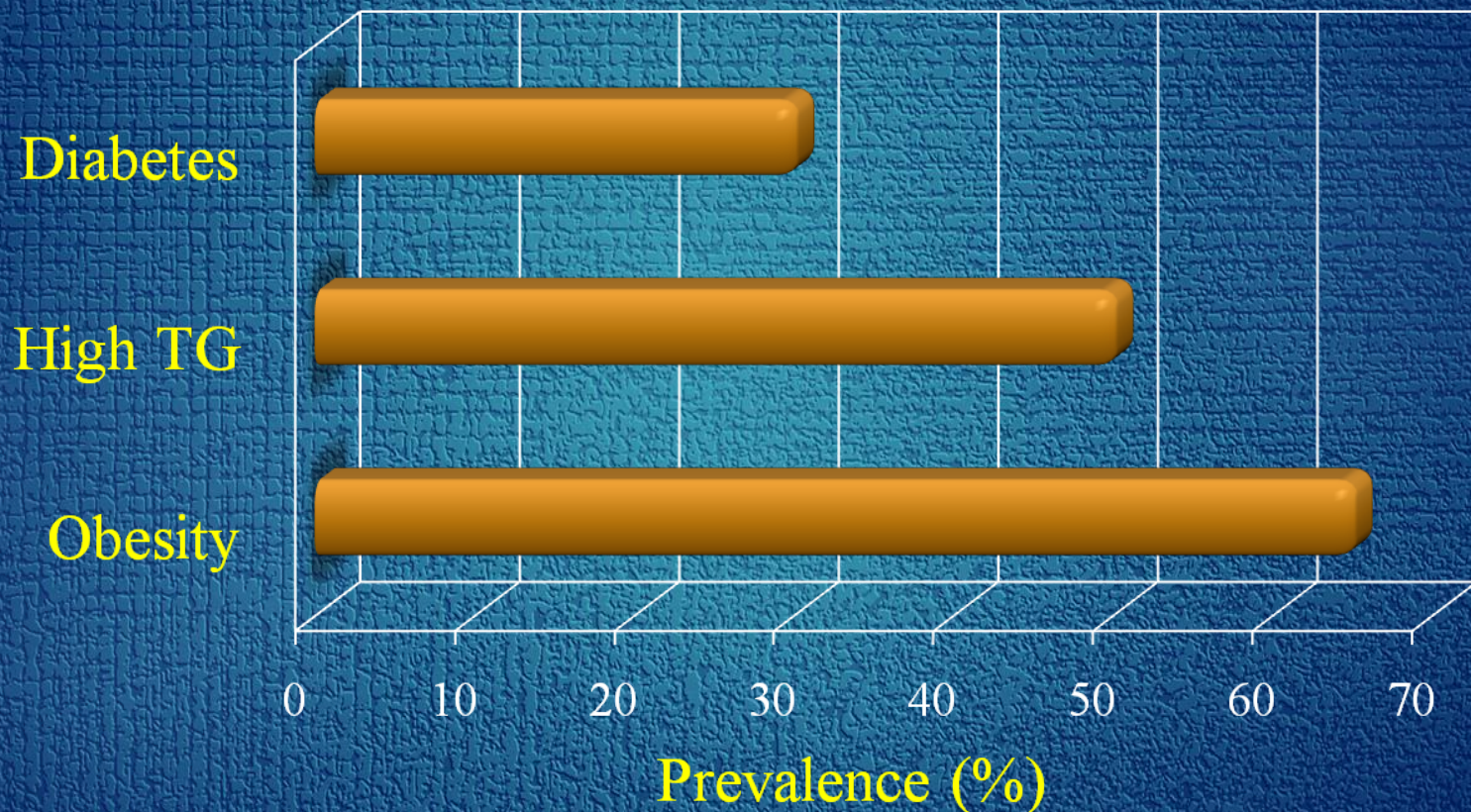
Demographic Pattern

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- ▶ 75% patients of NAFLD/NASH are women
- ▶ All ages are affected – Risk of NASH ↑ with age
- ▶ Caucasians > Hispanics > Africans > Asians
- ▶ Indian Fatty Liver – BMI < 25, Non obese, ↑ WC
- ▶ OSAS increases NASH; Its Rx. Reduces NASH

The Risk Factors

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NAFLD to NASH – Risk Factors

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		DM or Obesity			
		No	Yes		
Age	< 45	0	4	< 1	SGOT/SGPT
		0	50	> 1	
	> 45	12	47	< 1	
		13	66	> 1	

Age

Obesity

T2DM

SGOT/SGPT

Number represents % of patients with
NAFLD on USG who had significant
fibrosis on biopsy

What Causes Fatty Liver ?

