

# Early Real-World Liver Biomarker Changes Among Resmetirom-Treated MASH Patients, With and Without Concomitant GLP-1 Use: A Descriptive Cohort Study

POSTER  
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## INTRODUCTION

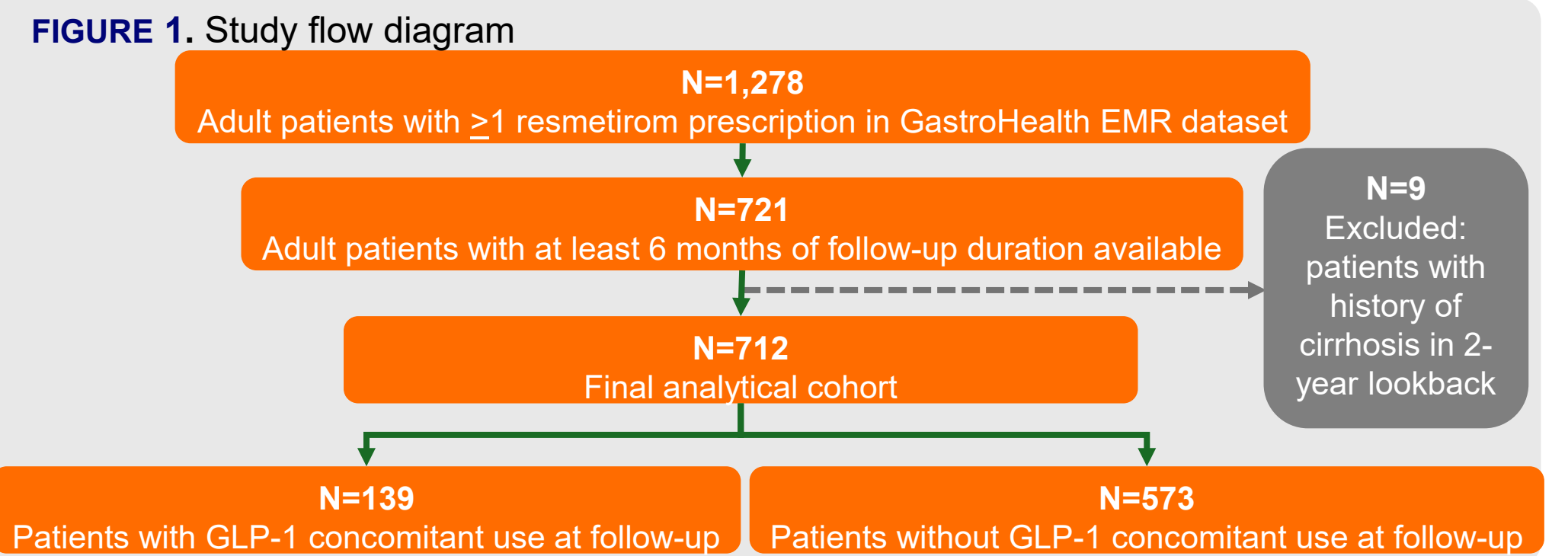
- Metabolic dysfunction-associated steatohepatitis (MASH) is a form of fatty liver disease which often develops as a result of one or more metabolic disorders, including type 2 diabetes mellitus (T2DM) and obesity.<sup>1,2</sup>
- Resmetirom (Rezdiffra™), a THR-β agonist, and semaglutide (Wegovy®), a glucagon-like peptide-1 receptor agonist (GLP-1), are conditionally FDA-approved for noncirrhotic MASH with moderate-to-advanced fibrosis.<sup>3,4</sup> Both resmetirom and semaglutide were shown to be more effective than placebo for MASH resolution and fibrosis improvement in phase III trials.<sup>5,6</sup>
- Given the coexistence of MASH with other metabolic conditions, some patients may also receive GLP-1s; however, it remains unclear whether resmetirom effectiveness differs by concomitant GLP-1 use.

