

# HHP Care Model and Disease Management Webinar Series

## Workup of Elevated Liver Enzymes

Thursday, June 24, 2021

5:30pm – 6:30pm

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Moderator – 06/24/21

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- The following is intended as information resource only for HHP/HPH providers, clinicians, administrative and clinical leaders.
- Specific areas may not pertain directly to your clinical practice area and/or may not be applicable to your practice based on your existing workflows, infrastructure, software (e.g. EHR), and communications processes.

# Webinar Information

- You have been automatically muted. You cannot unmute yourself.
- You will be able to submit questions via the Q&A section.
  - Due to time constraints, any unanswered questions will be addressed this week and posted on the HHP website
- A recording of the meeting will be available tomorrow on the HHP website and intranet.

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## 1. Step 1: Confirm your attendance

- You should have completed a brief questionnaire before joining today's live webinar.

## 2. Step 2: HPH CME team will email you instructions

- Complete and submit evaluation survey that will be emailed to you within one week of the offering.
- Your CE certificate will be immediately available to you upon completion of your evaluation.
- Questions? Email [hphcontinuingeduc@hawaiiipacifichealth.org](mailto:hphcontinuingeduc@hawaiiipacifichealth.org)

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# Disclosures

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# Workup of Elevated Liver Enzymes



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# Learning Objectives

- Know basic terminology of fatty liver
- Know basic workup for fatty liver and elevated liver enzymes
- Know diagnostic criteria for fatty liver
- Know when to biopsy

# Non-alcoholic fatty liver disease (NAFLD)

- The most common liver disorder in Westernized countries
- The most common liver-related referral to Straub gastroenterology
- Prevalence is up to 45% in the United States

UpToDate. Epidemiology, clinical features, and diagnosis of nonalcoholic fatty liver disease in adults. Accessed 6/23/2021.

# Definitions and abbreviations

- NAFLD (Non-alcoholic Fatty Liver Disease)
- NAFL (Non-alcoholic Fatty Liver)
- NASH (Non-alcoholic Steatohepatitis)
- NASH Cirrhosis

The Diagnosis and Management of Nonalcoholic Fatty Liver Disease: Practice Guidance from the American Association for the Study of Liver Diseases. Chalasani, et al. Hepatology. Vol 67 No. 1, 2018.

# Risk Factors

- Obesity
- Type II Diabetes
- Dyslipidemia
- Metabolic Syndrome
- PCOS
- Age, gender, race
- Others: Hypothyroidism, OSA, Hypogonadism, Pancreaticoduodenal resection, Psoriasis

# Screening

- **Currently no screening for NAFLD is recommended**
  - Uncertain benefit (costs, outcomes)
  - Uncertain treatment availability
  - Have a high index of suspicion in your DM patients
    - Consider screening with NFS of fibrosis-4 index (Fib-4) or elastography
- **There can be familial clustering but screening is still not recommended for these patients**

# Diagnosis

- Incidentally discovered
  - Elevated liver enzymes or signs of liver disease
  - Normal liver enzymes/no signs
- Elevated liver enzymes/liver function tests
  - ALT
    - Men: 29-33 u/L
    - Women 19-25 u/L
  - AST
    - Men: 10-40 mg/dL
    - Women 9-32 mg/dL
  - GGT
  - AP
  - Bilirubin
  - PT
  - Albumin

# Diagnosis

- 1) There is hepatic steatosis by imaging or histology
- 2) There is no significant alcohol consumption
- 3) There are no competing etiologies for steatosis
- 4) There are no coexisting causes of chronic liver disease

# Diagnosis

- Other causes of steatosis
  - Alcohol
  - Hepatitis C
  - Medications (valproic acid, high dose IV tetracycline, aspirin, nucleoside reverse transcriptase inhibitors)
  - TPN
  - Wilson's disease
  - Malnutrition
- Other causes of liver disease
  - Hemochromatosis, autoimmune liver disease, viral hepatitis, alpha-1 antitrypsin deficiency, medications



# Diagnosis

- **Imaging**
  - Ultrasound
  - CT/MRI
- **Labs:**
  - Alpha-1-antitrypsin
  - ANA
  - F-actin (ASMA)
  - AMA
  - Viral hepatitis panel (? Hep A IgG)
  - Ceruloplasmin
  - SPEP
  - ? Celiac panel
  - ? PT/INR
  - ? CK
  - ? TSH

# Diagnosis

- Abnormal labs in setting of NAFLD
  - Elevated ferritin common
  - Elevated serum autoantibodies (ASMA, ANA)
    - Present in 21% of NAFLD patients
    - Transaminases >5x ULN, high globulins, or high total protein to albumin ratio concerning for other etiology