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- ▶ Alcohol
- ▶ Obesity, ↑ WC
- ▶ T2DM
- ▶ ↑ Triglycerides
- ▶ Medicines*, TPN
- ▶ Wilson's Disease
- ▶ α-1 Anti-trypsin ↓
- ▶ AI Hepatitis
- ▶ Hepatitis C
- ▶ Inherited syndromes

* MTX, Valp, Acetaminophen, TC, Tamoxifen, Nefedipine, Amiodarone, CCl₄

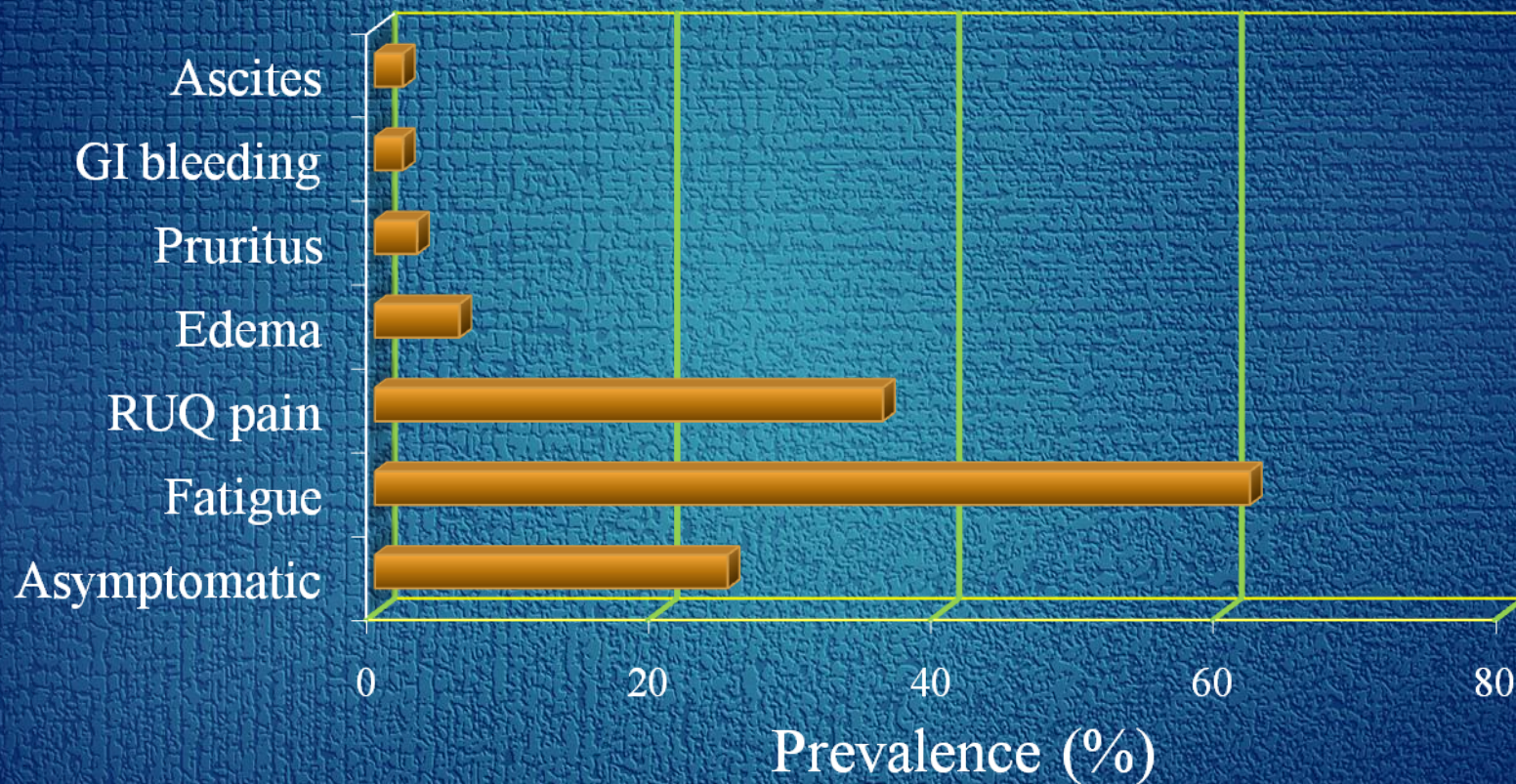
Clinical Presentation

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- ▶ Asymptomatic
- ▶ Routine blood tests
- ▶ ↑ Liver enzymes
- ▶ Enlarged Liver (1/3)
- ▶ RUQ periumb. Pain
- ▶ Fatigue. Malaise
- ▶ Anorexia, Nausea
- ▶ > 90% are obese
- ▶ USG e/o fatty liver
- ▶ Acanthosis Nigricans
- ▶ DM, HTN, Lipid abn.
- ▶ OSAS, Snoring