## AIM

The aim of this study was to descriptively assess changes in liver biomarkers, clinical measure and responder rates among resmetirom-treated adults, stratified by concomitant GLP-1 use, in a real-world setting.

## METHODS

- Study design & data source:** Single arm, retrospective cohort study using the Latica real-world data, which compiles de-identified EMR data from Gastro Health.
- Population:** Eligible patients were adults with ≥1 prescription for resmetirom between April 2024 and April 2025 with a minimum of 6 month of follow-up since their first prescription during this period (**FIGURE 1**). Patients with a documented history of compensated or decompensated cirrhosis within the two-year lookback period before resmetirom initiation were excluded using a validated algorithm of diagnostic codes.<sup>7</sup> Patients were stratified by concomitant GLP-1 use during follow-up.
- The **index date** was defined as the date of the patient's first resmetirom prescription. The **baseline period** encompassed the 12 months prior to index, during which clinical, laboratory and medication history were assessed. The **follow-up** period was defined as ≥6 months after initiation of resmetirom. Participants with at least one healthcare interaction during this timeframe were considered to have had a follow-up interaction.
- Outcomes:**
  - Clinical characteristics:** demographics, cardiometabolic conditions, and GLP-1 use.
  - Laboratory measures:** LDL, HDL, cholesterol, ALT, AST, kPa, CAP, and FAST at baseline and follow-up, stratified by concomitant GLP-1 use, when available.
    - Proportion of patients achieving threshold responses for ALT, FAST, and VCTE, as defined by the literature.<sup>8,9,10</sup>
  - Cardiometabolic conditions:** metabolic syndrome, hypertension, dyslipidemia, obesity, and T2DM.



**ABBREVIATIONS:** ALT: alanine aminotransferase; AST: aspartate aminotransferase; BMI: body mass index; CAP: controlled attenuation parameter; EMR: electronic medical record; FAST: FibroScan-AST score; FIB-4: Fibrosis-4 index; GLP-1: glucagon-like peptide-1; HDL: high-density lipoprotein; LDL: low-density lipoprotein; MASH: metabolic dysfunction-associated steatohepatitis; SD: standard deviation; T2DM: type 2 diabetes mellitus; US: United States; VCTE LSM: vibration-controlled transient elastography liver stiffness measurement.

## RESULTS

- Of the 1,278 who initiated resmetirom, 721 (56.4%) had at least 6 months of follow-up duration available. After excluding those with a history of cirrhosis in the 2-year look-back period, 712 patients comprised the final analytic cohort (**FIGURE 1**).
- During follow-up, 139 (19.5%) patients used concomitant GLP-1s (**FIGURE 1**); cardiometabolic conditions were more prevalent amongst these patients (**TABLE 1**).

**TABLE 1. Baseline characteristics of cohort by concomitant GLP-1 use during follow-up**

Characteristics	With GLP-1 (n=139)	Without GLP-1 (n=573)
Mean (SD) age at index, years	57.9 (11.9)	59.2 (13.1)
Female, n (%)	88 (63.3)	318 (55.5)
Follow-up data (months)*		
Mean (SD)	10.4 (4.2)	8.8 (5.8)
Median (IQR)	10.3 (7.7, 13.4)	8.7 (4.4, 12.2)
Race, n (%)		
White	66 (47.5)	214 (37.3)
Asian	2 (1.4)	13 (2.3)
Black or African American	3 (2.2)	25 (4.4)
Hispanic	7 (5.0)	45 (7.9)
Mixed	18 (12.9)	95 (16.6)
Other	6 (4.3)	7 (1.2)
Unknown	37 (26.6)	174 (30.4)
Insurance†, n (%)		
Medicare	53 (38.1)	248 (43.3)
Medicaid	3 (2.2)	12 (2.1)
Commercial††	106 (76.3)	416 (72.6)
Unknown	0 (0.0)	1 (0.2)
State, n (%)		
Florida	77 (55.4)	360 (62.8)
Ohio	25 (18.0)	92 (16.1)
Virginia	12 (8.6)	37 (6.5)
Other	25 (18.0)	84 (14.7)
Dyslipidemia	35 (25.2)	132 (23.0)
Hypertension	121 (87.1)	428 (74.7)
Obesity	120 (86.3)	387 (67.5)
T2DM	139 (100.0)	272 (47.5)
≥2 cardiometabolic conditions‡	138 (99.3)	431 (75.2)

