Healthcare practitioners' diagnostic and treatment practice patterns of non-alcoholic fatty liver disease in Poland: a real-world evidence study

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Disclosures

- I have received honoraria for sponsored lectures from Sanofi and Pro.Med

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Significance of NAFLD

May progress to advanced fibrosis, cirrhosis and HCC[1]

Is an independent risk factor for T2DM and CVD[2,3]

May be linked to other extrahepatic conditions[4]

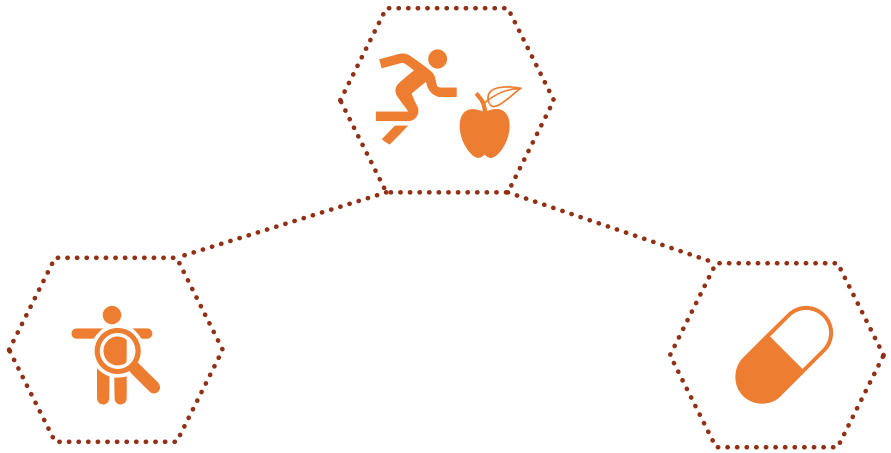
Therefore, NAFLD is associated a with considerable and increasing healthcare burden

CVD, cardiovascular disease; HCC, hepatocellular carcinoma; NAFLD, non-alcoholic fatty liver disease; T2DM, type 2 diabetes mellitus

1. Loomba R, et al. Aliment Pharamcol Ther 2020;51:1149–59; 2. Mantovani A, et al. Gut 2020;70:962–69; 3. Targher G, et al. Diabetes Metab 2020;47:101215; 4. Tomeno W, et al. Diagnostics (Basel) 2020;10:912

NAFLD treatment: according to EASL and AASLD recommendations

The mainstay is weight loss and physical exercise[1,2]



Liver-directed medications not recommended for patients with NAFL (non-NASH)

There is no single medication guided for NASH, fibrosis or cirrhosis

Concerns

- Many patients fail to achieve weight loss with diet or comply to dietary restrictions[3]
- Some patients cannot increase physical activity (e.g. arthralgia, obesity, asthenia)
- Some patients with NAFLD are non-obese (~12%) or even lean (~5%)[4]

NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis

1. EASL. J Hepatol 2016;64:1388–402; 2. Chalasani N, et al. Hepatology 2018;67:328–57; 3. Carneros D, et al. Nutrients 2020;12:3472; 4. Chrysavgis L, et al. World J Gastroenterol 2020;26:6514–28