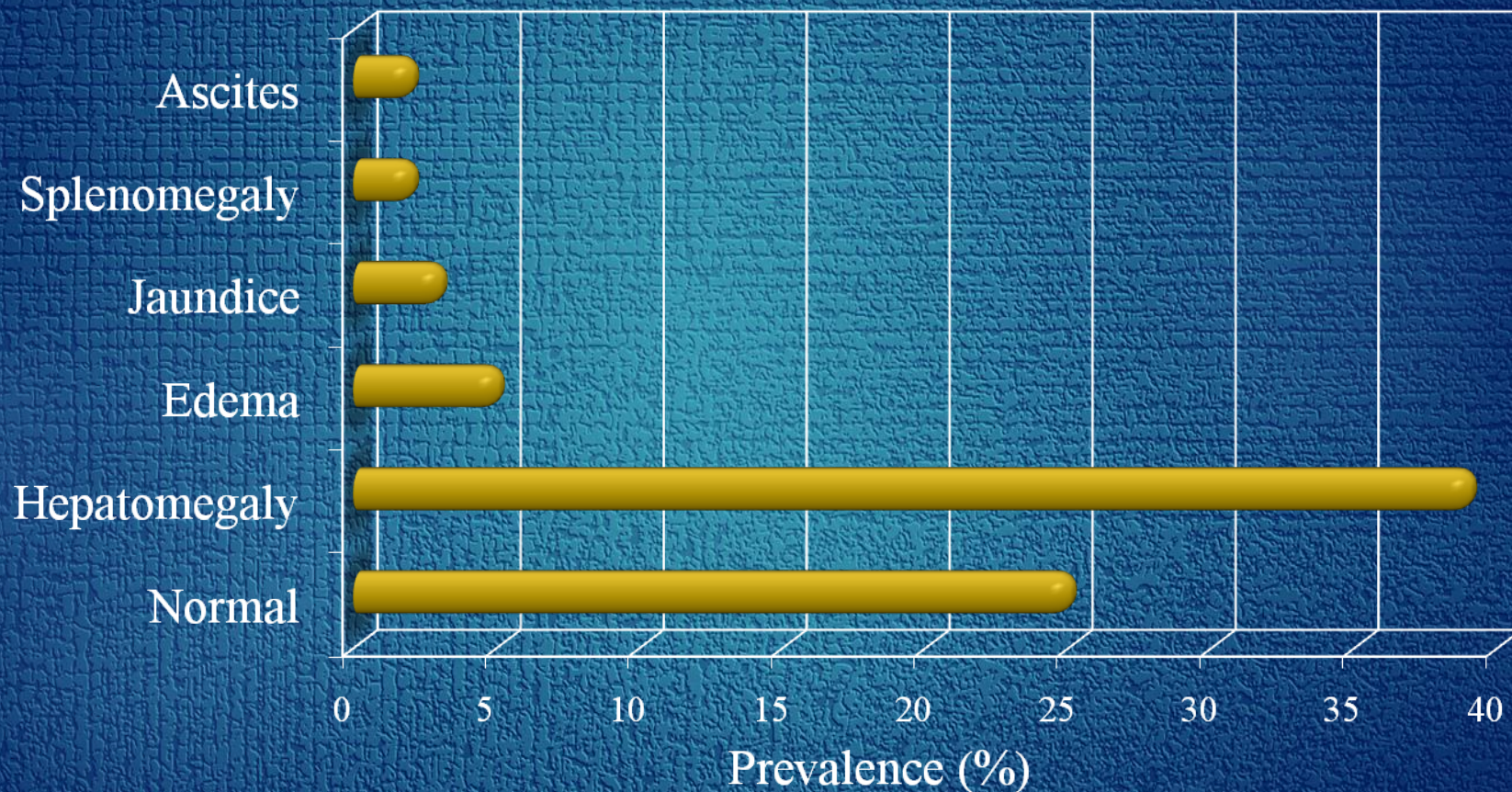
NAFLD – Symptoms

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NAFLD – Clinical Findings

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Take Home Points

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- ▶ It is the main cause of ↑ liver enzymes; Isn't that benign
- ▶ **Spectrum of disease – NAFLD – NASH – Cirrhosis - HCC**
- ▶ Insulin resistance, MS are the key pathogenic features
- ▶ **DM, TG, Non fatty abdominal obesity, increasing age**
- ▶ It is a marker of CV Risk. Rx. improve insulin sensitivity
- ▶ **Modify underlying metabolic risk factors – diet, exercise**
- ▶ Use Mayo scoring to predict NASH (fibrosis). No biopsy

What Tests to Order ?

