



SID
Società Italiana
di Diabetologia



AMD
ASSOCIAZIONE
MEDICI
DIABETOLOGI

DIABETE
TUTTO
INTORNO
ATE

TORINO
28/29
Novembre
2025

CONGRESSO REGIONALE
SID AMD PIEMONTE - VALLE D'AOSTA



Dal diabetologo all'epatologo e vice-versa

Il ruolo del diabetologo: prevenzione, diagnosi, terapia dietetica e terapia farmacologica sartoriale

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Conflict of Interest

last 3 years

Speaker in Scientific Events

AstraZeneca

Bayer

Boheringer Ingelheim

Daiichi Sankyo

Echosens

Lilly

Menarini Diag

Merck

Novartis

Novo Nordisk

Pfizer

PikDare

Roche Diag

Sanofi

Servier

Scientific AB

Amgen

Bruno Farmaceutici

EG

Lilly

Merck

Novartis

Novo Nordisk

Pfizer

PikDare

Sanofi



Il ruolo del diabetologo

- Cosa
- Perché
- Come

Screening steatosis and fibrosis in T2D

- 825 pats with DMT2: transient elastography
- Steatosis (CAP $\geq$ 274 dB/m): 73.8%

- Fibrosis
 - $\geq$ F2: 8.2 kPa
 - $\geq$ F3: 9.7 kPa
 - F4: 13.6 kPa

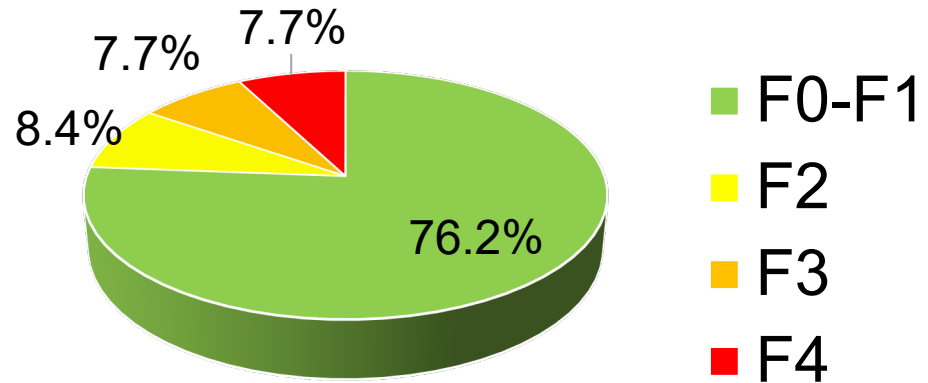


Table 4.2—Assessment and treatment plan

Assessing risk of diabetes complications

- ASCVD and heart failure history
- ASCVD risk factors and 10-year ASCVD risk assessment
- Staging of chronic kidney disease (see **Table 11.1**)
- Hypoglycemia risk (see Section 6, “Glycemic Goals and Hypoglycemia”)
- Assessment for retinopathy
- Assessment for neuropathy
- Assessment for NAFLD/NASH *

Goal setting

- Set A1C/blood glucose/time in range
- If hypertension is present, establish blood pressure goal
- Weight management and physical activity goals
- Diabetes self-management goals

Therapeutic treatment plans

- Lifestyle management
- Pharmacologic therapy: glucose lowering
- Pharmacologic therapy: cardiovascular and kidney disease risk factors
- Weight management with pharmacotherapy or metabolic surgery, as appropriate
- Use of glucose monitoring and insulin delivery devices
- Referral to diabetes education, behavioral health, and medical specialists

Assessment and treatment planning are essential components of initial and all follow-up visits. ASCVD, atherosclerotic cardiovascular disease; NAFLD, nonalcoholic fatty liver disease; NASH, nonalcoholic steatohepatitis.

**ADA Standard of Care,
Diabetes Care, 2024**

Cosa? 2024, a new era

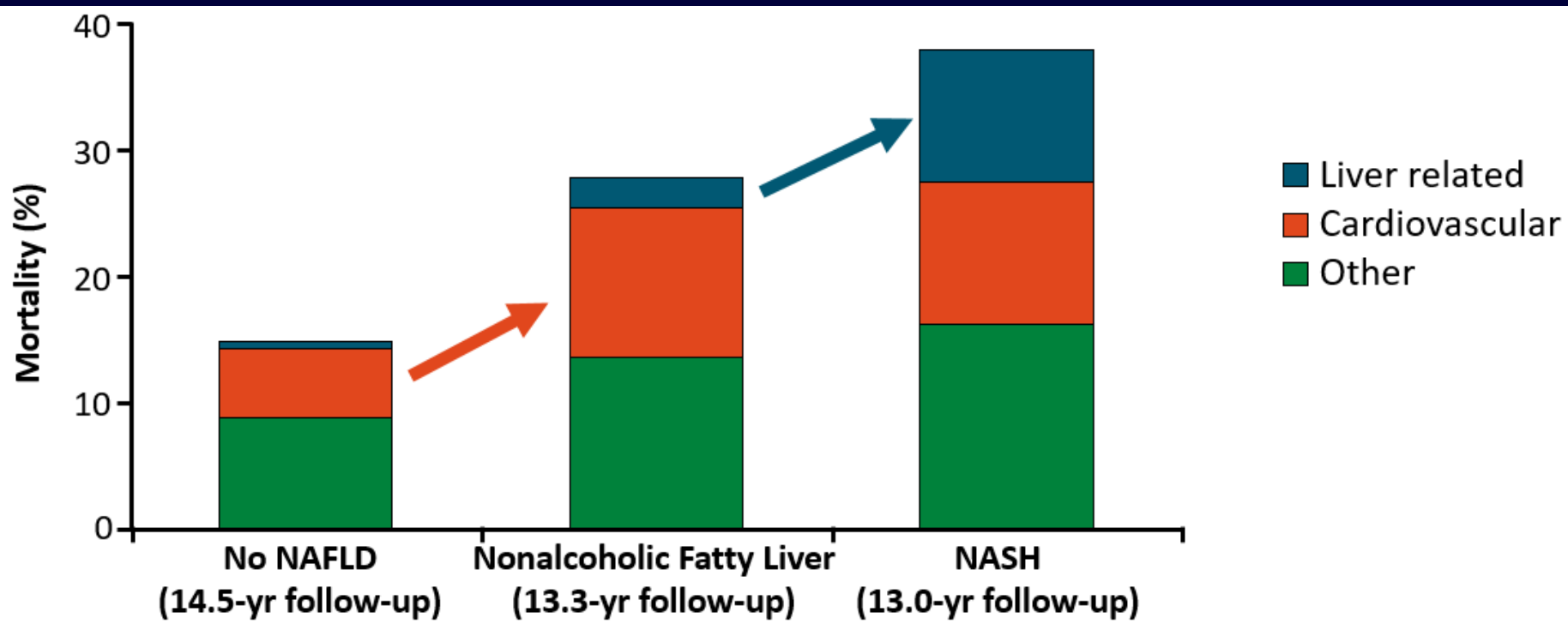
References

1. Lomonaco R, Godinez Leiva E, Bril F, et al. Advanced liver fibrosis is common in patients with type 2 diabetes followed in the outpatient setting: the need for systematic screening. *Diabetes Care* 2021;44:399–406
2. Harrison SA, Gawrieh S, Roberts K, et al. Prospective evaluation of the prevalence of non-alcoholic fatty liver disease and steatohepatitis in a large middle-aged US cohort. *J Hepatol* 2021; 75:284–291
3. Ciardullo S, Monti T, Perseghin G. High prevalence of advanced liver fibrosis assessed by transient elastography among U.S. adults with type 2 diabetes. *Diabetes Care* 2021;44:519–525
4. Ciardullo S, Perseghin G. Prevalence of elevated liver stiffness in patients with type 1 and type 2 diabetes: a systematic review and meta-analysis. *Diabetes Res Clin Pract* 2022;190:109981
5. Stefan N, Cusi K. A global view of the interplay between non-alcoholic fatty liver disease and diabetes. *Lancet Diabetes Endocrinol* 2022;10: 284–296

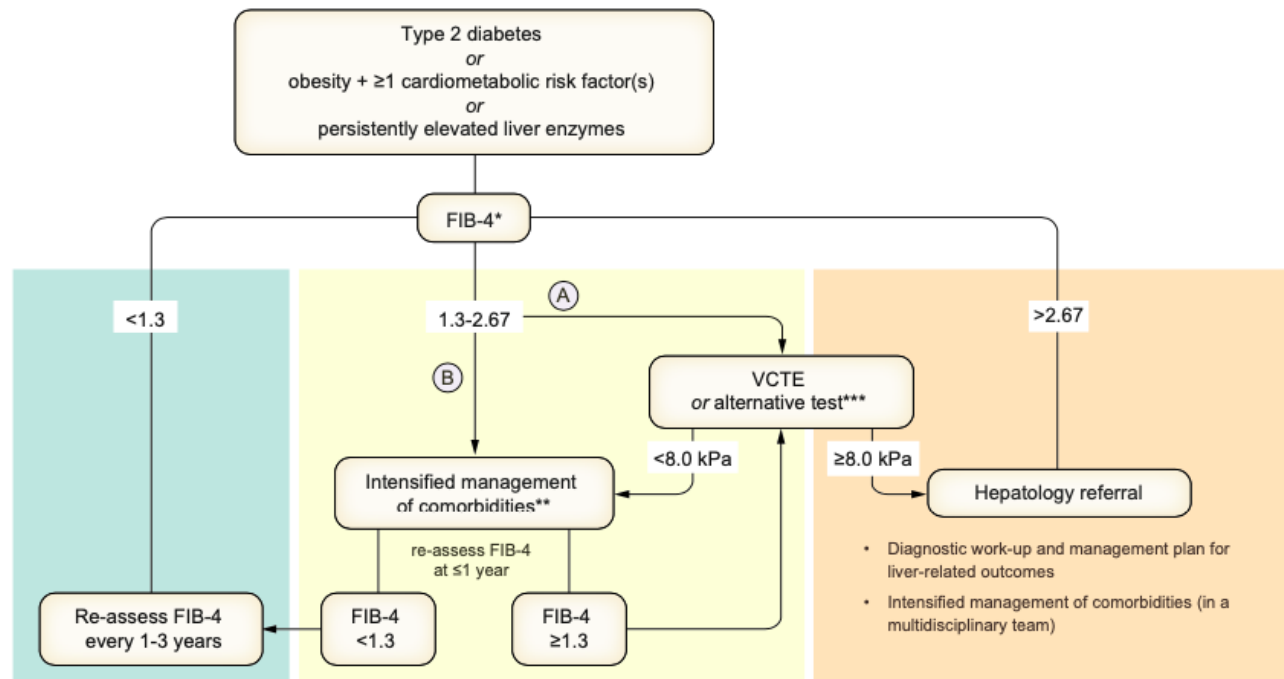
- TC-F. Can we use old NAFLD data under the new MASLD definition? *J Hepatol* 2024;80:e54–e56
17. Younossi ZM, Paik JM, Stepanova M, Ong J, Alqahtani S, Henry L. Clinical profiles and mortality rates are similar for metabolic dysfunction-associated steatotic liver disease and non-alcoholic fatty liver disease. *J Hepatol* 2024; 80:694–701
18. Ciardullo S, Carbone M, Invernizzi P, Perseghin G. Exploring the landscape of steatotic liver disease in the general US population. *Liver Int* 2023;43: 2425–2433
19. Castera L, Cusi K. Diabetes and cirrhosis: current concepts on diagnosis and management. *Hepatology* 2023;77:2128–2146
20. Alexopoulos A-S, Crowley MJ, Wang Y, et al. Glycemic control predicts severity of hepatocyte ballooning and hepatic fibrosis in nonalcoholic fatty liver disease. *Hepatology* 2021;74:1220–1233
21. Barb D, Repetto EM, Stokes ME, Shankar SS, Cusi K. Type 2 diabetes mellitus increases the risk of hepatic fibrosis in individuals with obesity and nonalcoholic fatty liver disease. *Obesity* (Silver

**Cusi K et al ADA Consensus MASLD
Diabetes Care, 2025**

Perché?