\*Follow-up data is derived using the latest available post-index observable data point across encounters; †Insurance categories are not mutually exclusive, patients may have had multiple coverage types during the study period (e.g., dual eligibility or plan switching); ††Includes employer-sponsored and individually purchased private insurance plans; ‡Cardiometabolic conditions include metabolic syndrome, dyslipidemia, hypertension, obesity, and/or T2DM.

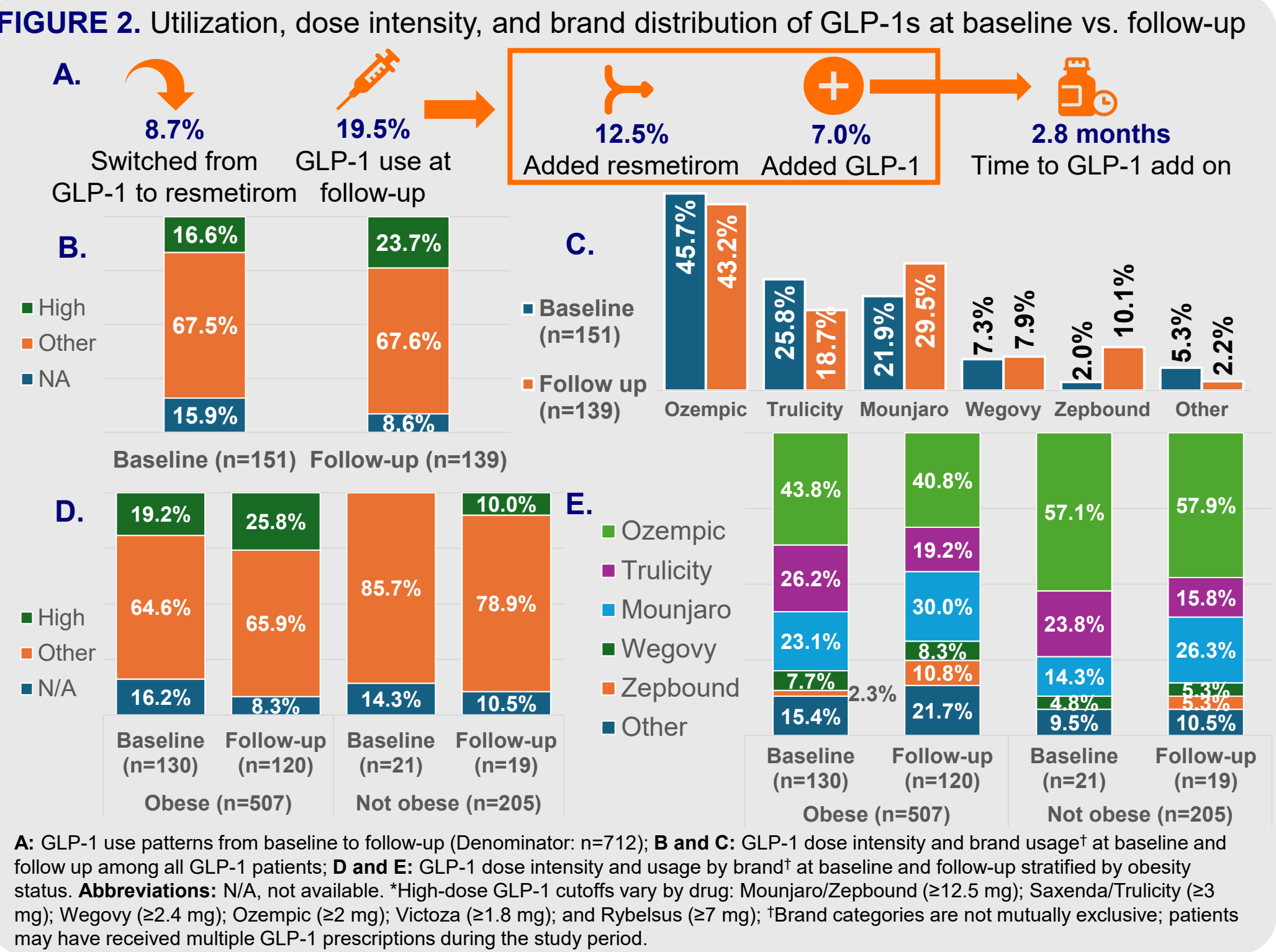
- Changes in BMI and body weight by concomitant GLP-1 use**
- BMI and body weight decreased slightly more in those with concomitant GLP-1 use, compared to those without (-0.9 vs -0.6 kg/m<sup>2</sup> and -2.5 vs -2.1 kg, respectively; **TABLE 2**).