# NAFL or NASH? How much fat? Fibrosis?

- Liver biopsy
- Imaging
  - MR
  - Elastography (VCTE)
- Scoring systems
  - Fib-4 index
  - NFS
  - NAFLD fibrosis score
  - Fibrosure
  - APRI

# Vibration Controlled Transient Elastography (VCTE)



# Who to biopsy

- Consider anyone with high risk of having steatohepatitis or advanced fibrosis (MetS, NFS, Fib-4, VCTE)
- Consider biopsy if serologies are unclear (rule out other etiologies)

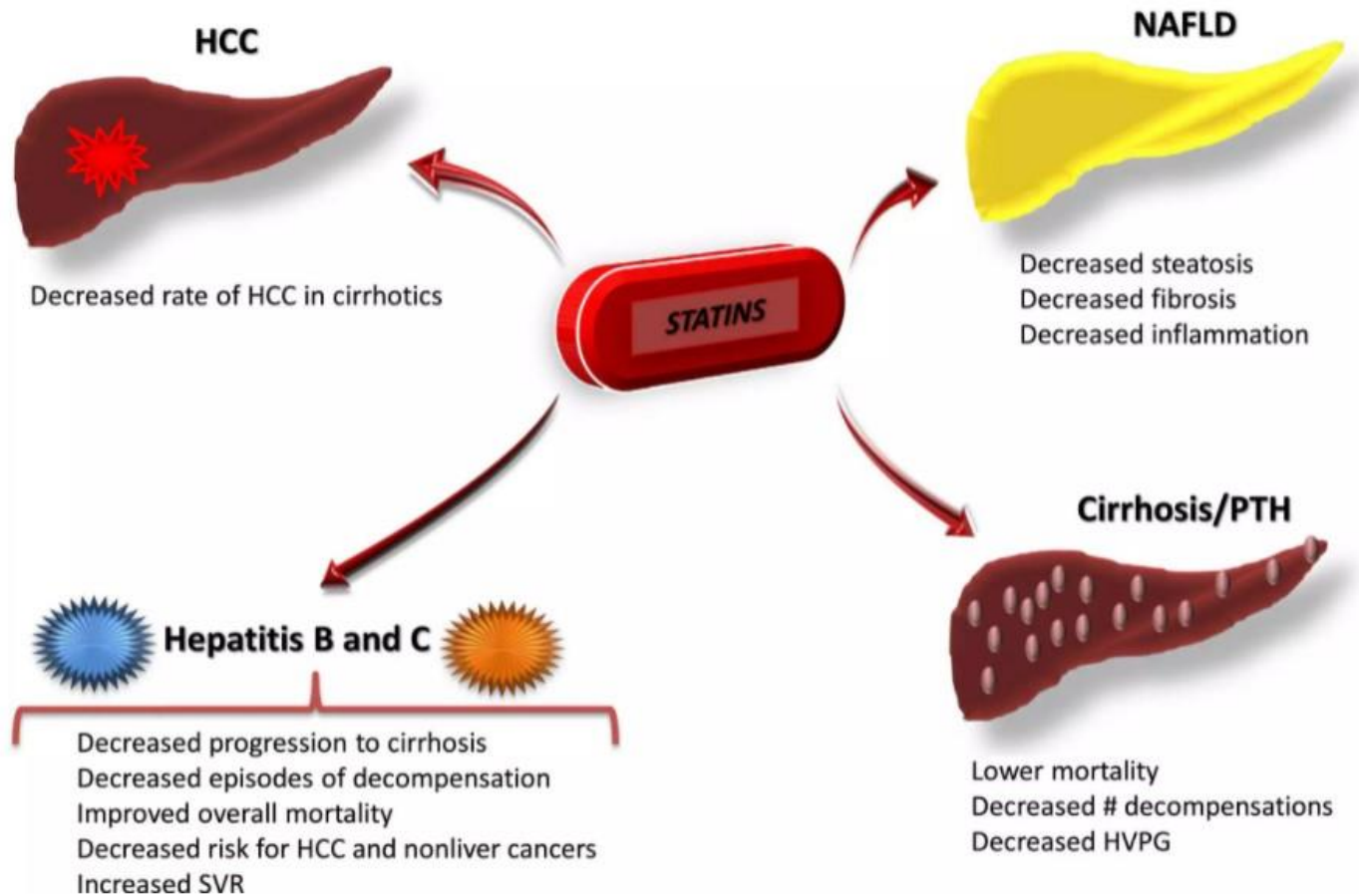
# Treatment

- Diet
- Exercise
  - Improvement in steatosis
  - >150 min/week
- Weight loss (>5% vs >7%)
  - Stabilized or improved fibrosis in 94% of patients!
  - Calorie restricted? Mediterranean? Low carb?!?
- Treat hypertension, diabetes, hyperlipidemia