Come? Lo screening



* FIB-4 thresholds valid for age ≤65 years (for age >65 years: lower FIB-4 cut-off is 2.0)

** e.g. lifestyle intervention, treatment of comorbidities (e.g. GLP1RA), bariatric procedures

*** e.g. MRE, SWE, ELF, with adapted thresholds

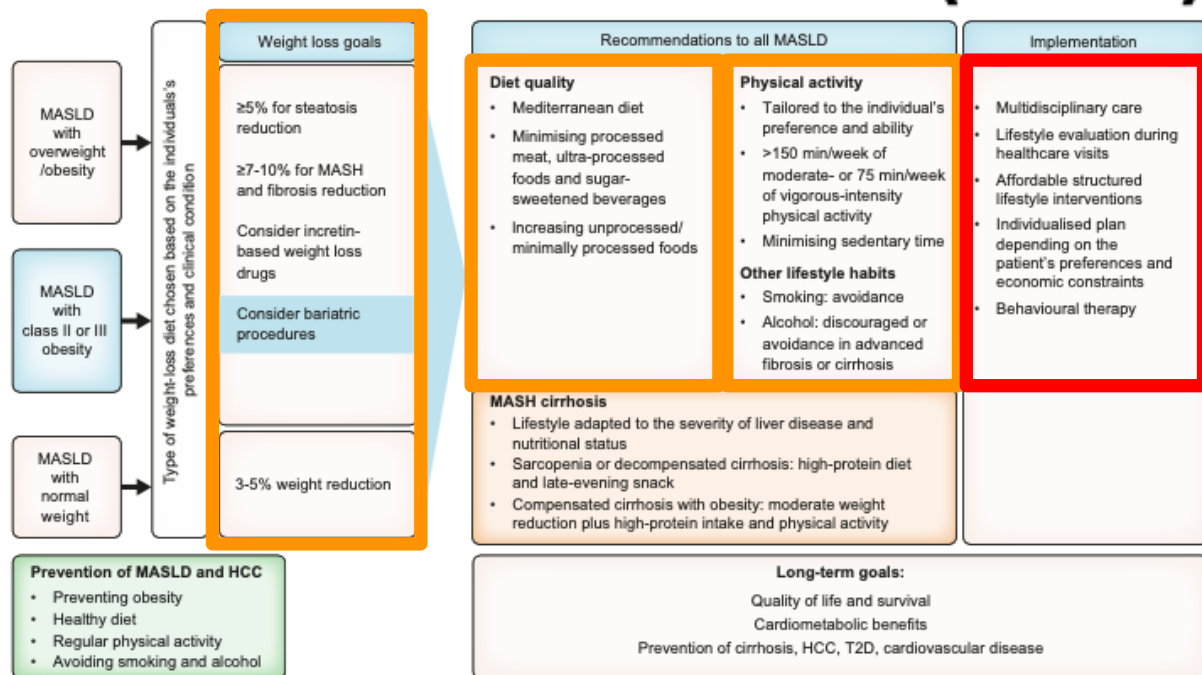
Ⓐ and Ⓑ are options, depending on medical history, clinical context and local resources

EASL-EASD-EASO
J Hepatol, 2024

Life-style intervention

Crucial but difficult task

EASL-EASD-EASO Clinical Practice Guidelines on the management of metabolic dysfunction-associated steatotic liver disease (MASLD)[☆]



Regardless of diabetes

Weight loss !

EASL-EASD-EASO
J Hepatol, 2024

Fig. 3. Lifestyle management algorithm for MASLD. Note: Behavioural therapy includes: self-monitoring, clinicians providing affected individuals with self-efficacy and motivation, setting realistic negotiable goals, and overcoming barriers. Examples of unprocessed/minimally processed foods: vegetables, fruits (not juice), low-fat dairy, nuts, olive oil, legumes, unprocessed fish and poultry. Overweight/obesity: Overweight: BMI of 25–29.9 kg/m² (non-Asian) or 23–24.9 (Asian), Obesity: ≥30 kg/m² (non-Asian) ≥25 kg/m² (Asian). Class II obesity: BMI ≥35 kg/m² (non-Asian) or BMI ≥30 kg/m² (Asian). Normal weight: BMI <25 kg/m² (non-Asian) or <23 kg/m² (Asian). BMI, body-mass index; HCC, hepatocellular carcinoma; MASH, metabolic dysfunction-associated steatohepatitis; MASLD, metabolic dysfunction-associated steatotic liver disease; T2D, type 2 diabetes.

How

Hypocaloric diet

- low-carbohydrate diet
- low-fat diet

appear to be similarly effective in reducing liver lipid content and related biomarkers

Mediterranean diet

Why?

- polyphenols
- fiber
- carotenoids
- omega-3 PUFA

Observational studies

the **Mediterranean diet** advocates added value

PREDIMED – N Engl J Med, 2013
corrected and republished 2018

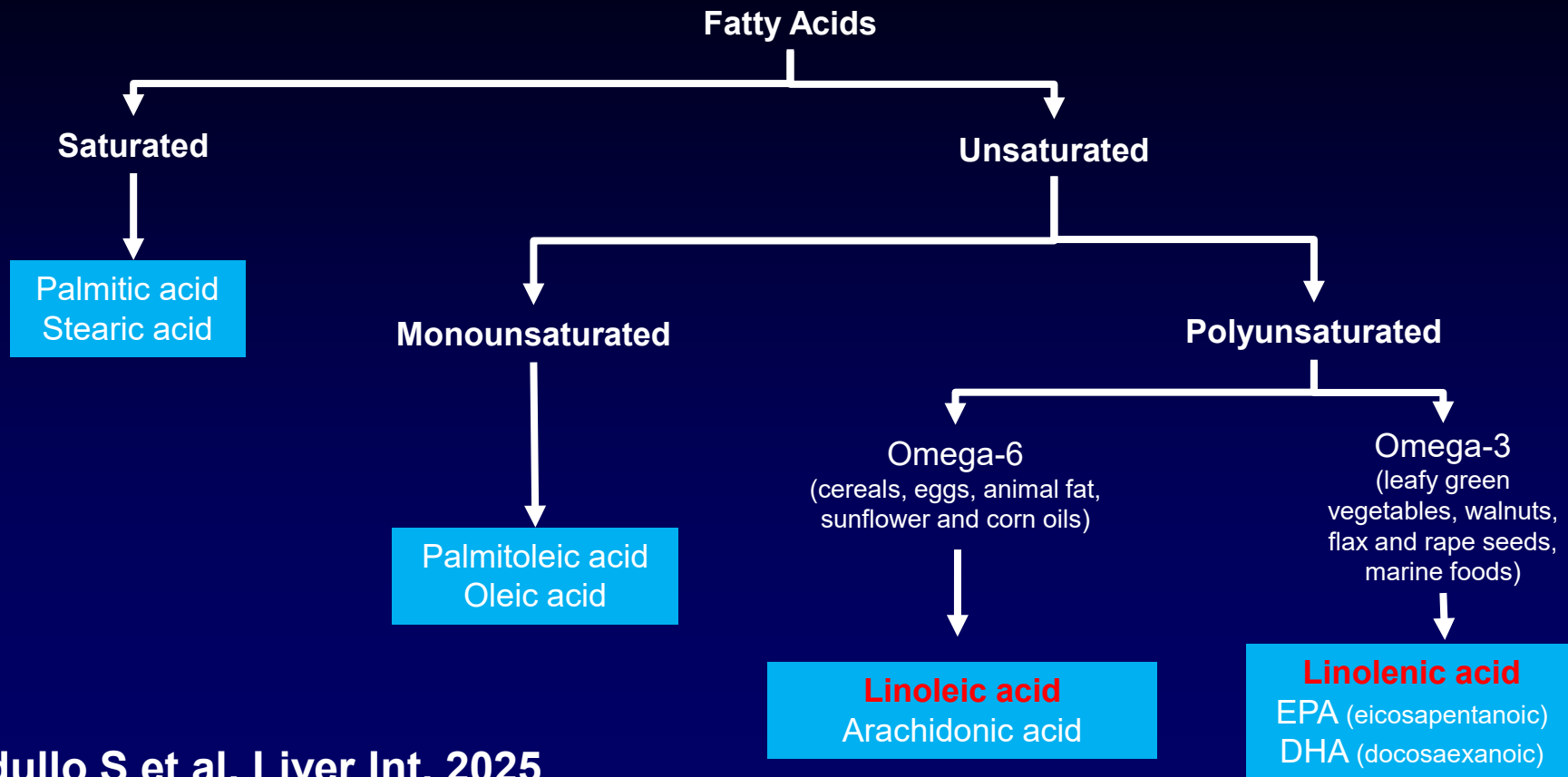
Reduction of

- fructose and refined carbohydrates, especially in soft-drinks (*via* reduction of de-novo lipogenesis),
- saturated fat
- ultra-processed foods
- red and processed meat