**TABLE 2.** Mean change in BMI and body weight by concomitant GLP-1 use

Outcome	With GLP-1 (n=139)					Without GLP-1 (n=573)				
	Time to FU assessment (months), mean (SD)	n*	Mean BL value	Mean FU value	Mean change (SD)	Time to FU assessment (months), mean (SD)	n*	Mean BL value	Mean FU value	Mean change (SD)
BMI (kg/m <sup>2</sup> )	7.3 (3.8)	132	36.2	35.3	<b>-0.9 (3.5)</b>	7.4 (3.7)	371	33.1	32.5	<b>-0.6 (2.7)</b>
Weight (kg)	7.3 (3.8)	132	102.6	100.1	<b>-2.5 (10.8)</b>	7.4 (3.7)	372	94.1	92.0	<b>-2.1 (8.3)</b>

**Abbreviations:** BMI, body mass index; BL, baseline; FU, follow up; GLP-1, glucagon-like peptide-1; SD, standard deviation. **Notes:** Bolded values indicate p<0.05. \*sample sizes (n) reported reflect patients with baseline and follow up measurements of each corresponding assessment.

- GLP-1 use from baseline to follow-up**
- Pre-index, 151/712 patients received a GLP-1; 8.7% (62/712) stopped GLP-1 at resmetirom initiation while 7.0% (50/712) added GLP-1 during follow-up, resulting in 139 (19.5%) patients with concomitant GLP-1 use during follow-up (**FIGURE 2A**).
  - All baseline (151/151) and/or follow-up (139/139) GLP-1 users had T2DM and 86.1% (130/151) baseline GLP-1 users had obesity.
  - High-dose GLP-1 use increased over follow-up, and Ozempic (semaglutide) was the most prescribed overall (**FIGURE 2B and 2C**), and among patients with obesity (**FIGURE 2D and 2E**).



- Mean changes in biomarkers from baseline to follow-up by concomitant GLP-1 use**
- Individuals with concomitant GLP-1 use showed a greater mean absolute reduction in CAP (-85.7 vs. -43.9) and slightly larger mean reductions in ALT (-15.1 vs. -13.4), AST (-8.8 vs. -8.5), and kPa (-3.2 vs. -1.9) compared to those without. Individuals without concomitant GLP-1 use had reductions in LDL (-19.9 vs. +7.2) and cholesterol (-13.1 vs. +10.0) levels as opposed to increases in those with GLP-1 use.
  - Both groups experienced similar mean change in FAST scores between those with concomitant GLP-1 use and those without (-0.3 vs -0.2; **TABLE 3**).