- ▶ Ht, Wt, BMI, WC
- ▶ Blood Pressure
- ▶ OGTT – IR, DM
- ▶ Fasting Lipid Profile
- ▶ SB, SGPT, SGOT, AKP, GGT, Serum Proteins
- ▶ Hemogram complete
- ▶ USG Abdomen
- ▶ HCV, HBsAg, ANA
- ▶ Liver Biopsy, CT Abd
- ▶ F and PP C-peptide
- ▶ aPTT, PT, body fat

This Tests For

- Lipid Profile
- Glucose
- SGPT
- SGOT
- hs-CRP
- 5 minutes time
- Finger Prick

CHOLESTECH LDX® SYSTEM

Cholestech
LDX

[VIEW DEMO >](#)

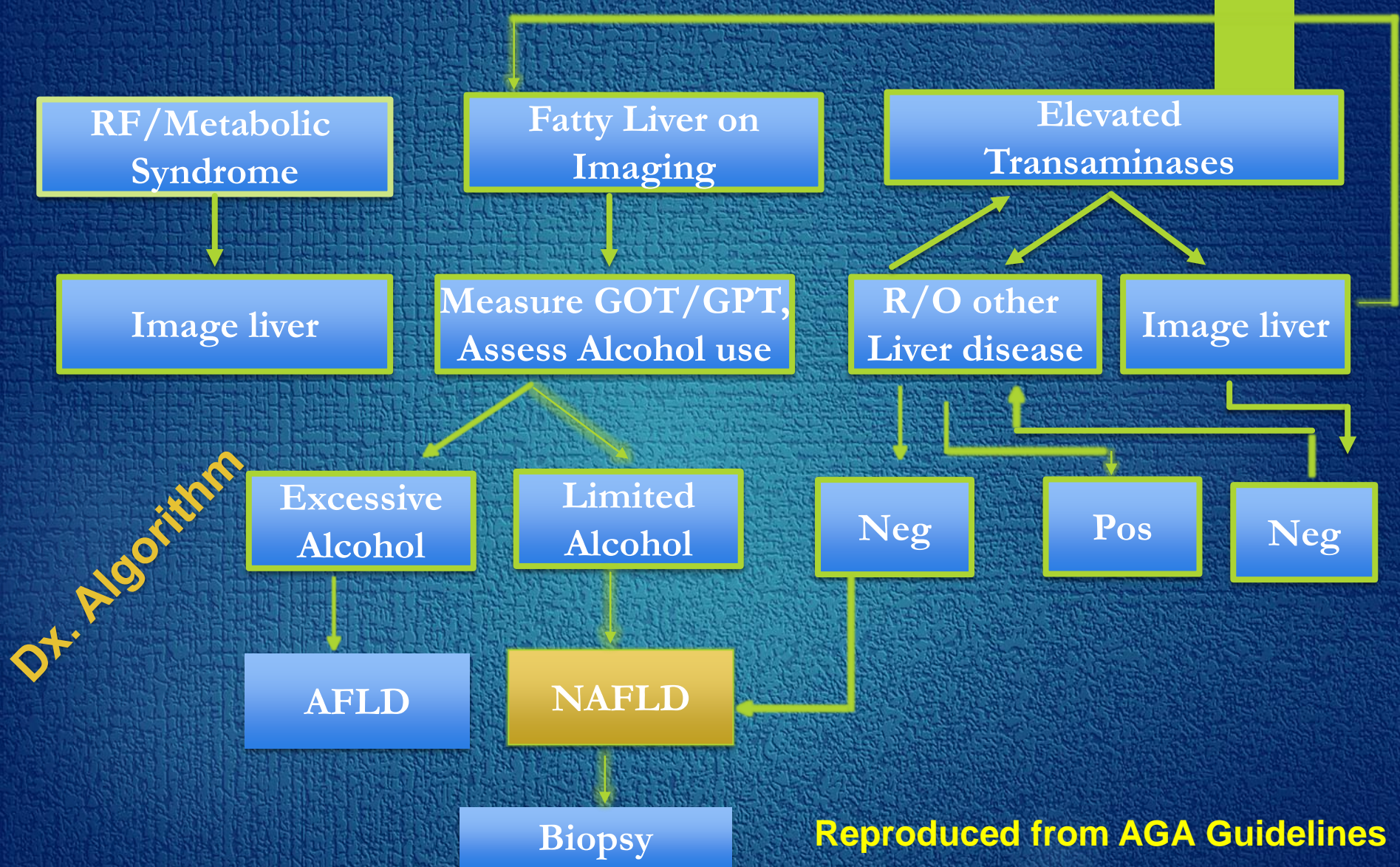


LDX SYSTEM TESTS >

- Lipid Profile•GLU
- Lipid Profile
- ALT•AST >
- hs-CRP >
- TC•HDL•GLU
- TC•HDL
- TC•GLU
- TC

The Cholestech LDX System brings a wealth of benefits to healthcare professionals and patients. The LDX System delivers the ability to measure a complete lipid profile and glucose, ALT, AST, and hs-CRP and it does it all in 5 minutes per test cassette (6 minutes for hs-CRP).