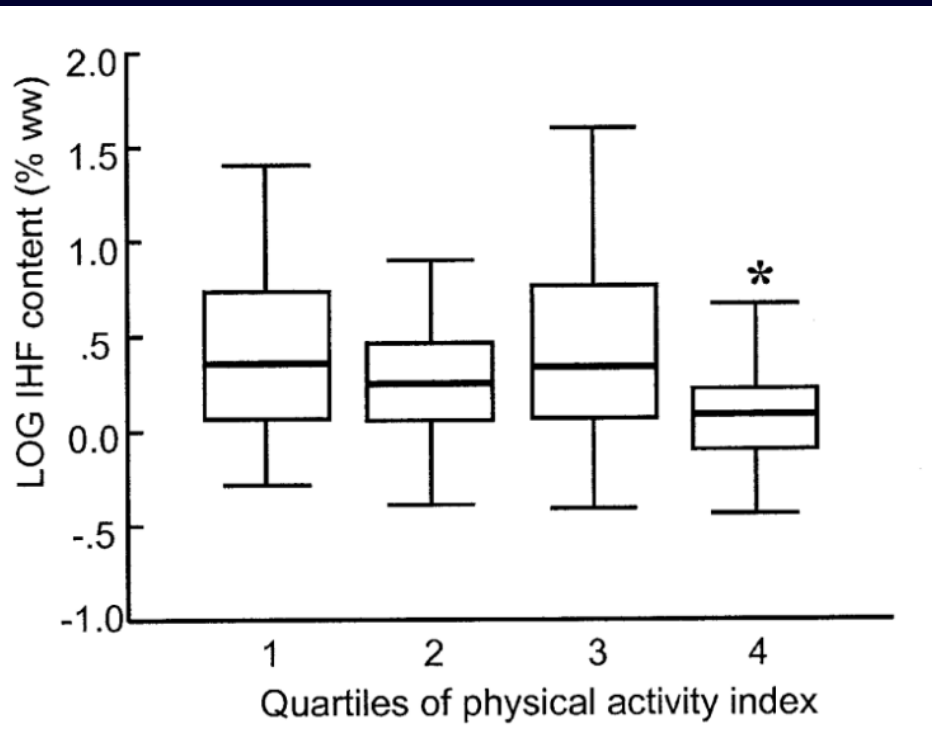
all related to MASLD risk (based on epidemiologic association)

Circulating FA subtypes and MASLD and liver fibrosis

Both esterified and free FAs were measured through GC-MS in the fasting state (≥ 8 h)



Habitual physical activity; retrospective analysis



Based on PAI (physical activity index); self reported questionnaire

- Work
- Leisure time
- Sport

Perseghin G et al Diabetes Care, 2007

Behavior therapy

the Need for a Multi-disciplinary Approach

The favorable effects of lifestyle modifications in MASLD reported in very few studies
But positive results are largely expected

Table 3. Strategies to Engage Patients in Lifestyle Modifications

Communicate empathetically

- Counseling is most effective when a patient feels that physicians understand his/her situation, perspective, and feelings.⁶²

Evaluate the pros and cons to change

- Counseling physicians should analyze collaboratively the pros and cons of changing patients' eating and activity habits.⁶⁵
- Change is facilitated by a communication strategy to elicit the person's reasons for and the advantages of change.⁶⁶

Examine the variables maintaining the problematic behavior

- Resistance to change should not be opposed with confrontation, but with a collaborative analysis of the problems that favors the unhealthy behavior.⁶⁵
- In resistant patients, physicians should always think contextually (such as, "What are the reasons for this behavior") and functionally (such as, "What are the consequences of this behavior").⁶⁷

Support self-efficacy

- Self-efficacy refers to a person's belief that he/she is capable of keeping a specific behavior;⁶⁸ it plays an important role in achieving health behavior change.⁶⁹
- Initially, self-efficacy is promoted by raising the hope that lifestyle changes can be attained.
- During the program, self-efficacy is promoted by designing an individualized program of eating and physical activity that patients are confident to attain.¹⁶

Be sensitive to stigma against obese individuals

- Stigma has a negative impact on obese patients' health care experiences and influences their decision to start treatment.⁶²
- To reduce stigma, physicians should recognize that obesity is a medical condition not the product of lack of willpower, and treat obese patients with respect and support.⁶²

Explain treatment

- The aims, duration, organization procedures and results of lifestyle modification should be detailed using written materials, in order to strengthen the commitments to treatment.⁵²
- In reluctant patients it might be helpful to propose treatment as a sort of experiment, with a possible return to the old lifestyle habits in the absence of benefits.⁷⁰

≈

20 years ago

Bellentani S et al
Hepatology, 2008

Diabetes Self-Management Education and Support (DSMES)

Individual
sessions

Trained
educators

Ongoing Process

-At onset

-Annually

-Onset of complications

-Transition in life

-Transition in care

Davies MJ et al

Diabetes Care, 2022

DECISION CYCLE FOR PERSON-CENTERED GLYCEMIC MANAGEMENT IN TYPE 2 DIABETES

REVIEW AND AGREE ON MANAGEMENT PLAN

- Review management plan
- Mutually agree on changes
- Ensure agreed modification of therapy is implemented in a timely fashion to avoid therapeutic inertia
- Undertake decision cycle regularly (at least once/twice a year)
- Operate in an integrated system of care

ASSESS KEY PERSON CHARACTERISTICS

- The individual's priorities
- Current lifestyle and health behaviors
- Comorbidities (i.e., CVD, CKD, HF)
- Clinical characteristics (i.e., age, HbA_{1c}, weight)
- Issues such as motivation, depression, cognition
- Social determinants of health

CONSIDER SPECIFIC FACTORS THAT IMPACT CHOICE OF TREATMENT

- Individualized glycemic and weight goals
- Impact on weight, hypoglycemia, and cardiorenal protection
- Underlying physiological factors
- Side effect profiles of medications
- Complexity of regimen (i.e., frequency, mode of administration)
- Regimen choice to optimize medication use and reduce treatment discontinuation
- Access, cost, and availability of medication

GOALS OF CARE

- Prevent complications
- Optimize quality of life



PROVIDE ONGOING SUPPORT AND MONITORING OF:

- Emotional well-being
- Lifestyle and health behaviors
- Tolerability of medications
- Biofeedback including BGM/CGM, weight, step count, HbA_{1c}, BP, lipids

IMPLEMENT MANAGEMENT PLAN

- Ensure there is regular review; more frequent contact initially is often desirable for DSMES

AGREE ON MANAGEMENT PLAN

- Specify SMART goals:
 - Specific
 - Measurable
 - Achievable
 - Realistic
 - Time limited

UTILIZE SHARED DECISION-MAKING TO CREATE A MANAGEMENT PLAN

- Ensure access to DSMES
- Involve an educated and informed person (and the individual's family/caregiver)
- Explore personal preferences
- Language matters (include person-first, strengths-based, empowering language)
- Include motivational interviewing, goal setting, and shared decision-making

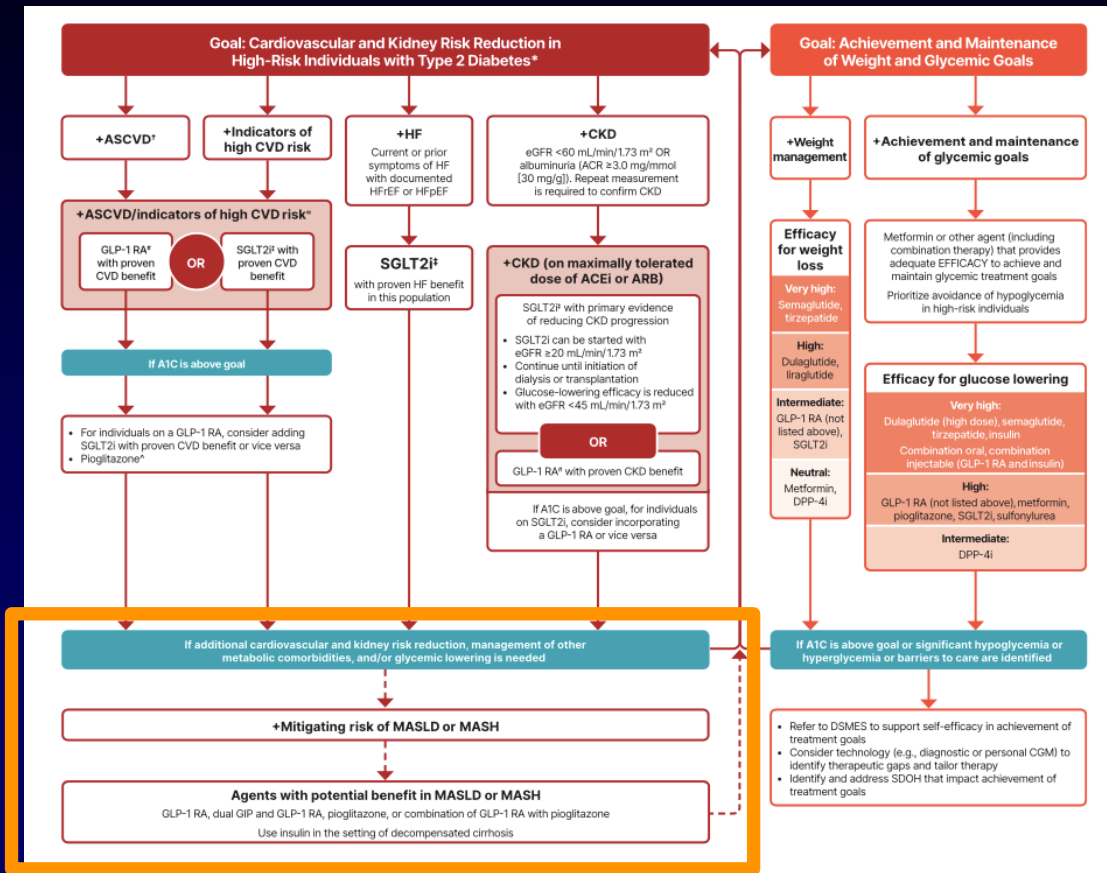
Figure 1—Decision cycle for person-centered glycemic management in type 2 diabetes. Adapted from Davies et al. (5) with permission. BGM, blood glucose monitoring; BP, blood pressure; CGM, continuous glucose monitoring; CKD, chronic kidney disease; CVD, atherosclerotic cardiovascular disease; DSMES, diabetes self-management education and support; HF, heart failure.