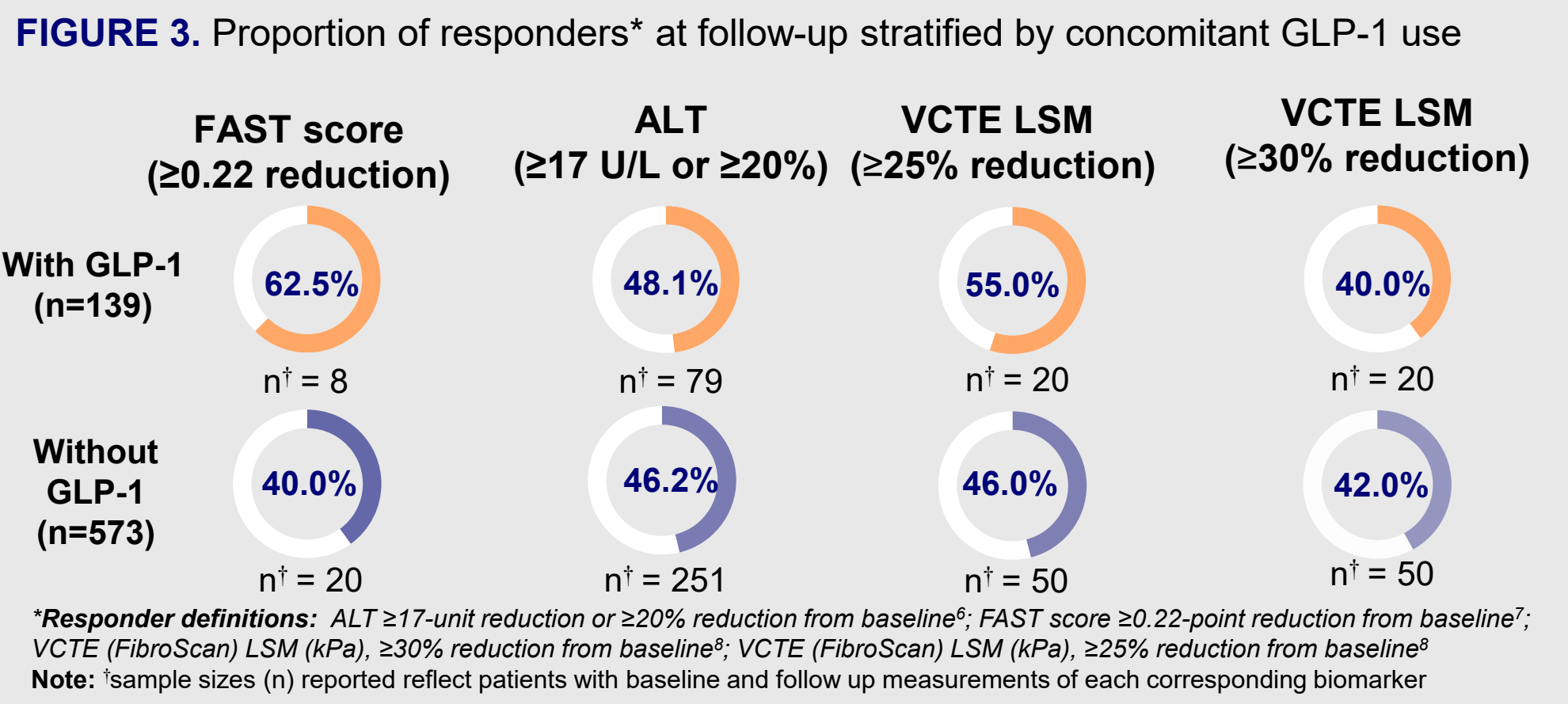
**TABLE 3. Mean change in biomarkers and time to follow-up test stratified by GLP-1 use**