# Treatment

- Metformin
  - Improves numbers but not histology
- Thiazolidinediones
  - Pioglitazone
    - Improved hepatocellular injury
    - Decreased fibrosis
    - No effect on steatosis
    - Weight gain
- GLP1 Analogues ?
- Vitamin E
  - Non-diabetics only
  - Improves histology
- Obeticholic acid
- Bariatric surgery

# Treatment



<https://medicaldialogues.in/gastroenterology/news/statins-use-may-reduce-risk-of-nafl-and-liver-cirrhosis-ajg-study-73435>



# When to get worried

- Rapidly worsening liver enzymes
  - Liver enzymes in thousands
- Jaundice
- RUQ abdominal pain
- Weight loss
- Confusion
- Bruising/petechiae

# Case #1

- 35yo M presents for follow up after a brief hospitalization and treatment for appendicitis. It is noticed on the initial CT that he has hepatic steatosis
- 5'9, 220lb, BP160/90, HR 86
- PMHx: None
- PSHx: Appendectomy
- FamHx: Mom had some liver problem
- SocHx: Non-smoker. Drinks 1 beer 3 times per week. Married with 2 kids. Works at local hotel at front desk.
- Meds: None
- Physical Exam WNL

# Case #1

- Labs:
  - AST/ALT, T. bili, albumin, AP all WNL
  - CBC WNL
  - Lytes WNL
  - Hgb A1C 5.9
- How to proceed?

# Case #1

- **Labs:**
  - AST/ALT, T. bili, albumin, AP all WNL
  - CBC WNL
  - Lytes WNL
  - Hgb A1C 5.9
- **How to proceed?**
  - Diagnosis: NAFLD without any other signs of liver disease
  - No need for extensive lab workup
  - Treat underlying issues, may monitor transaminases

# Case #2

- Take exact same patient from Case #1 but:
  - AST 44
  - ALT 86
  - Otherwise labs normal
- Now how do you proceed?

# Case #2

- Take exact same patient from Case #1 but:
  - AST 44
  - ALT 86
  - Otherwise labs normal
- Now how do you proceed?
  - Check for viral hepatitis, autoimmune hepatitis (ANA, f-actin/ASMA), iron overload, Wilson's disease, ceruloplasmin, A1AT, +/- AMA

## Case #2

- Ferritin 150, Iron Sat 30%
- All other negative
- ? Hemochromatosis
- Diagnosis: NAFL with some findings concerning for NASH
  - Consider VCTE or biopsy
  - Lifestyle changes
  - Treat underlying disease

# Case #3

- 35yo F presents for routine follow up. She had MyCharted you with mild epigastric pain and imaging/labs ordered. An ultrasound showed mild steatosis.
- 5'6, 190lb, BP160/90, HR 86
- PMHx: None
- PSHx: Appendectomy
- FamHx: Mom had some liver problem and thyroid problem, MGM had RA
- SocHx: Non-smoker. Drinks 1 beer 3 times per week. Married with 2 kids. Works at local hotel at front desk.
- Meds: None
- Physical Exam: WNL



# Case #3

- Labs:
  - AST 90, ALT 180, Bilirubin normal, AP normal
  - CBC WNL
  - TSH WNL
  - HGB A1C 5.9
- How to proceed in this case?
  - Check for viral hepatitis, autoimmune hepatitis (ANA, f-actin/ASMA), iron overload, Wilson's disease, ceruloplasmin, A1AT, +/- AMA

## Case #3

- Repeat transaminases about the same
- ANA 1:40
- F-actin 24
- ASMA 1:40
- Ferritin 180, Iron sat 30%
- Ceruloplasmin/A1AT/viral hepatitis negative
- Immune to hep A/B

# Case #3

- Autoimmune hepatitis or NAFLD?
- Biopsy? VCTE?

# Take Home Points

- Fatty liver is a spectrum
- Not all fatty liver requires a complete workup
- Not all steatosis is NAFL
- Statins are safe for the liver
- You're already doing the right thing

# Q&A

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Next Webinar:

# HHP Care Model and Disease Management Webinar Series

**Thursday, July 8, 2021**  
**5:30pm – 6:30 pm**

# Thank you!

- A recording of the meeting will be available afterwards.
- Unanswered question?
  - Contact us at [info@hawaiihealthpartners.org](mailto:info@hawaiihealthpartners.org)

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