Terapia farmacologica sartoriale

Algoritmo terapeutico ADA 2025

Treat-to-benefit

Treat-to-target



- GLP1-RA
- GIP/GLP1-RA
- Pioglitazone
- GLP1-RA + Pio

ADA Standards of Care,
Diabetes Care, 2025

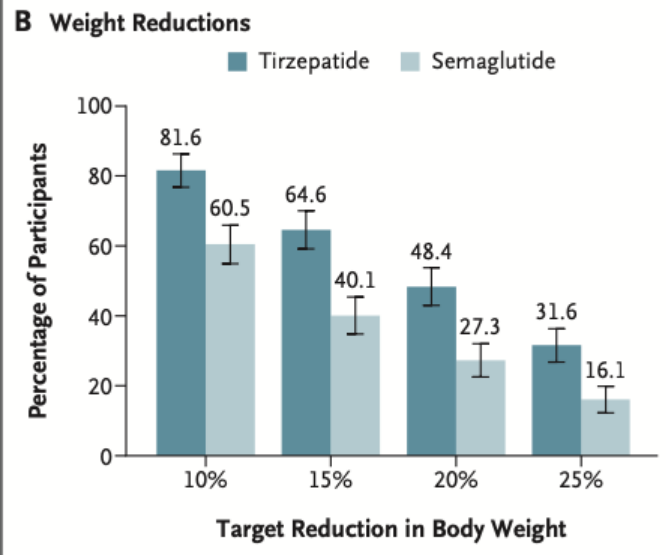
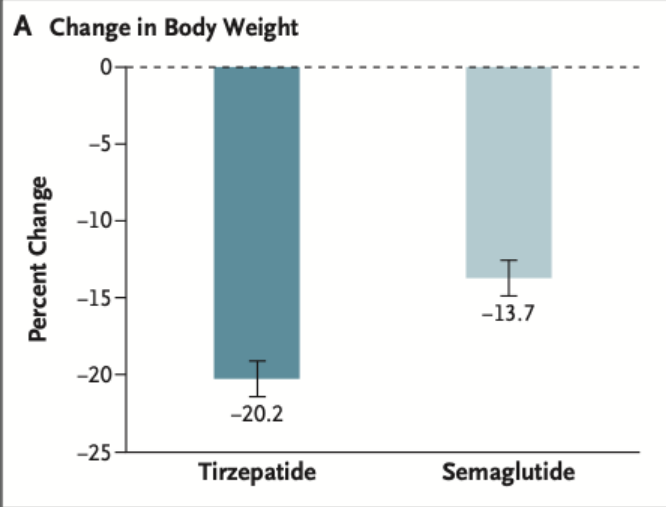
No complications

SURMOUNT-5

phase 3b, open-label, controlled trial, adult participants with obesity assigned in a 1:1 ratio to receive the maximum tolerated dose of tirzepatide (10 mg or 15 mg) or the maximum tolerated dose of semaglutide (1.7 mg or 2.4 mg) subcutaneously once weekly

primary end point was the % change in weight from baseline to week 72.

Aronne LJ et al N Engl J Med, 2025



Mechanical Complication: OSAS

SURMOUNT-OSA

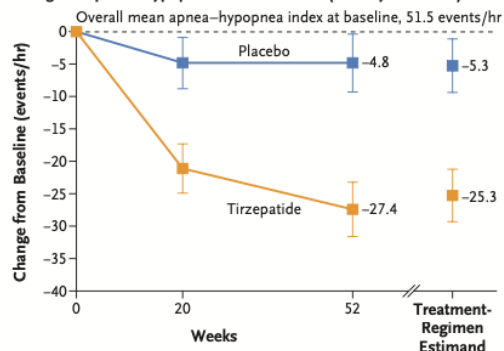
Two phase 3, double-blind, randomized, controlled trials involving adults with moderate-to-severe obstructive sleep apnea and obesity.

- who were not receiving treatment with positive airway pressure (PAP) at baseline
- who were receiving PAP therapy at baseline

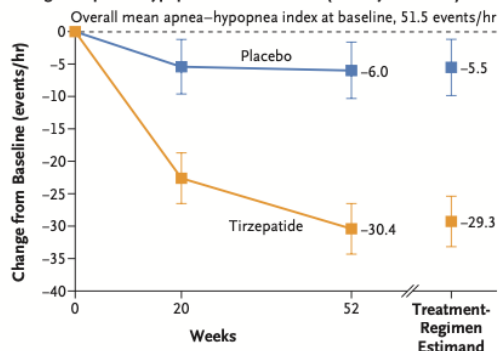
maximum tolerated dose of tirzepatide (10 mg or 15 mg) or placebo for 52 weeks.

The **primary end point** was the change in the apnea–hypopnea index (AHI, the number of apneas and hypopneas during an hour of sleep) from baseline

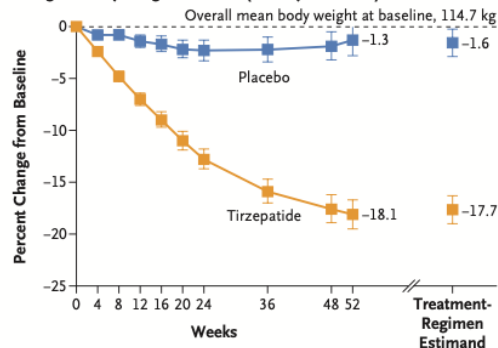
A Change in Apnea–Hypopnea Index in Trial 1 (efficacy estimand)



B Change in Apnea–Hypopnea Index in Trial 2 (efficacy estimand)



C Change in Body Weight in Trial 1 (efficacy estimand)



D Change in Body Weight in Trial 2 (efficacy estimand)

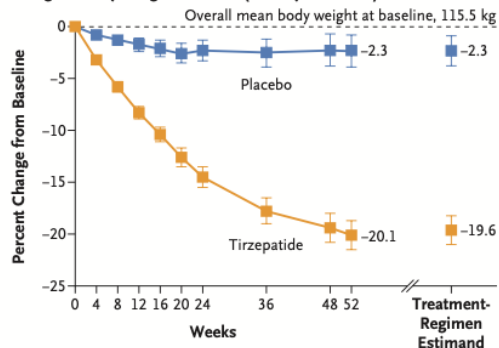


Figure 1. Change in AHI and Body Weight.

Mechanical complication: knee osteoarthritis

STEP-9

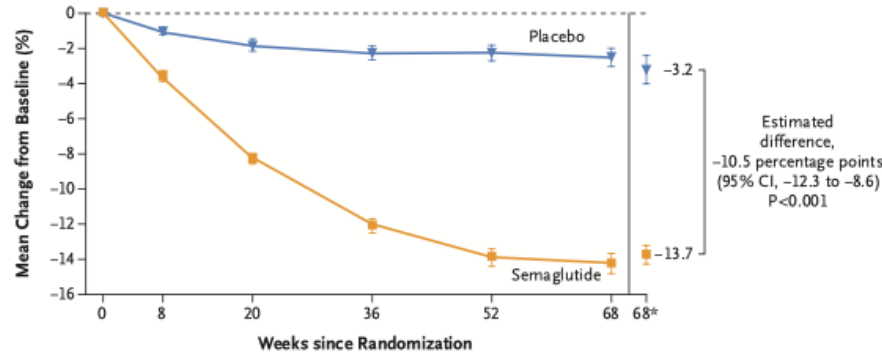
68-week, double-blind, randomized, placebo-controlled RCT. Participants with obesity and a clinical and radiologic diagnosis of moderate knee osteoarthritis with at least moderate pain were randomly assigned,

The primary end points were the percentage change in body weight and the change in the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain score

A key confirmatory secondary end point was the physical-function score on the 36-Item Short Form Health Survey (SF-36), version 2

Bliddal H et al N Engl J Med, 2024

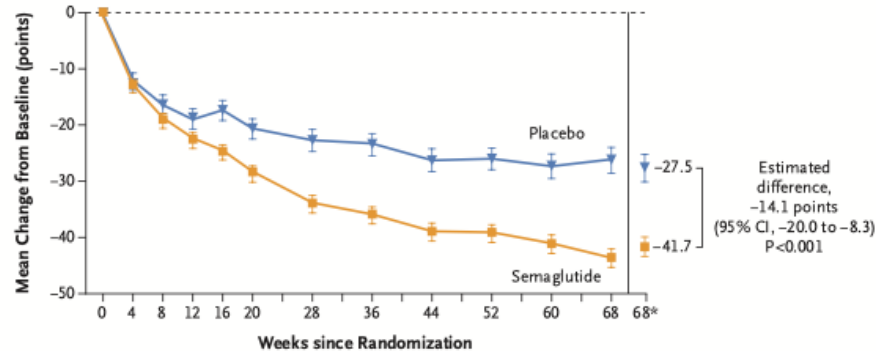
A Change in Body Weight



No. of Participants

Placebo	136	132	127	123	120	120	136
Semaglutide	271	263	259	254	245	253	271

C Change in WOMAC Pain Score



No. of Participants

Placebo	136	132	129	126	126	128	126	117	116	118	111	117	136
Semaglutide	271	262	260	256	257	256	251	250	245	245	239	245	271

Sick fat complication: prediabetes

STEP-10

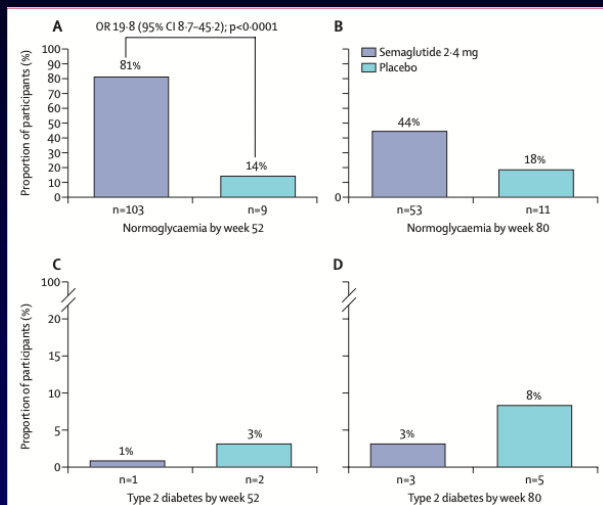
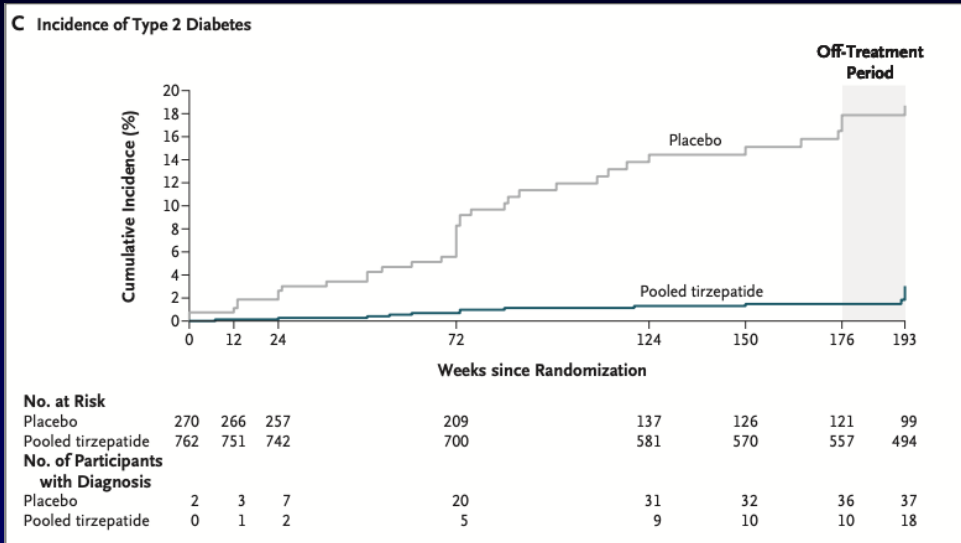


