Characterization of Chronic Liver Disease in Hawai'i using Transient Elastography

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Introduction

Nonalcoholic Fatty Liver Disease (NAFLD)

Non-alcoholic fatty liver (NAFL)

-Simple steatosis without inflammation

- Cirrhosis 1% over 16 years

Non-alcoholic steatohepatitis (NASH)

- Steatosis with hepatocyte injury and fibrosis
- Cirrhosis 11% over 16 years

< 50% of PCPs know the difference between NASH and NAFL

Chalasani N, *Hepatology*. 2018;67(1):328-357.

NAFLD: An epidemic

#1 indication liver transplantation in the next decade

25% of the global population and 21-31% of the U.S. population

$103 billion annually in the US

Younossi ZM, et al. *Hepatology*. 2016;64(1):73-84.

NAFLD: A Pressing Problem for Hawai'i

Prevalence in "Westernized" Asian populations approaches 40%.

Fung J, et al. *Liver Int*. 2015;35(2):542-549

NAFLD causes 32.3% of all cirrhosis in Japanese-Americans, 31.5% in Native Hawaiians, 31.9% in Latinos, versus 21.7% in Whites.

Setiawan VW, et al. *Hepatology*. 2016;64(6):1969-1977

Amongst non-cirrhotics, NAFLD was responsible for almost 75% of chronic liver diseases in Japanese Americans and Native Hawaiians, compared to 61% of Latinos and 56% of Whites.

Wei JL, et al. *Am J Gastroenterol*. 2015;110(9):1306-1314

Hypothesis

We hypothesized that the clinical significance of NAFLD as an important cause of hepatic fibrosis may be underrecognized in Hawai’i.

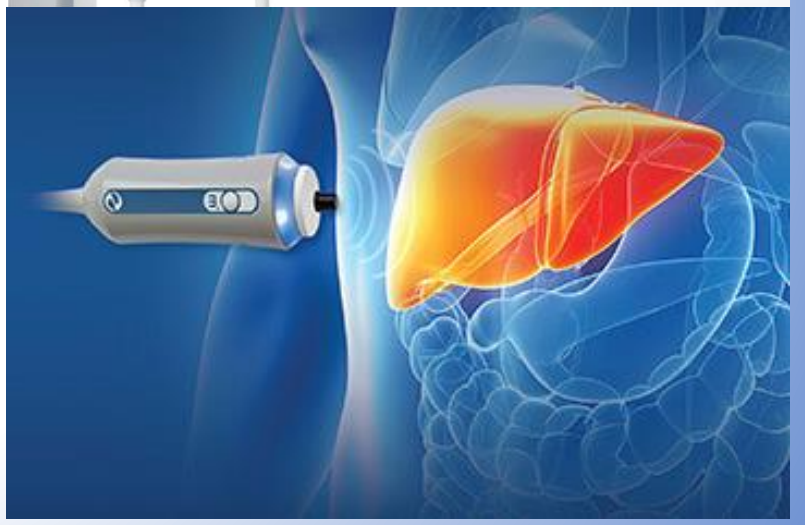
Which patients and when?

Is there a bias against FibroScan® referral for NAFLD?

Image from: Maestro et al, 2017: retrieved from https://wasabi.org/liver-disease/

FibroScan® (Transient Elastography)

- Acoustic technique to determine characteristics of liver as ultrasound waves travel through the liver
- Controlled Attenuation Parameter (CAP) (dB/m) = 100 to 400 dB/m
  - Measures degree of **steatosis**
- kilopascals (kPA) = 2-19 kPA
  - Measures stiffness of liver (estimates **fibrosis**)