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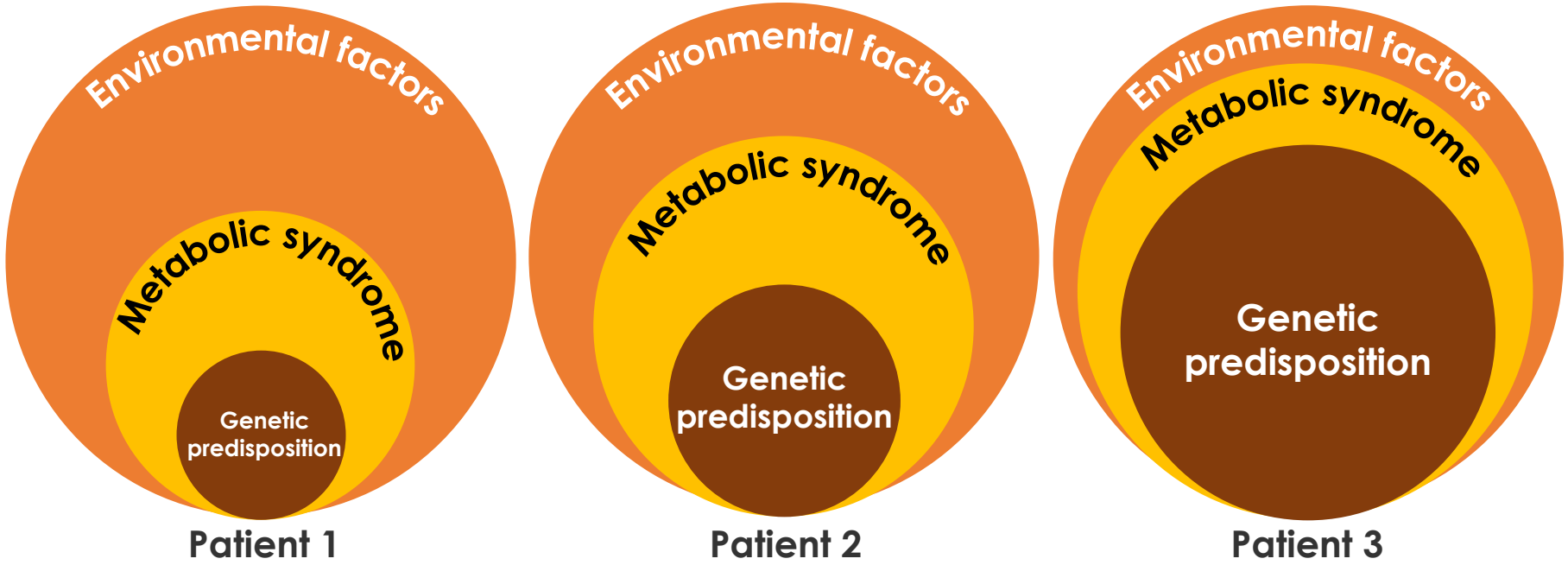
Heterogeneity of etiologic factors in NAFLD population



. . . requires different treatment approaches or use of several medications affecting different signaling pathways

NAFLD, non-alcoholic fatty liver disease

1. Eslam M, et al. Gastroenterology 2020;158:1999–2014.e1

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RESTORE study: background and goals

Treatment recommendations by **GEs** and **GPs** may be different as **profiles of patients** managed by these two medical specialties might **differ**

Goals of this observational, cross-sectional, real-world retrospective survey conducted in Poland:

1. To reflect actual outpatient practice regarding management of NAFLD patients in Poland
2. To compare the GEs and GPs practices in diagnosis, staging and therapy of NAFLD

GEs, gastroenterologists; GPs, general practitioners; NAFLD, non-alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study: methods (1)

Physician selection
GEs were invited to the study during face-to-face meetings, and GPs were invited by phone

Eligibility criteria

Knowledge and use of EPL for treatment of patients with NAFLD

GEs

- ≥3 years work experience
- Seeing ≥260 patients/month within the practice (open care), or ≥160 patients/month if also working in hospital care

GPs

- ≥3 years work experience
- Seeing ≥400 patients/month within the practice (open care)

EPL, essential phospholipids; GEs, gastroenterologist; GPs, general practitioner; NAFLD, non-alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study: methods (2)

Patient selection

Each GE was asked to select 4 patients diagnosed with NAFLD 1 year prior to the last visit (at the earliest) or during the last visit (at the latest)

Data collection

The GE/GP declarative survey was conducted using CAWI. The quantitative survey of patient data was also conducted using CAWI. A second questionnaire was completed online by GEs*