Figure 3: Proportion of participants who reverted to normoglycaemia or progressed to type 2 diabetes with semaglutide 2.4 mg versus placebo in the full analysis set during the in-trial observation period. Observed proportions of participants who reverted to normoglycaemia ($HbA_{1c} < 6.0\%$ [< 42 mmol/mol] and $FPG < 5.5$ mmol/L) at week 52 (A; OR is for the treatment policy estimand) and week 80 (B). Observed proportions of participants who progressed to type 2 diabetes ($HbA_{1c} \geq 6.5\%$ [≥ 48 mmol/mol] or $FPG \geq 7.0$ mmol/L, verified with a repeated blood sample within 4 weeks from baseline) at week 52 (C) and week 80 (D). OR for panel A is for the treatment policy estimand. FPG=fasting plasma glucose. OR=odds ratio.

1% vs 3%

OR 19.8; 95% CI 8.7 to 45.2; p<0.0001

SURMOUNT-1

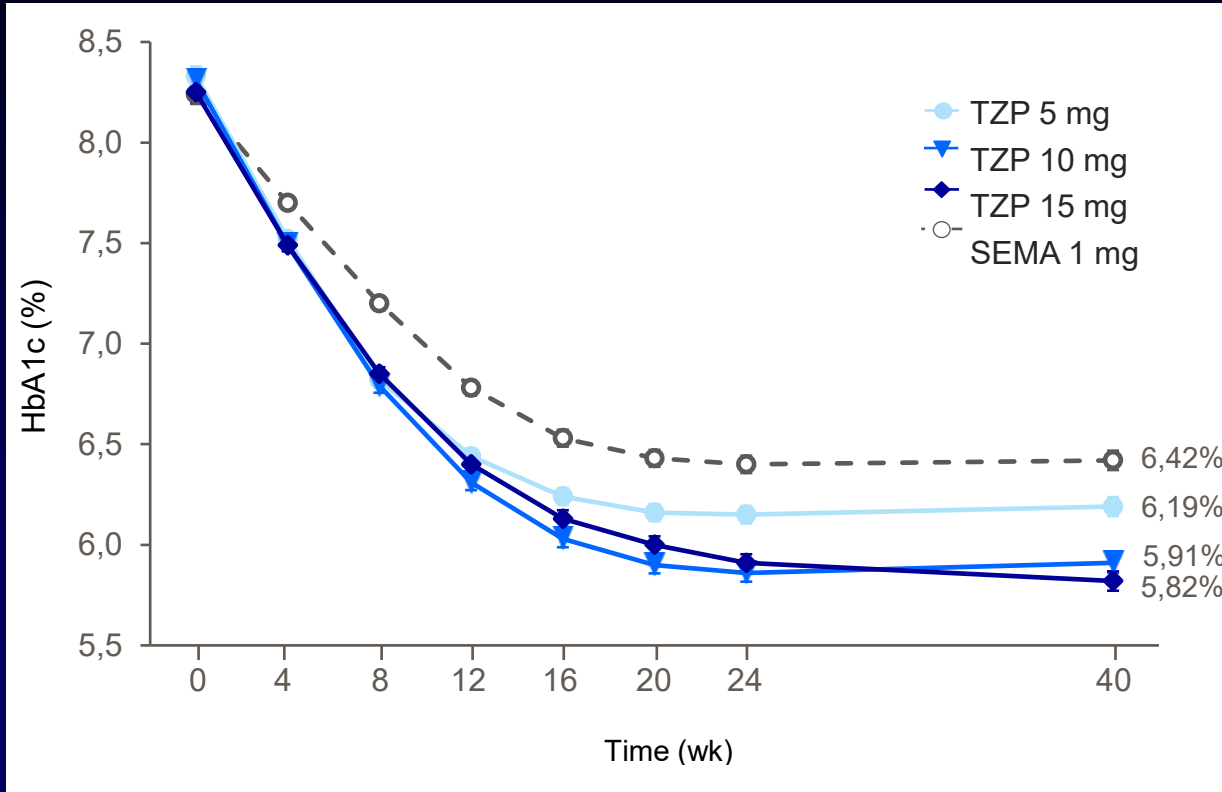


1.3% vs. 13.3%

HR 0.07; 95% CI: 0.0-0.1; P<0.001

Sick fat complication: T2DM

SURPASS-2



Sick fat complication: CVD

SELECT

multicenter, double-blind, placebo-controlled RCT event-driven for superiority

45 years of age or older who had pre-existing CVD and BMI > 27 kg/m² without diabetes

semaglutide at a dose of 2.4 mg or placebo

The primary end point was composite of death from CVD, nonfatal myocardial infarction, or nonfatal stroke in a time-to-first-event analysis.

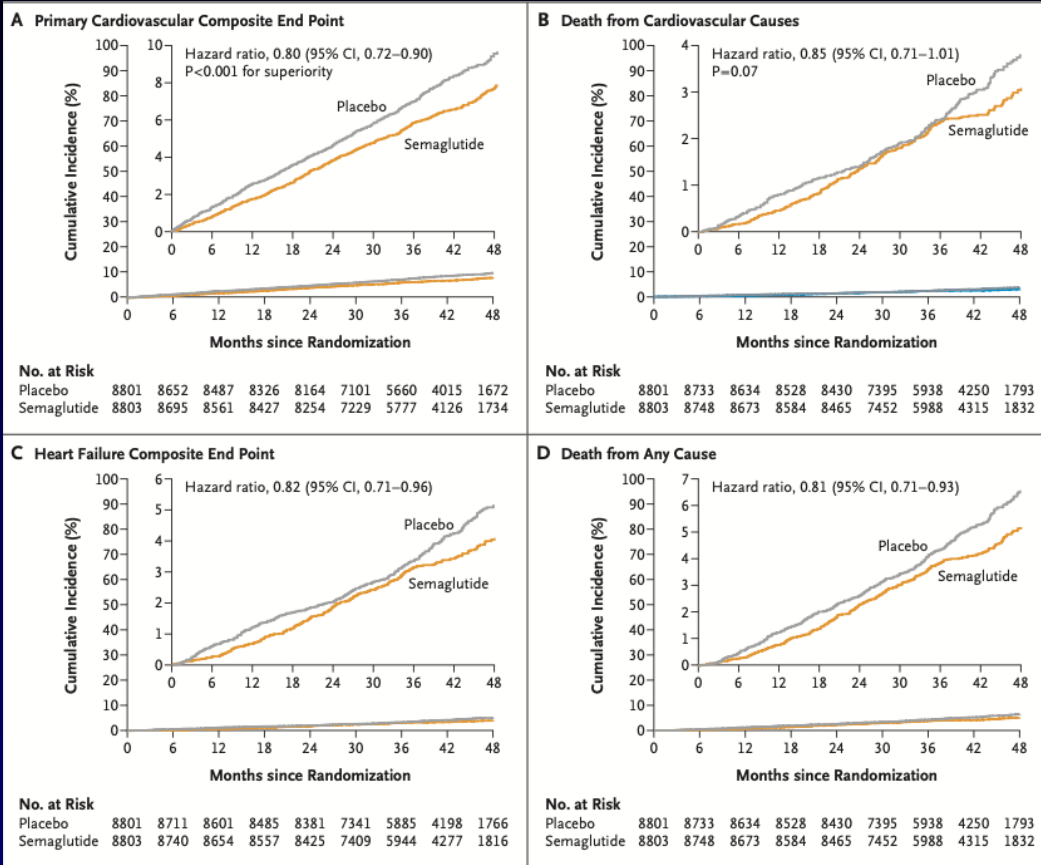


Figure 1. Time-to-First-Event Analysis for Primary and Confirmatory Secondary Efficacy End Points.

Lincoff AM et al N Engl J Med, 2023

Sick fat complication: heart failure

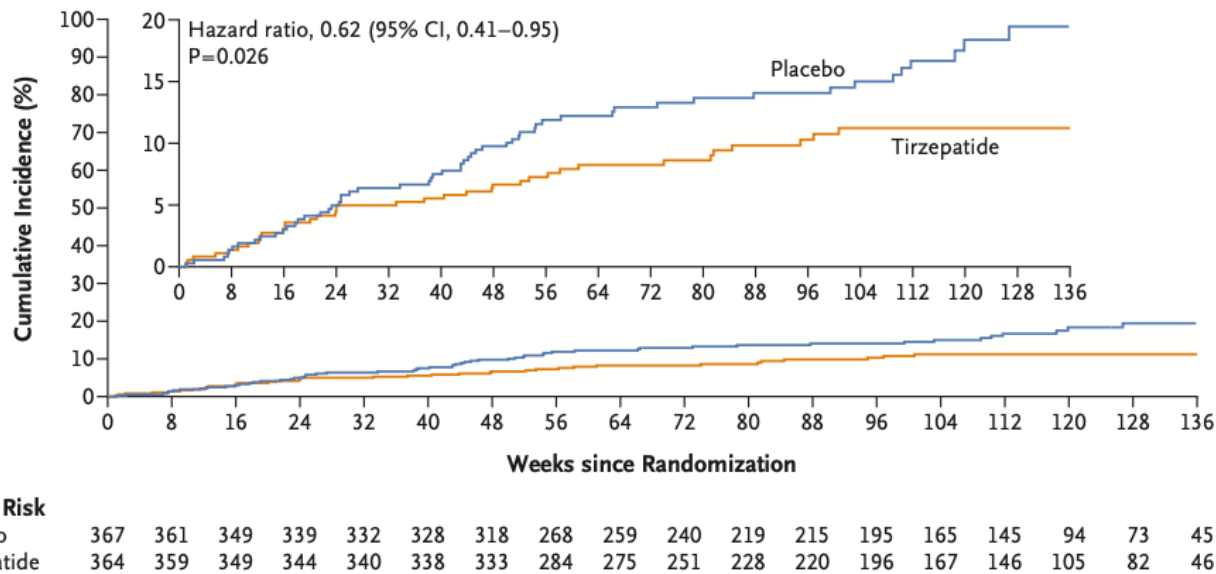


Figure 1. Composite of Death from Cardiovascular Causes or a Worsening Heart-Failure Event.