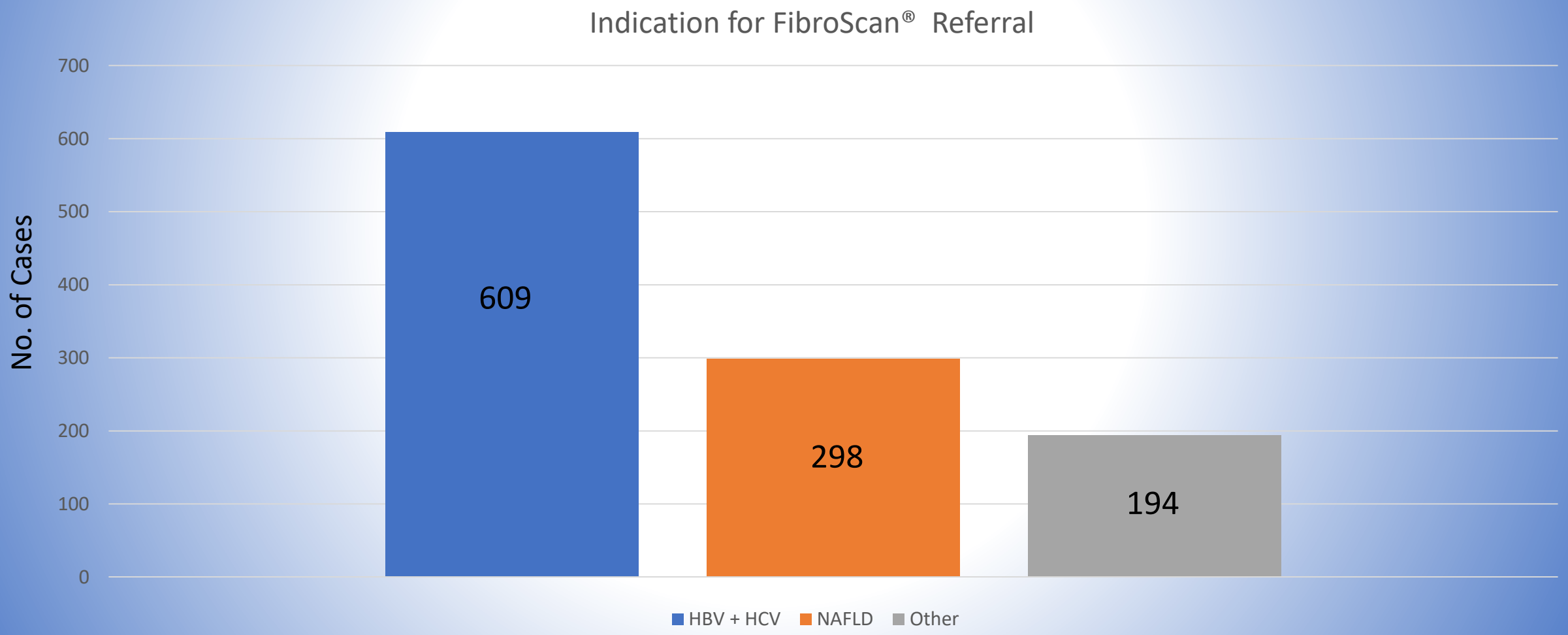
Methods

- Patients referred for FibroScan® (approximately 1101 patients from July 2013 - November 2018) at the Liver Center at the Queen's Medical Center were reviewed.

- Demographic data, indications for referral and FibroScan® results were compared by indication for referral.

- QMC Institutional Review Board approval was obtained for the study.

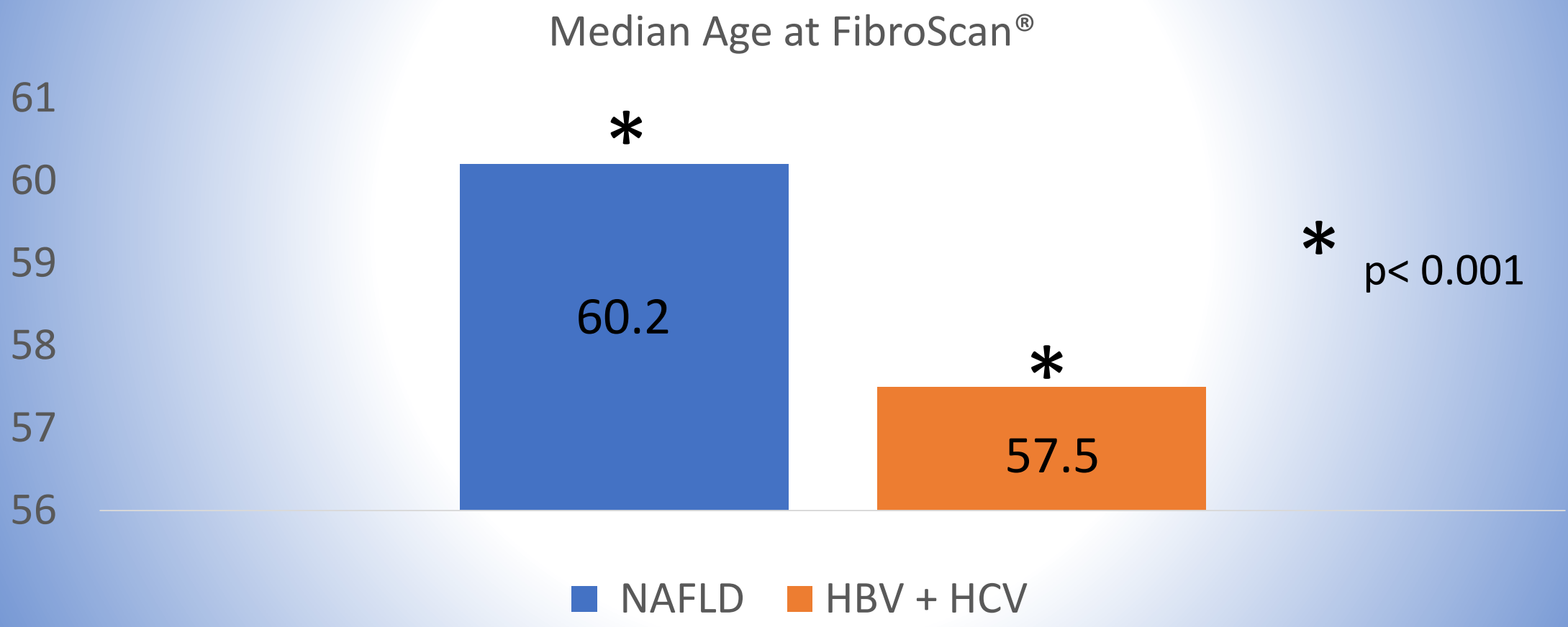
Results – Far more patients were referred for viral hepatitis than NAFLD