*Questionnaires were developed by PEX PharmaSequence (Warsaw, Poland) in cooperation with Sanofi (Supplementary Appendix)
CAWI, computer-assisted web interviews; GE, gastroenterologist; GP, general practitioner; NAFLD, non-alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study results: Comorbidities in patients with NAFLD

Five most common comorbidities	Prevalence (%)	No. of five most common comorbidities	
		Rank	%
Abdominal obesity	85	5	19
Dyslipidemia	75	4	31
Arterial hypertension	69	3	16
Metabolic syndrome	56	2	18
Diabetes	30	1	12

- No comorbidities were reported in 3% of patients
- Other comorbidities were reported in 1% of patients

Differences between use of laboratory tests between GEs and GPs are marked with letters.
ALP, Alkaline phosphatase; ALT, alanine aminotransferase; Fe, iron; GEs, gastroenterologists; GGTP, gamma-glutamyl transferase; GPs, general practitioners; HDL, high-density lipoproteins; INR, international normalized ratio (prothrombin time); LDL, low-density lipoproteins; NAFLD, non-alcoholic fatty liver disease; OGTT, oral glucose tolerance test; PLT, platelets; TG, triglycerides; TIBC, total iron-binding capacity
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study results: Top five most common symptoms of NAFLD reported by GEs and GPs using patients' language

GEs n=95		GPs n=115	
Symptom	**GEs (%)**	**Symptom**	**GPs (%)**
Bloating	62	Bloating	57
Weakening	33	Pain*	47
Tiredness/fatigue	31	Weakening	21
Pain*	28	Feeling of fullness	27
Feeling of fullness	24	Stomach aches	26

*Right upper quadrant pain/below right ribs/in the right side/in liver area, $p<0.01$ (Mann-Whitney U test)
GEs, gastroenterologists; GPs, general practitioners; NAFLD, non alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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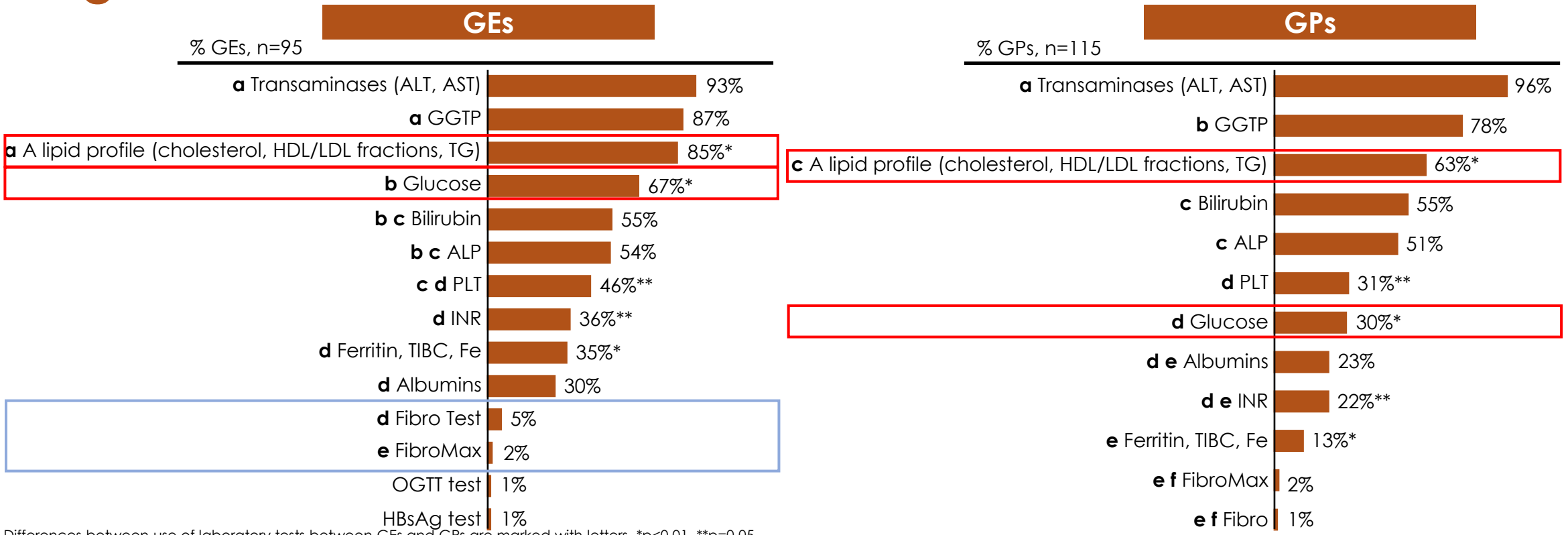
RESTORE study results: Laboratory tests used by GEs and GPs to diagnose NAFLD