The accuracy, speed and broad menu of tests available for the Cholestech LDX make it an invaluable tool in the fight against heart disease, diabetes and metabolic syndrome. Best of all, the rapid results allow for immediate



Diagnosis of Fatty Liver

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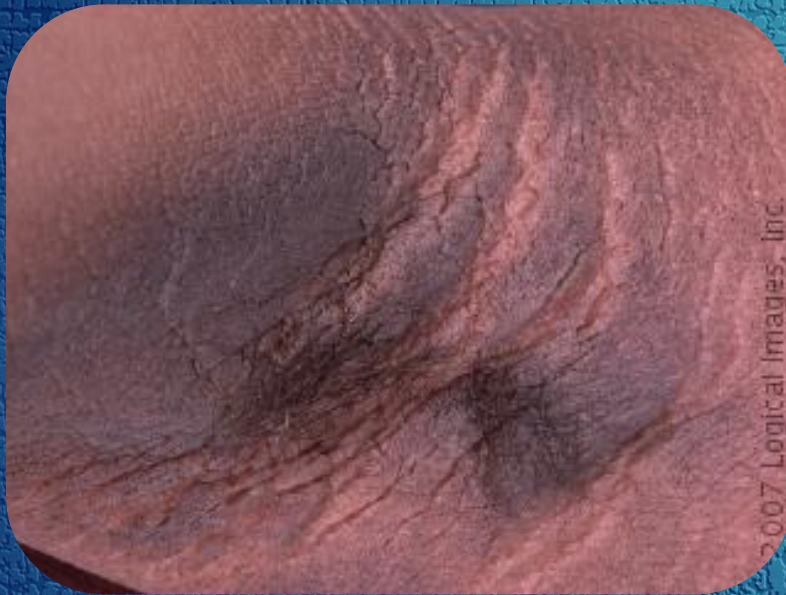
- ▶ USG is enough; CT if USG is not informative
- ▶ Imaging can detect > 33% fat on liver biopsy
- ▶ Cannot differentiate Steatosis from steatohepatitis
- ▶ Liver biopsy is usually not needed to diagnose fatty liver

Exclude Other Disease

- ▶ HBV – HBsAg, (HBV DNA)
- ▶ HCV – anti-HCV, (HCV RNA)
- ▶ Autoimmune hepatitis – ANA
- ▶ Alfa-1 anti-trypsin deficiency
- ▶ Wilson's disease
- ▶ Hepatic malignancy
- ▶ Hepatic infection; Biliary disease