Biomarker (unit)	With GLP-1 (n=139)					Without GLP-1 (n=573)				
	Time to FU test (months), mean (SD)	n*	Mean BL value	Mean FU value	Mean change (SD)	Time to FU test (months), mean (SD)	n*	Mean BL value	Mean FU value	Mean change (SD)
LDL (mg/dL)	10.1 (5.2)	5	64.6	71.8	7.2 (40.2)	8.8 (3.5)	14	108.2	88.3	-19.9 (40.5)
HDL (mg/dL)	10.1 (5.2)	5	44.0	49.6	5.6 (8.5)	9.2 (4.3)	16	38.1	39.2	1.0 (8.2)
Cholesterol (mg/dL)	12.6 (7.2)	4	168.0	178.0	10.0 (56.1)	8.2 (3.7)	11	161.6	148.5	-13.1 (30.1)
ALT (U/L)	9.7 (4.6)	79	53.0	37.9	<b>-15.1 (31.6)</b>	8.8 (4.6)	251	54.8	41.4	<b>-13.4 (38.3)</b>
AST (U/L)	9.5 (4.4)	78	42.2	33.4	<b>-8.8 (27.5)</b>	8.9 (4.6)	244	44.0	35.5	<b>-8.5 (35.7)</b>
kPa†	10.4 (4.9)	20	11.3	8.1	<b>-3.2 (3.2)</b>	10.0 (3.6)	50	11.3	9.4	<b>-1.9 (5.0)</b>
CAP (dB/m)	10.6 (5.0)	13	352.1	266.4	<b>-85.7 (78.0)</b>	10.9 (3.6)	32	319.1	275.2	<b>-43.9 (65.3)</b>
FAST‡	NA	8	0.5	0.2	<b>-0.3 (0.2)</b>	NA	20	0.5	0.3	<b>-0.2 (0.2)</b>

**Abbreviations:** BL, baseline; FU, follow-up; NA, not available; SD, standard deviation. **Notes:** Bolded values indicate p<0.05. \*sample sizes (n) reported reflect patients with BL and FU measurements of each corresponding biomarker; †kPa values derived from vibration-controlled transient elastography; ‡FAST scores are derived from multiple biomarker measurements that may occur at different FU intervals.

### Responder rates at follow-up by concomitant GLP-1 use

- At follow-up, patients with concomitant GLP-1 use had higher response rates for FAST (62.5% vs. 40.0%), ALT (48.1% vs. 46.2%), and VCTE ≥25% reduction (55.0% vs. 46.0%); patients without concomitant GLP-1 use had a slightly higher VCTE ≥30% reduction (42% vs 40%; **FIGURE 3**).

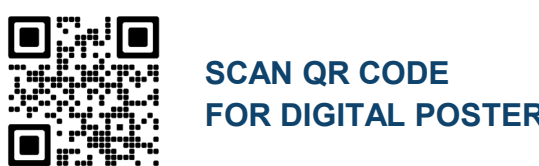


## DISCUSSION

- In this real-world analysis, resmetirom use was associated with improvements in laboratory and non-invasive clinical measures over follow-up. During follow-up, 139/712 patients (19.5%) used concomitant GLP-1s, and these patients had a higher cardiometabolic burden than those not using GLP-1s.
- Improvements were observed in patients both with and without concomitant GLP-1 use during the ≥6-month follow-up, although the pattern and magnitude of improvement differed by endpoint. Approximately 40–63% of patients met predefined responder thresholds across endpoints, supporting early improvement following resmetirom initiation. Concomitant GLP-1 use during follow-up was observed only among patients with T2DM, likely reflecting treatment of cardiometabolic conditions.
- Limitations include missing outcome data for laboratory and imaging measures, small sample sizes among patients with both baseline and follow-up biomarker measurements, variability in coding, potential care received outside the database network, inability to confirm medication adherence, limited follow-up time, and limited generalizability given data were derived from a single healthcare system.

## CONCLUSION

These early descriptive findings show improvements in liver biomarkers and non-invasive clinical measures among resmetirom-treated patients regardless of concomitant GLP-1 use, though the pattern and magnitude of response differed by subgroup. Larger studies with longer follow-up are needed to confirm these results.



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