Differences between use of laboratory tests between GEs and GPs are marked with letters. *p<0.01. **p=0.05
ALP, Alkaline phosphatase; ALT, alanine aminotransferase; Fe, iron; GEs, gastroenterologists; GGTP, gamma-glutamyl transferase; GPs, general practitioners; HDL, high-density lipoproteins; INR, international normalized ratio (prothrombin time); LDL, low-density lipoproteins; NAFLD, non-alcoholic fatty liver disease; OGTT, oral glucose tolerance test; PLT, platelets; TG, triglycerides; TIBC, total iron-binding capacity
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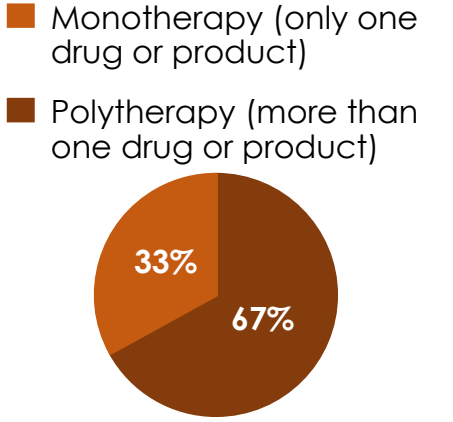
RESTORE study results: Drug treatment or recommendations for patients with NAFLD

GEs

% patients, n=95 GEs

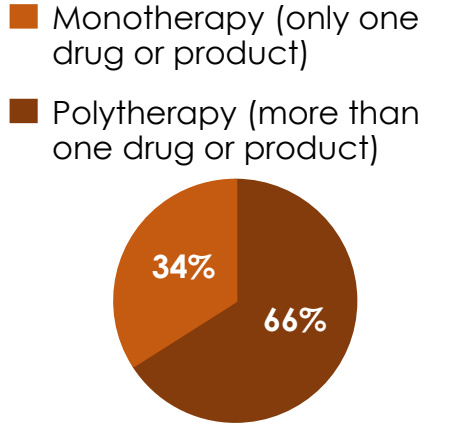
% patients, n=95 GEs



GPs

% patients, n=115 GPs

% patients, n=112 GPs
(i.e. those who recommend treatment)