Acanthosis Nigricans

Black Pigmentation - Axilla

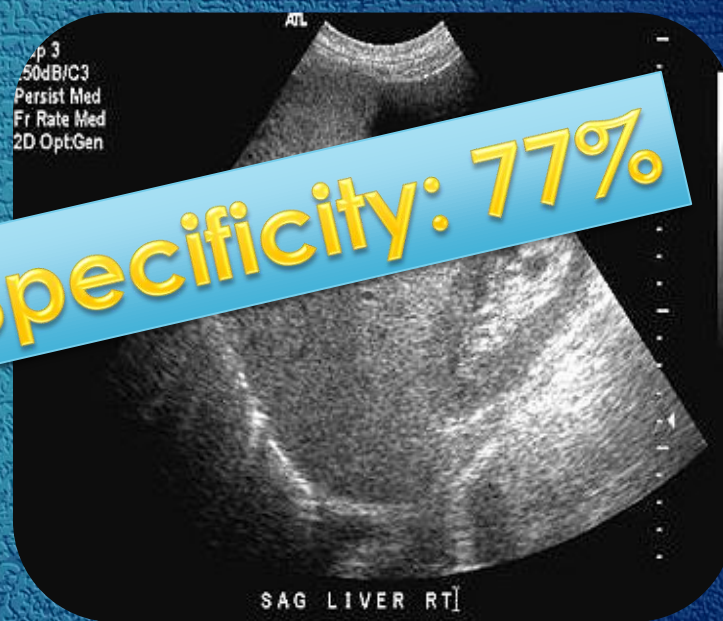


Black Pigmentation - Neck



USG of Fatty Liver

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Sensitivity: 89%; Specificity: 77%

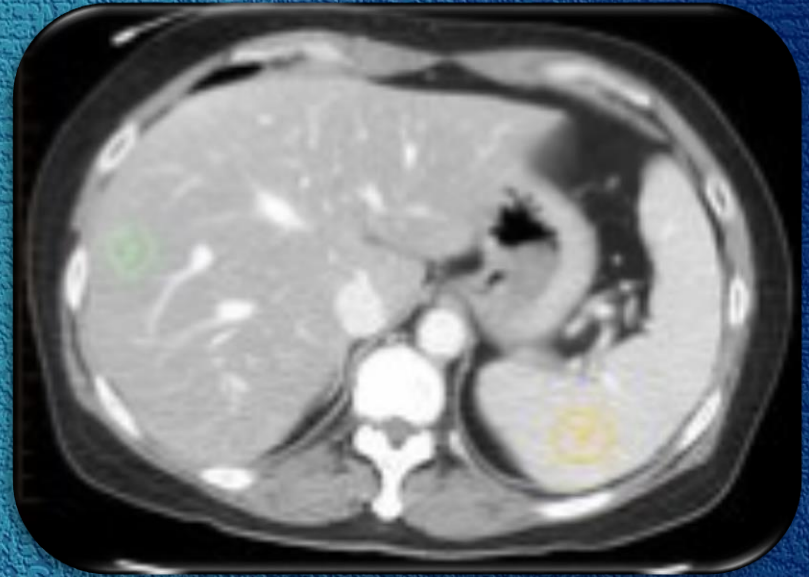
CT of Fatty Liver

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CT Liver - Normal

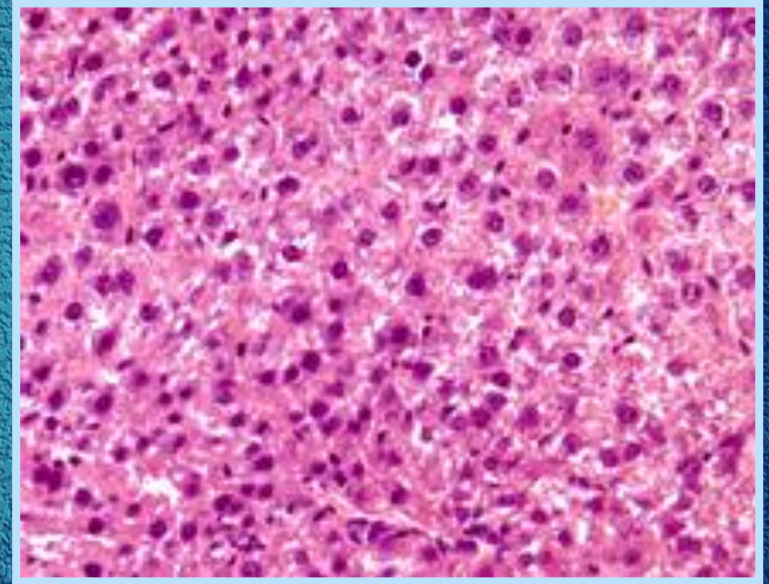
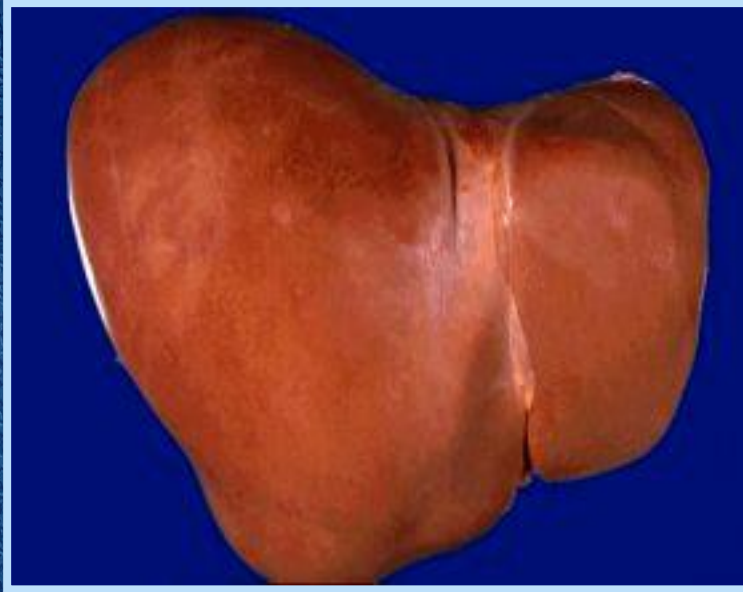