Shown is the cumulative incidence of death from cardiovascular causes or a worsening heart-failure event (the composite primary end point), assessed in a time-to-first-event analysis, among 364 patients who received tirzepatide and 367 patients who received placebo. The inset shows the same data on an expanded y axis.

SUMMIT

double-blind, randomized
RCT

731 patients with HF, and FE:
50%, and BMI > 30 kg/m²

The two primary end points

- composite of CVD death or a worsening heart-failure
- change from baseline to 52 weeks in the Kansas City Cardiomyopathy Questionnaire clinical summary score (KCCQ-CSS)

Sick fat complication: MASLD-MASH

ESSENCE

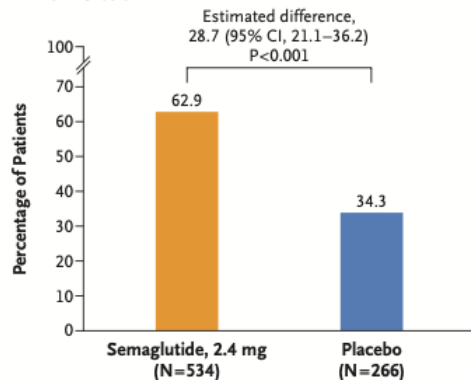


ESSENCE is an ongoing phase 3 trial comparing once-weekly subcutaneous semaglutide 2.4 mg versus placebo in participants with biopsy-defined MASH and fibrosis stage 2 or 3



Here, we report interim efficacy and safety* results from the first 800 patients who completed 72 weeks of treatment

A Resolution of Steatohepatitis with No Worsening of Liver Fibrosis



B Reduction in Liver Fibrosis with No Worsening of Steatohepatitis

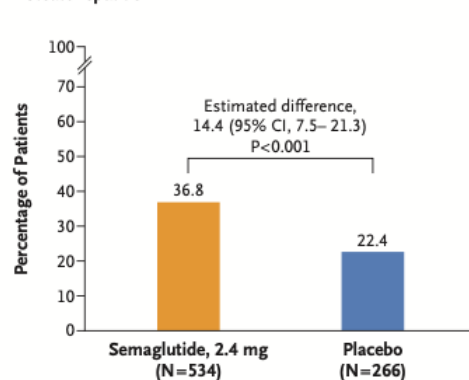
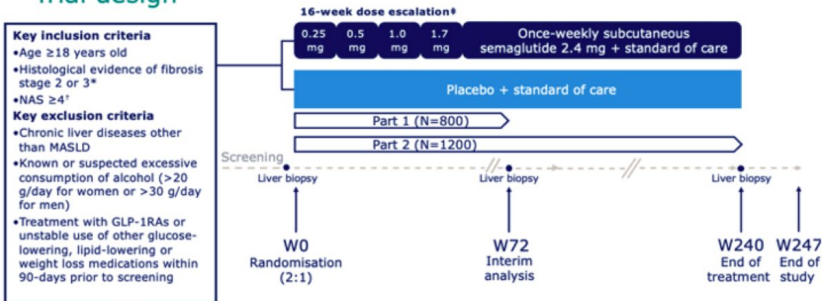


Figure 1. Primary End Points.

The figure shows the percentage of patients with fibrosis stage 2 or 3 who had resolution of steatohepatitis with no worsening of liver fibrosis (Panel A) and reduction in liver fibrosis with no worsening of steatohepatitis (Panel B) after 72 weeks, with the estimated difference expressed in percentage points.

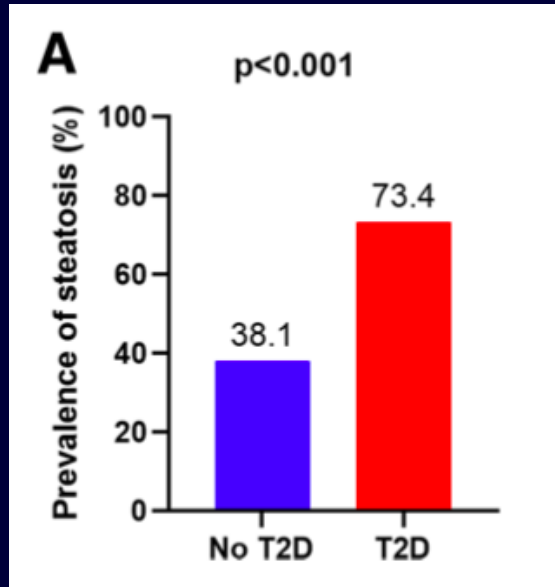
Methods Trial design



Prevalence of Noninvasively Detected Clinically Significant Portal Hypertension Among U.S. Adults With and Without Diabetes

<https://doi.org/10.2337/dc24-1341>

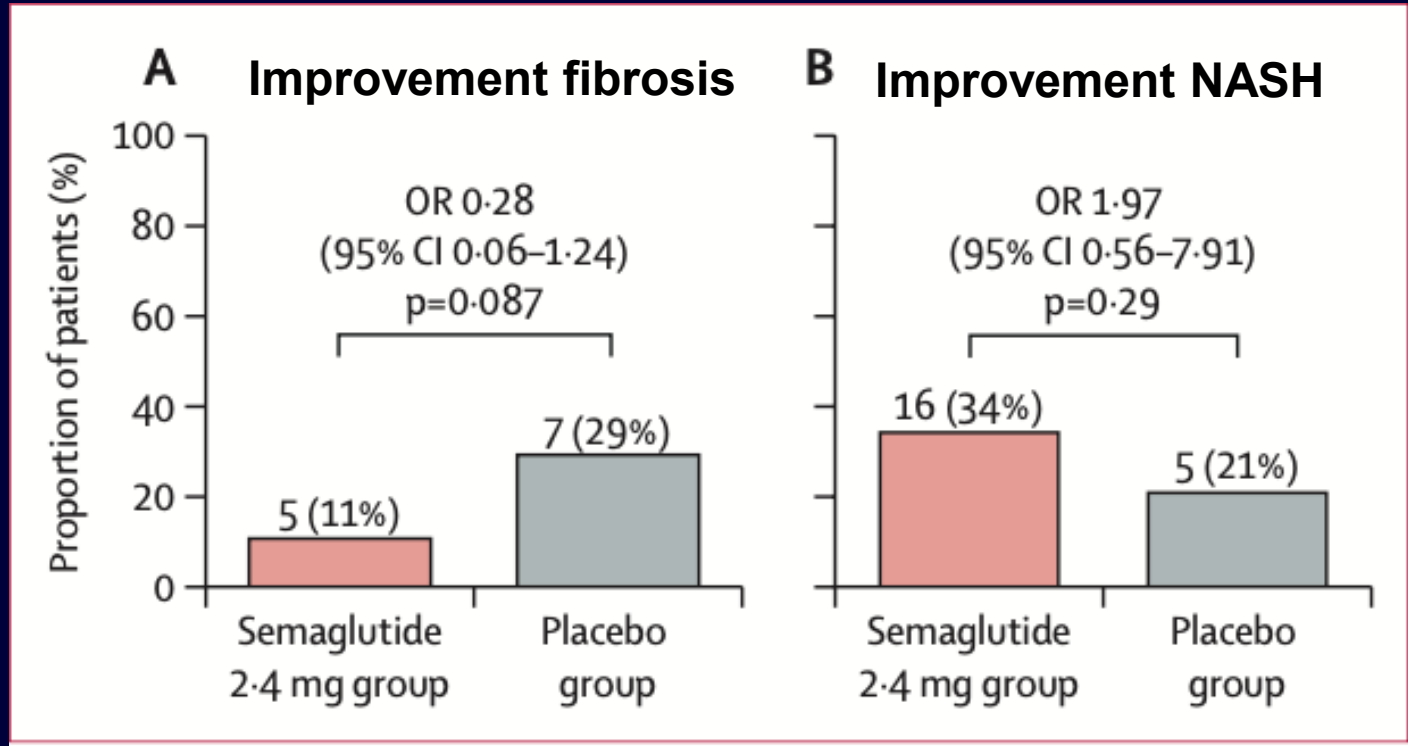
Ciardullo S et al. Diabetes Care, 2024



MASLD/MASH

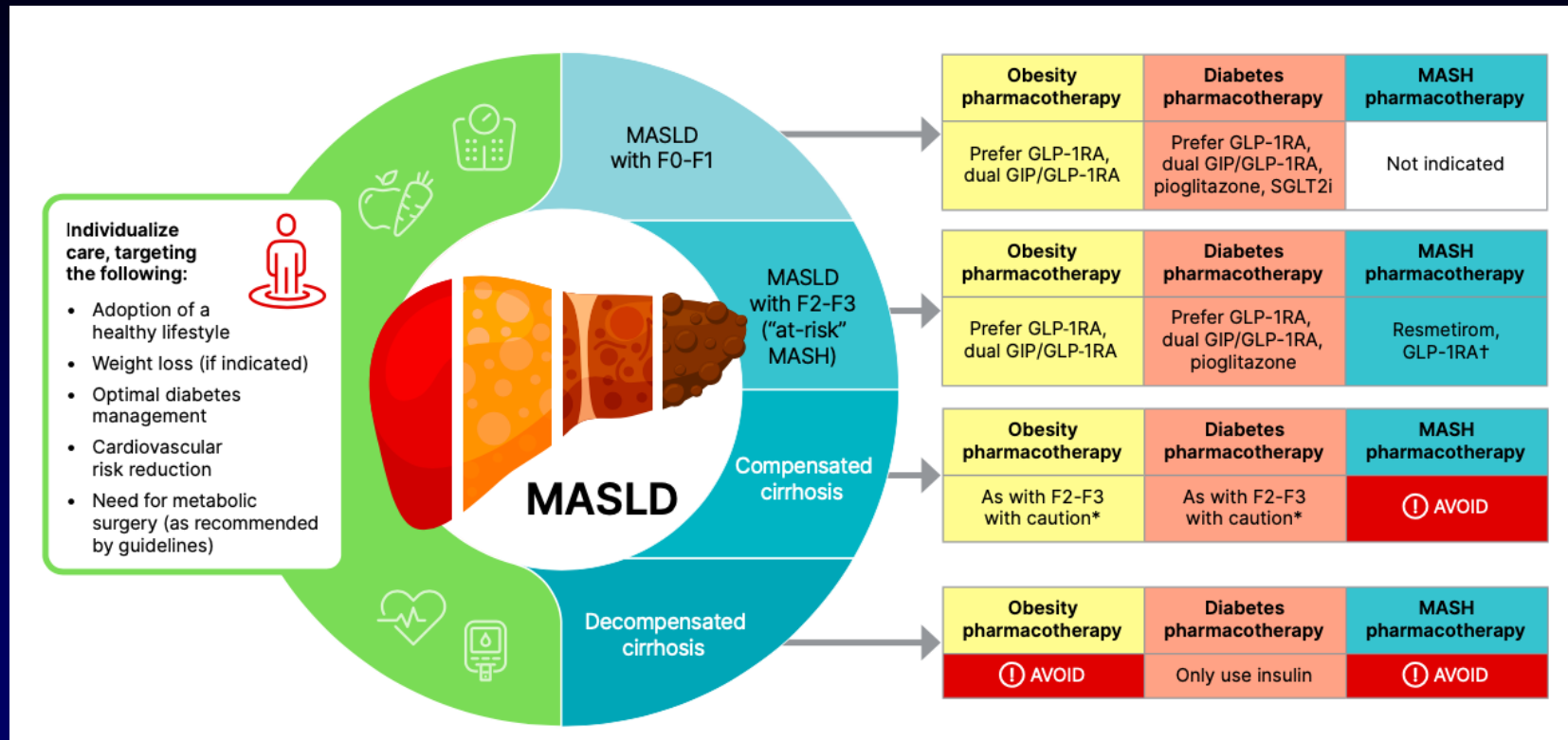
GLP1-RA in compensated cirrhosis (F4) - Semaglutide