The differences between GEs and GPs are significant (p=0.05) are marked with *, Mann–Whitney U test
GEs, gastroenterologists; GPs, general practitioners; NAFLD, non-alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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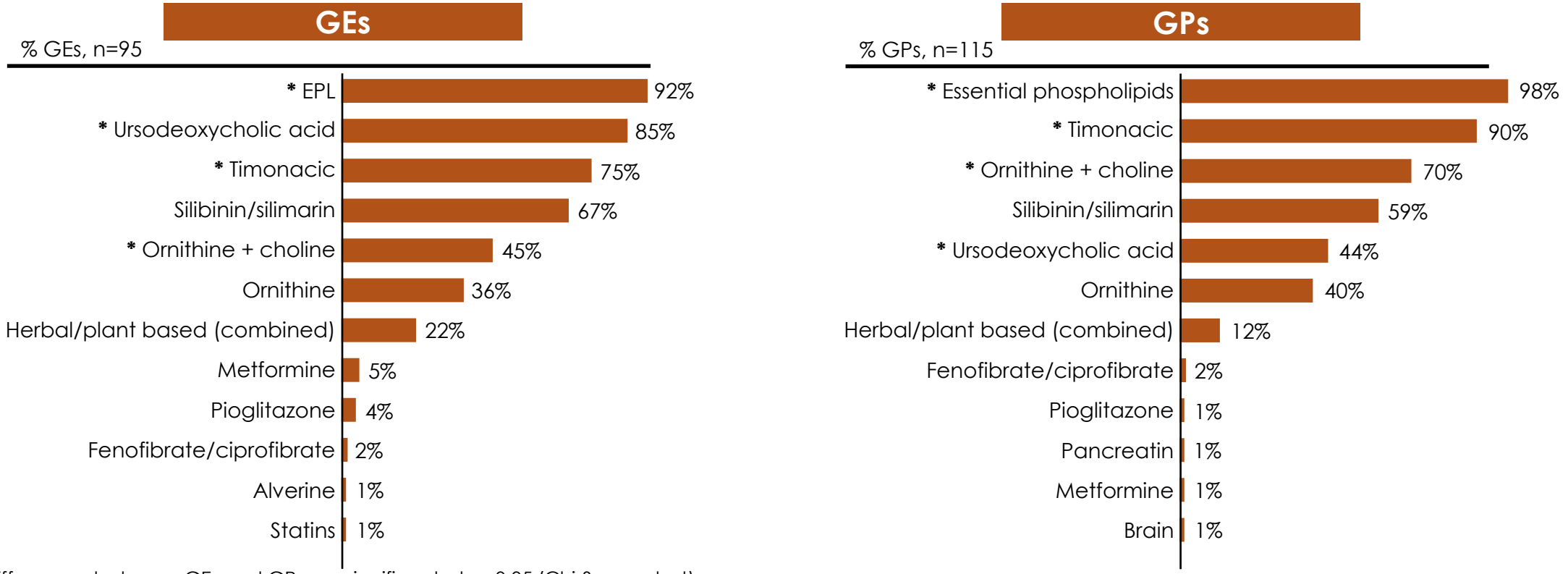
RESTORE study results: Most frequently prescribed drug treatments for NAFLD by GEs and GPs



*The differences between GEs and GPs are significant at p=0.05 (Chi-Square test)
EPL, essential phospholipid; GEs, gastroenterologists; GPs, general practitioners; NAFLD, non-alcoholic fatty liver disease
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study results: Ranking of criteria for choosing pharmacological interventions for NAFLD treatment

Criteria	Mean ranking score*	
	GEs n=95	GPs n=115
Efficacy	4.7	4.6
Tolerability	4.4	4.3
Improvement of QoL	4.4	4.3
Own experience with product	4.3	4.2
Cost of therapy	3.7	3.7
Duration of treatment	3.5	3.5
Fast onset of action	3.5	3.5

*Physicians ranked each criterion using a scale of 1 (not relevant at all) to 5 (extremely relevant)
GEs, gastroenterologists; GPs, general practitioners; NAFLD, non-alcoholic fatty liver disease; QoL, quality of life
Hartleb M, et al. Eur J Gastroenterol Hepatol 2021. [submitted]

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RESTORE study results: Ranking of the five most commonly recommended treatments by the top three criteria

	Essentiale (a)	Heparegen (b)	Hepatil (c)	Proursan (d)	Sylimarol (e)
GEs					
Efficacy	3.7 (c, e)	3.6 (c, e)	3.0 (a, b, d)	3.9 (c, e)	3.1 (a, b, d)
Tolerability	4.5 (c, e)	4.4 (d)	4.3	4.1	4.4 (d)
Improvement of the QoL	3.5 (c, e)	3.5 (c, e)	3.1 (a, b, d)	3.6 (c, e)	3.2 (a, b, d)
GPs					
Efficacy	4.2 (c, d, e)	4.3 (c, d, e)	3.3 (a, b, d, e)	3.6 (a, b, c, e)	2.7 (a, b, c, d)
Tolerability	4.6 (d)	4.4 (d)	4.3 (d)	3.6 (a, b, c, e)	4.2 (d)

