

Background

- Problem: Metabolic Dysfunction-Associated Fatty Liver Disease (MAFLD) and Metabolic Dysfunction-Associated Steatohepatitis (MASH) are liver diseases that have rapidly increased in the population over the last few years and are becoming an ever-common cause of liver failure and the need for liver transplant. Disease presence long predates concerning symptoms and many individuals will not be made aware until after the disease has progressed in severity. Earlier intervention is often inhibited due to the need of invasive biopsy or specific lab testing not easily available leading to significant underdiagnosis of patients with early disease
- Project AIM: We sought to add a well-researched and independently verified equation known as the Liver Fibrosis Index-4 (FIB-4) to our EPIC EMR as a "dotphrase" in order to increase the capture rate of patients with early asymptomatic disease to improve outcomes and screening in the endocrinology department as the two highest risk patient populations, those with diabetes or obesity, are routinely seen in our clinics

Baseline Metrics

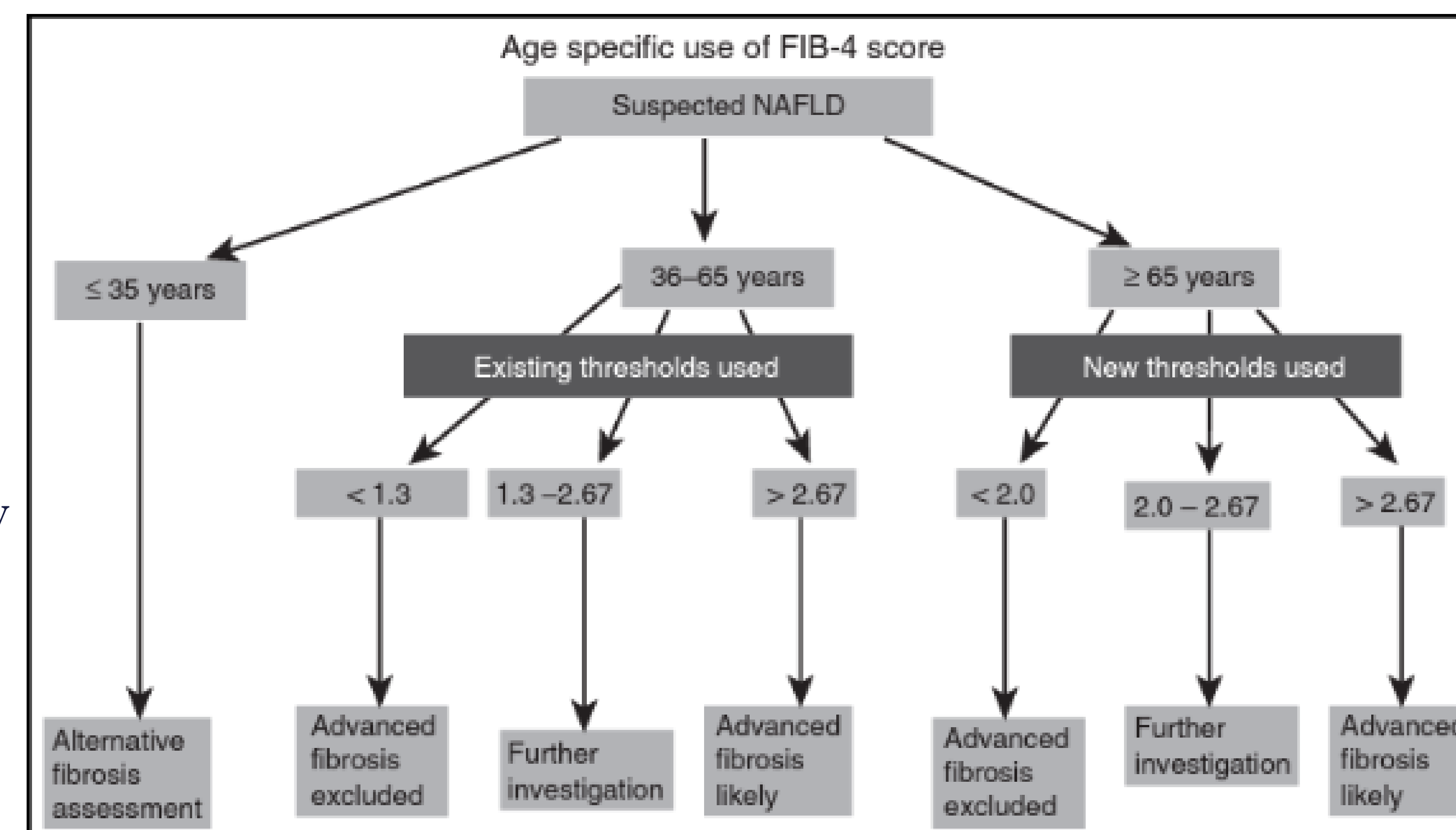
- We compared the number of outpatient visits via unique MRNs across the Jefferson Enterprise one year prior to the implementation of the FIB-4 dotphrase algorithm who had an associated ICD-10 code indicating concern for MAFLD or MASH
- Prior to our dotphrase going live there were only 32 patients with an attached ICD-10 code of concern out of the 589,599 patients who saw an outpatient Jefferson provider at least once in the prior year
 - This represents 0.0054% of the Jefferson outpatient population
 - Current research indicates that NAFLD likely affects about 25% of the current American population
- The implementation of our dotphrase led to an increase of 584, using the prior number of unique MRNs this is 0.099% of the Jefferson outpatient population
- The utilization of this non-invasive FIB-4 dotphrase allowed for more than an 18-fold increase in patients being screened for concerns of MAFLD and MASH in the absence of symptoms

Interventions

FIB-4 Score With Algorithm

FIB-4 Score: **no score available**

$$\text{FIB-4 Score} = (\text{Age} \times \text{AST}) / (\text{Platelets} \times \sqrt{\text{ALT}})$$



McPherson, S. et al. (2017) "Age as a confounding factor for the accurate non-invasive diagnosis of advanced NAFLD fibrosis," American Journal of Gastroenterology, 112(5), pp. 740-751. Available at: <https://doi.org/10.1038/ajg.2016.453>.

Future Directions

The dotphrase was overwhelmingly used by the Center City Departments of Endocrinology and Hepatology, we would like to expand this out to be common practice among Endocrinologists and Hepatologists throughout the entire Jefferson Enterprise

Challenges and Lessons Learned

- Whenever implementing a new tool for screening, it is important that the method by which it is incorporated into the outpatient visit does not affect the flow of patient care or create an unnecessary burden on clinicians. This phrase can be easily added to any templates for patients who are being seen for obesity or diabetes without creating excessive distractions to the provider or affecting the patient visit. Additionally, the helpful graphic and use of commonly obtained blood draws avoids the risk of screening being forgotten or confused in a busy visit

Linkage to Healthcare Disparities

- Diabetes and obesity disproportionately affect lower socioeconomic status and non-white individuals
- Disenfranchised groups are also more likely to suffer from the long-term complications of this disease and be treated at a point when the disease has become far more difficult to control
- Using an easy, non-invasive, EMR-based algorithm we can greatly increase the screening of these highly vulnerable groups for fatty liver complications and have them evaluated earlier and adjust treatment to obtain the best outcome and decrease complications
- The screening requires neither expensive tests or imaging nor does it require a patient have ready access to experts prior to symptomatic disease