**Phase 2:
71 patients
48 weeks**



Loomba R et al, Lancet Diabetes Endocrinol, 2023

Anti metabolic & anti fibrotic therapy



Cusi K et al ADA Consensus MASLD Diabetes Care, 2025

Weight loss may be associated with overall health improvements in:

Magnitude of weight loss (%)

0–5%

- Hypertension¹
- Hyperglycemia¹

5–10%

- PCOS¹
- NAFLD¹
- Prevention of T2D¹
- Dyslipidemia¹

10–15%

- OSAS¹
- GERD¹
- NASH¹
- Cardiovascular disease¹
- Urinary stress incontinence²
- Knee osteoarthritis¹

15–20%

- CV mortality³
- T2D remission⁴
- Hepatic steatosis⁵

>20%

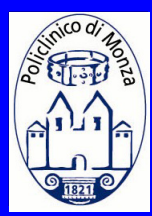
- HFpEF⁶
- Advanced T2D remission^{7,8*}
- Postural instability⁹

**Bariatric surgery
GLP1 & GLP1/GIP-RA**

**Look Ahead
DiRECT**

**evidences suggesting
that**

Greater weight loss = better liver health outcomes



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Giovanni Corrao

Hypertension Unit

UNIMIB

Guido Grassi
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Papa Giovanni XXIII - BG

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Roberto Trevisan

H Niguarda

Federico Bertuzzi

IRCCS Monzino

Stefano Genovese

PRIN 2021

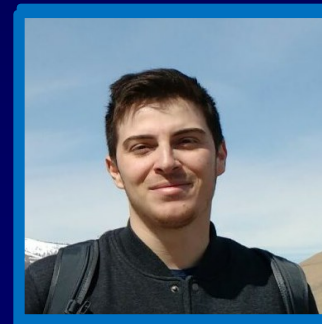
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Milena Raffi (UNIBO)

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Angelo Scuteri (UNICA)

UNIVR

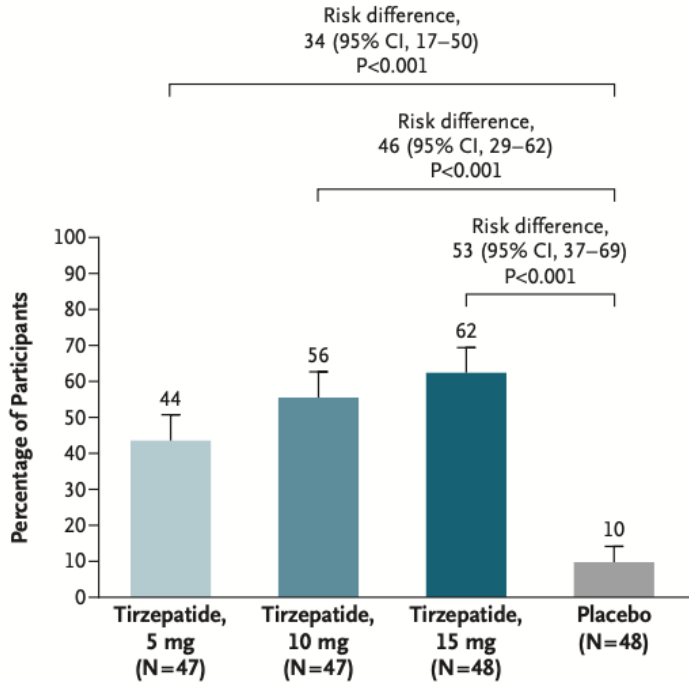
Alessandro Mantovani
Giovanni Targher



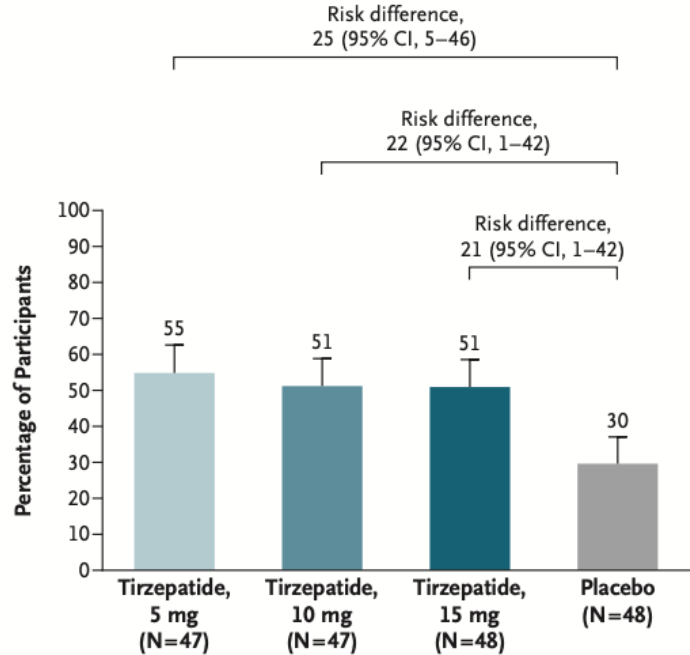
Dual-agonists

GLP1/GIP RA: Tirzepatide

A Resolution of MASH and No Worsening of Fibrosis

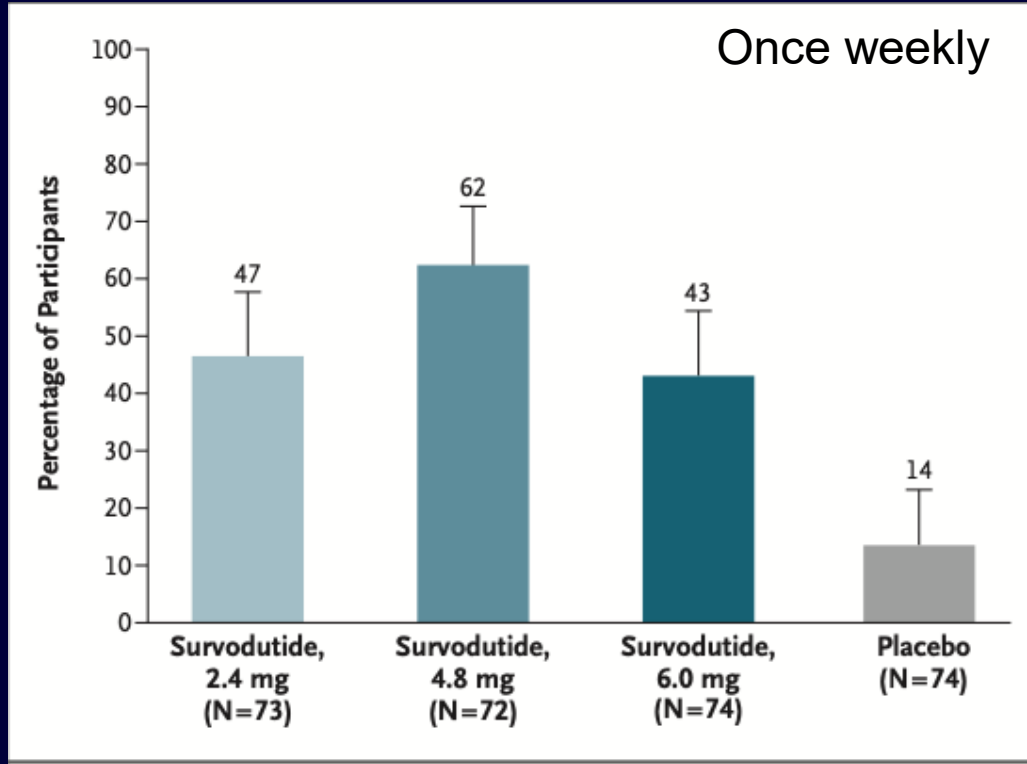


B Decrease of ≥ 1 Fibrosis Stage and No Worsening of MASH



**Phase 2:
190 pats
54 weeks**

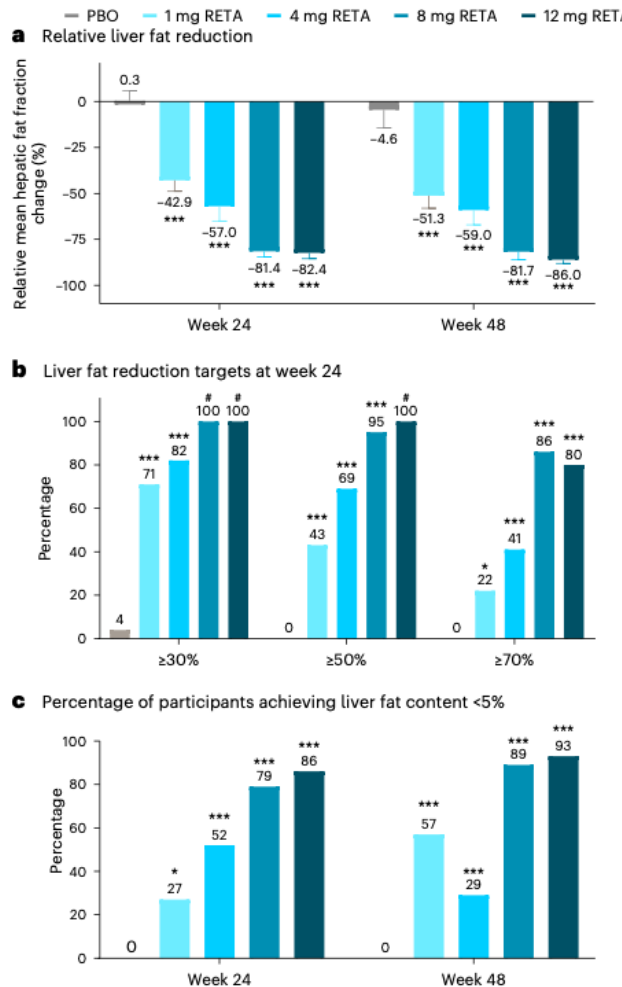
GLP1/Glucagon RA: Survodutide



Phase-2, 48 weeks
Histologic improvement
in MASH, with no
worsening of fibrosis

Triple-agonists

GLP1/GIP/Glucagon – RA (Retatrutide)