Physicians ranked each drug against each criterion using a scale of 1 (not relevant at all) to 5 (extremely relevant). Essentiale® (essential phospholipids); Hepatil® (ornithine + choline); Heparegen® (timonacic); Proursan® (ursodeoxycholic acid); Sylimarol® (silybinin/silymarin). The differences between each drug evaluation within a group of physicians are marked with letters. The letter below the average score indicates which drug the marked one significantly differs from. Kruskal -Wallis test $p<0.05$.
GEs, gastroenterologists; GPs, general practitioners; QoL, quality of life
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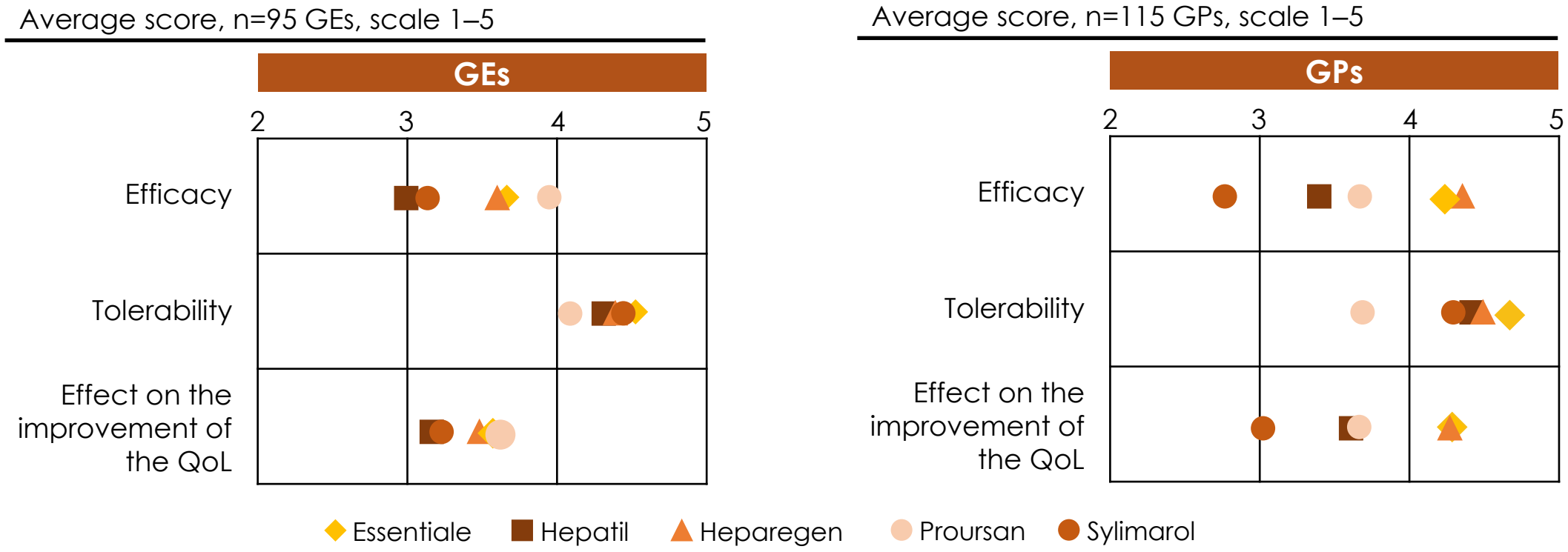
RESTORE study results: Ranking of the five most commonly recommended treatments by the top three criteria



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Conclusions

1. NAFLD is not a silent disease; rather, both GEs/GPs and patients report many, albeit non-specific, symptoms
2. This cross-sectional survey provides important insights into clinical management of NAFLD by GEs and GPs in Poland

GEs, gastroenterologists; GPs, general practitioners; NAFLD, non-alcoholic fatty liver disease

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