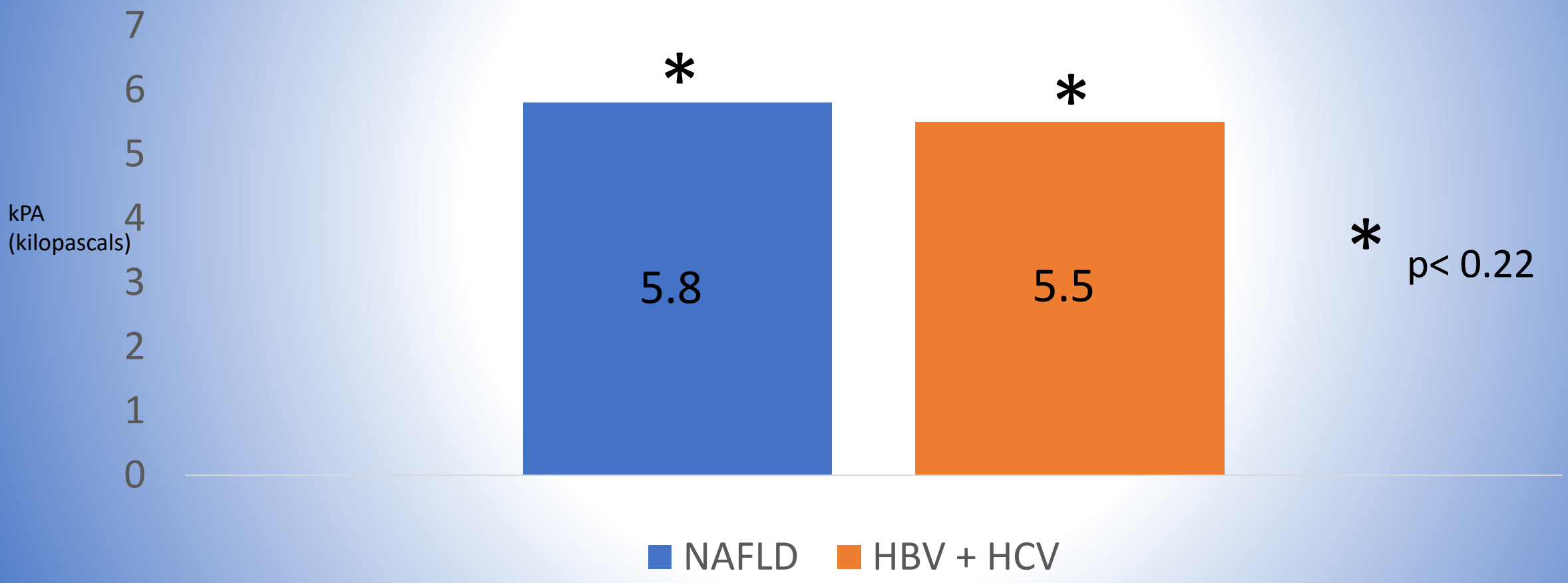
Results – FibroScan® referral by gender and indication.

Indication	Males (N), Average age of referral (years)	Female (N), Average age of referral (years)
NAFLD	N=138, 58.9 years	N=160 , 63.4 years
HBV, HCV	N=238, 56.7 years	N=371, 58.8 years
Other	N=95, 53.6 years	N=99, 55.8 years

Results – HBV and HCV patients are referred at significantly younger age than NAFLD patients



Results- Liver stiffness (fibrosis) was similar between NAFLD and viral hepatitis cases



Conclusions

Our results suggest a Bias against NAFLD as a cause of liver fibrosis

- Twice as many viral hepatitis patients were referred for FibroScan® than NAFLD patients – despite similar insurance coverages.
- NAFLD patients were referred significantly later in life than viral hepatitis patients.

Our results suggest underestimation of the severity of NAFLD-mediated hepatic fibrosis:

- NAFLD patients were significantly younger than viral hepatitis patients yet had similar hepatic fibrosis values.

NAFLD patients require early intervention to prevent hepatic fibrosis.

Hawai'i is particularly vulnerable to the NAFLD epidemic. PCPs are uniquely positioned for early diagnosis and treatment.

Thank you!

- Dr. Scott Kuwada, M.D., M.S., FACP, AGAF
- Dr. Sumodh C. Kalathil, M.D.

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