Liver fat reductions were significantly related to changes in body weight, abdominal fat and metabolic measures associated with improved insulin sensitivity and lipid metabolism

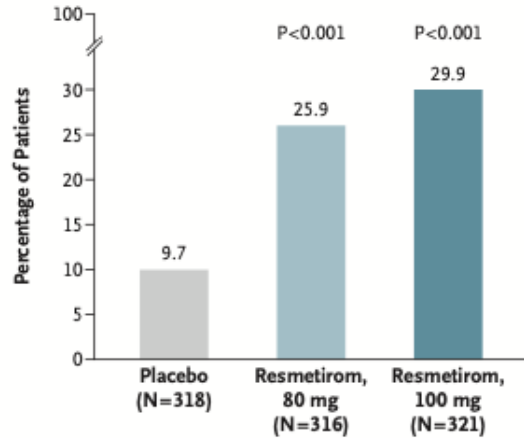
Sanyal AJ et al, Nature Med, 2024

Resmetirom

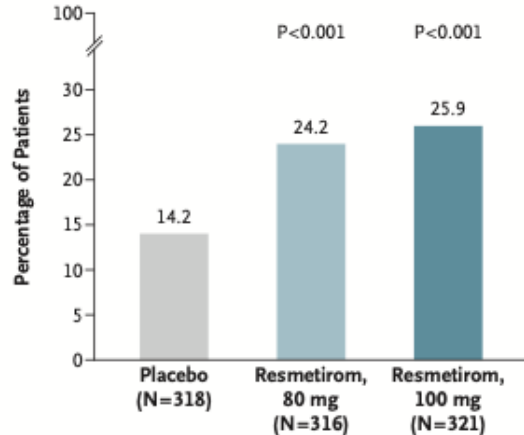
MAESTRO – Phase 3

Resmetirom is an oral, liver-directed, thyroid hormone receptor beta (THR- β) – selective agonist

A NASH Resolution with No Worsening of Fibrosis



B Fibrosis Improvement by ≥ 1 Stage with No Worsening of NAFLD Activity Score



Harrison SA et al, N Engl J Med, 2024

Conclusions

EASL–EASD–EASO Clinical Practice Guidelines on the management of metabolic dysfunction-associated steatotic liver disease (MASLD)[☆]

European Association for the Study of the Liver (EASL)^{*}, European Association for the Study of Diabetes (EASD), European Association for the Study of Obesity (EASO)

Life-style intervention 5 Questions + 1

Journal of Hepatology, September 2024; 81: 492–542

Q1

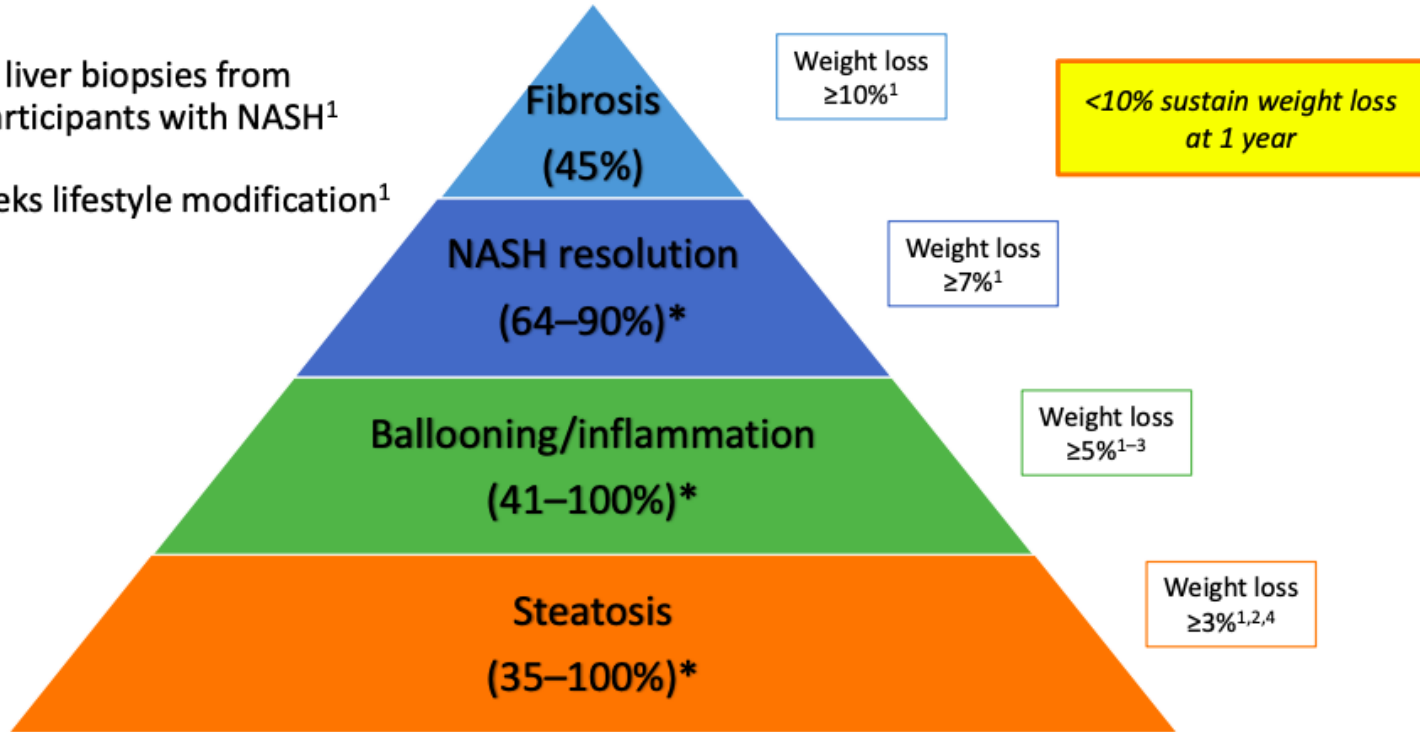
In adults with MASLD,
what is the efficacy of dietary and behavioural therapy-
induced **weight loss** on

- histologically
- non-invasively assessed liver damage/fibrosis
- liver related outcomes

compared with no intervention?

Lifestyle Modification and Histology in NAFLD

- Paired liver biopsies from 261 participants with NASH¹
- 52 weeks lifestyle modification¹



Vilar-Gomez E et al Gastroenterology, 2015

Limitations

- Short duration of intervention

- Lack of hard liver-related outcomes

In a Cochrane systematic review of RCTs in people with MASLD, with follow-up periods of 2–24 months, data were sparse regarding the effects of lifestyle interventions on any clinical outcome (death, liver-related complications, and liver cancer)

- Time-restricted eating: very little evidence for a beneficial effect vs. regular caloric restriction on hepatic lipid content in individuals with MASLD

Q2

In adults with MASLD
is **changing diet quality** effective in reducing

- histologically
- non-invasively assessed liver damage/fibrosis
- liver-related outcomes

compared with no intervention?

Q3

In adults with MASLD
are **physical activity and exercise** effective at reducing

- histologically
- non-invasively assessed liver damage/fibrosis
- liver-related outcomes compared

with no intervention?

RCTs

- aerobic training
- resistance training
- high-intensity interval training
- combinations

With varying frequency and length of sessions and intensities

Effective for **steatosis** reduction

No data for individuals with **fibrosis**

Q4

In adults with MASLD who are **normal weight** are diet and exercise interventions effective in reducing

- histologically
- non-invasively assessed liver damage/fibrosis
- liver related outcomes

in comparison with no intervention?

Few, but interesting data

In an RCT of a 12-month lifestyle intervention programme, a 3-5% weight reduction led to remission of MASLD (1H-MRS) among 50% of the individuals without obesity.

Individuals defined as non-obese were more likely than individuals with obesity to maintain weight reduction and normal liver enzymes over long-term (6-year) follow-up

In a large cohort study that included 2,383 normal-weight adults with MASLD, weight reduction over a median follow-up of 3 years was associated with MASLD resolution (measured by abdominal ultrasound) in a dose-dependent manner

Wong VW et al, J Hepatol 2018

Sinn DH et al, Eur J Gastroenterol Hepatol 2021

Q5

In adults with MASLD, are **nutraceuticals** (food supplements, herbal products, gut microbiota-modifying agents) effective to reduce

- Histologically
- non-invasively assessed liver damage/fibrosis
- liver-related outcomes compared

with no intervention?

Observational

Microbiome-centred therapies such as engineered bacteria, postbiotics, and phages have mainly been tested in preclinical models

Coffee consumption – caffeinated or not – has been shown to have a protective association with MASLD (fibrosis > steatosis) in several observational studies of varying quality

Q6 - End-stage liver disease?

Malnutrition and sarcopenia (a progressive decline in skeletal muscle mass and function) are prevalent, especially if MASH-related

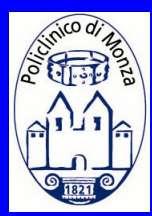
Intervention

- high-calorie (35 kcal/kg of body weight/day)
- protein-rich (1.2–1.5 g/kg of body weight/day rich in BCAA)
- snack late evening (to prevent muscle breakdown during prolonged overnight fasting)
- nutritional status and sarcopenia
- hepatic encephalopathy
- survival
- QoL

EASL Clinical Practice Guidelines on nutrition in chronic liver disease. J Hepatol, 2019

Critical topics

- Cultural
- Infrastructures
- Value



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