CT - NASH Liver



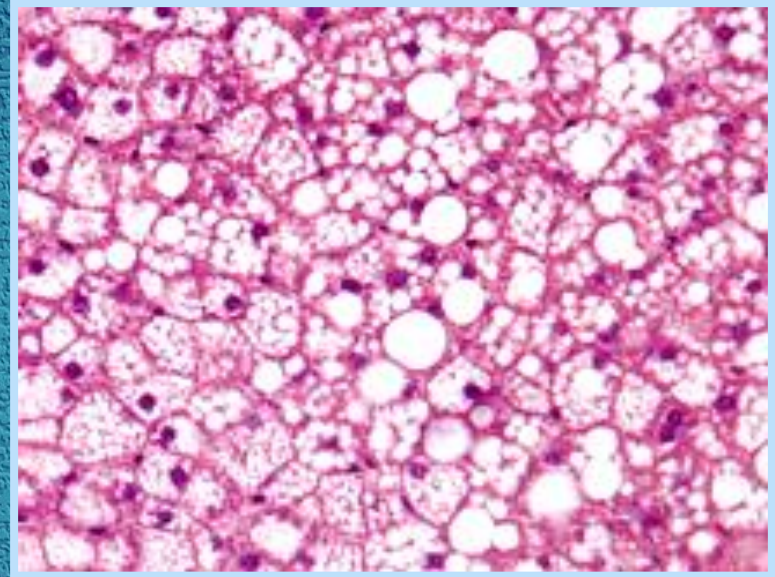
Normal Liver

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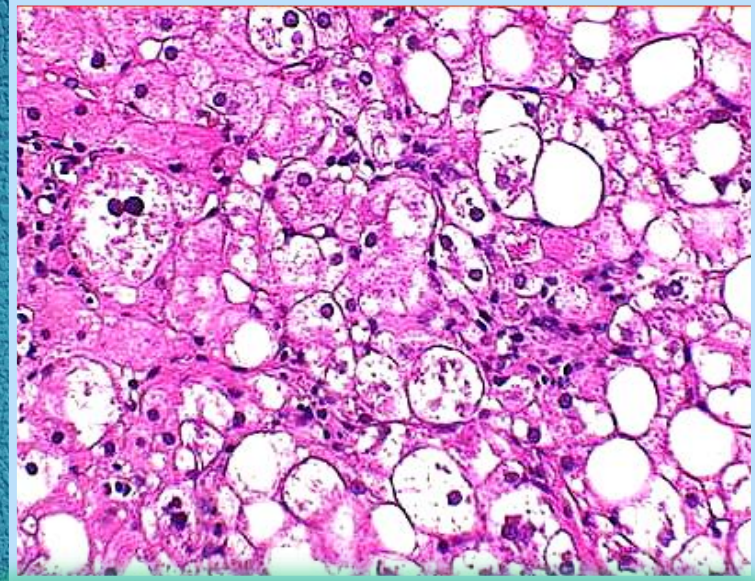
Fatty Liver (Steatosis) –Ballooning

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Steato – Hepatitis (Inflam. + Fibrosis)

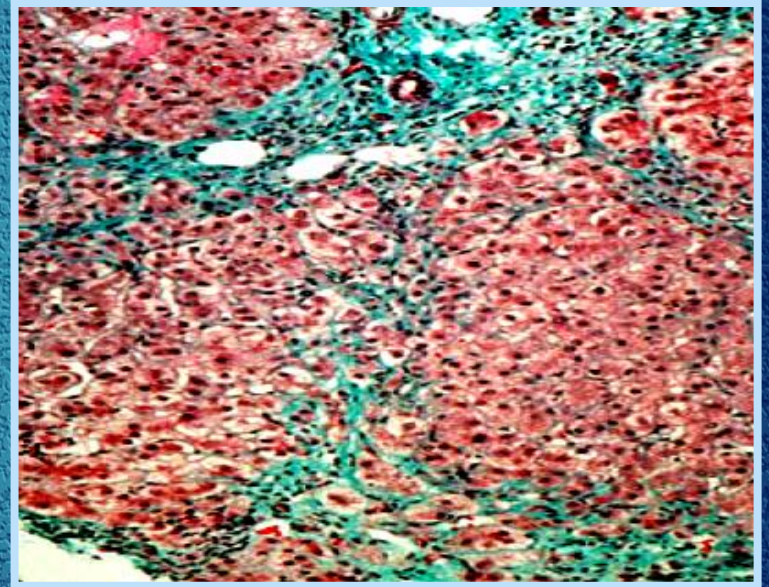
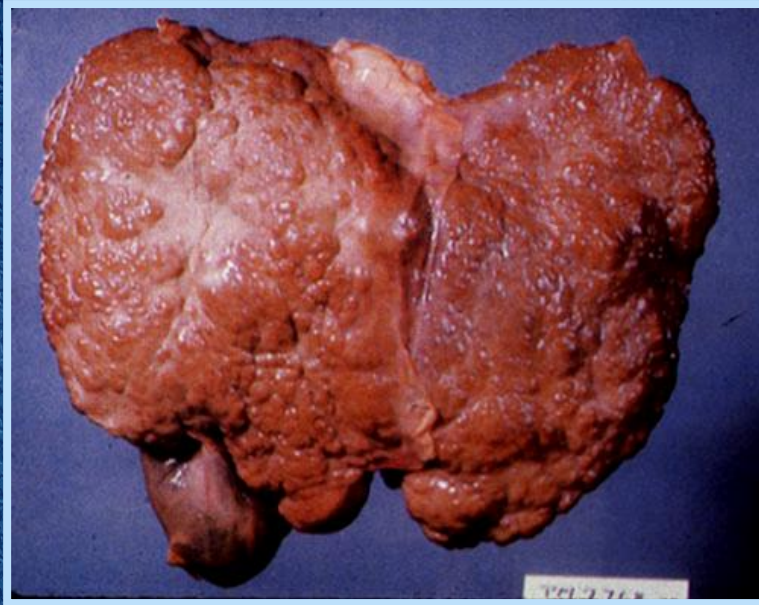
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Mallory Bodies - Hyaline

Cirrhosis (Nodularity & Scarring)

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Role of Liver Biopsy

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- ▶ Only accurate method of staging and diagnosis,
- ▶ May convince patient of need for life-style change
- ▶ NAFLD / NASH generally good prognosis
- ▶ Key risk factors are addressed without a biopsy
- ▶ Lack of effective therapy, cost and risk.
- ▶ If cirrhosis is clinically suspected – biopsy needed

Guidelines for Treatment

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- ▶ Similar to the recommendations for
 - ▶ T2DM and IR
 - ▶ HTN
 - ▶ Dyslipidemia
 - ▶ Obesity and Abdominal obesity

Guidelines for Treatment

1. Eat less fat, especially saturated fat
2. Keep blood sugars normal
3. Drink less or no alcohol
4. Exercise regularly
5. Match kilojoules to energy requirement
6. Don't smoke

Therapeutic Approach

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Control of risk factors

- ▶ Decrease of 10% in BMI
- ▶ Diet as already discussed
- ▶ Aerobic exercise 30 min x 6 days /week
- ▶ Statins where indicated

Therapeutic Approach

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If no response after six months

- ▶ Pt is at higher risk of fibrosis
- ▶ Mayo Score or Liver biopsy to distinguish Steatosis versus steatohepatitis - prognosis
- ▶ Add non-evidence based therapy

Treatment Effects

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- ▶ Exercise is the cornerstone of therapy
- ▶ Benefit of exercise even without weight ↓
- ▶ Biochemical improvement – liver enzymes
- ▶ Variable histological improvement
- ▶ Variable effect on progression to cirrhosis.

Potential Drugs for NAFLD

INSULIN SENSITIZING AGENTS

GLITAZONES; METFORMIN

LIPID-LOWERING AGENTS

CLOFIBRATE; GEMFIBROZIL

FUTURE POTENTIAL TREATMENTS

ANTI-FIBROTICS; PROBIOTICS

SILYMARIN; SELENIUM

Membrane-Stabilizing

- ▶ Urso deoxy cholic Acid
- ▶ Betaine (SAM)

Anti-Oxidants

- ▶ Vitamin E; Vitamin C
- ▶ Lecithin; α -Carotene
- ▶ Vitamin B Complex