# Update on the Management of T2D and MASLD in NB

April 24, 2026

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Assistant Professor (Dalhousie)

NB Internal Medicine Update

*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes*

Slides included for your reference №

# Disclosures

## Relationships With Financial Sponsors

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|---|---|
| **SPEAKERS BUREAU/ HONORARIA:** | **Diabetes/Obesity:** CPD Network Association, Eli Lilly, Novo Nordisk, Dexcom, Abbott (FreeStyle Libre) **Lipids:** Ultragenyx |
| **GRANTS/RESEARCH SUPPORT/PATENTS:** | **Diabetes:** Novo Nordisk |
| **CONSULTING FEES:** | **Diabetes:** Abbott (FreeStyle Libre), Dexcom |
| **OTHER:** | Assistant Professor in Medicine (Dalhousie) |

*Image generated using Microsoft Copilot 2026.*

- Mitigation of potential bias: not applicable
- I do not intend to make therapeutic recommendations for medications that have not received regulatory approval.
- I will be using AI-generated images (not content).

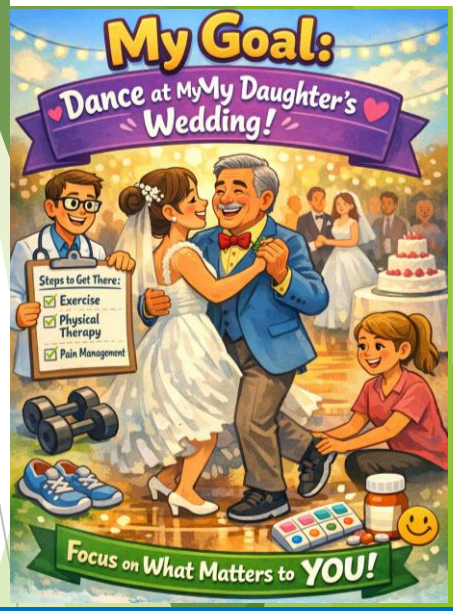
Health Canada

NB Internal Medicine Update

*CPD = continuing professional development; AI = artificial intelligence*

# Objectives

- At the conclusion of this activity, participants will be able to
  1. Describe the impact of MASLD on patients in **New Brunswick** living with diabetes.
  2. Explain **non-pharmacologic options** for the prevention & management of MASLD in T2D.
  3. Compare **pharmacologic** options to reduce steatohepatitis & progression of fibrosis of MASLD in T2D.




**Ultimate Goal:**
Design patient-centred care plan to manage MASLD (integrating lifestyle modification & pharmacotherapy)

*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes*

*Image generated using Microsoft Copilot 2026.*

# MASLD - Guidelines

- Today, I've drawn mainly upon:
  - 2025 Diabetes Canada Clinical Practice Guideline
- I've also included some material from:
  - 2025 Obesity Canada Clinical Practice Guideline
  - 2025 ADA Consensus
  - 2024 EASL–EASD–EASO Clinical Practice Guidelines

*MASLD = metabolic dysfunction-associated steatotic liver disease; ADA = American Diabetes Association; EASL = European Association for the Study of the Liver; EASD = European Association for the Study of Diabetes; EASO = European Association for the Study of Obesity*

[1]Kim et al. 2025, [2]Pedersen et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024

# Case - John (1)

- 56M with T2D, hypertension, dyslipidemia, obesity, obstructive sleep apnea
- Metformin 1000mg BID, atorvastatin 20mg, perindopril 8mg, amlodipine 5mg
- Do I have **fatty liver**?

**Metabolic syndrome**

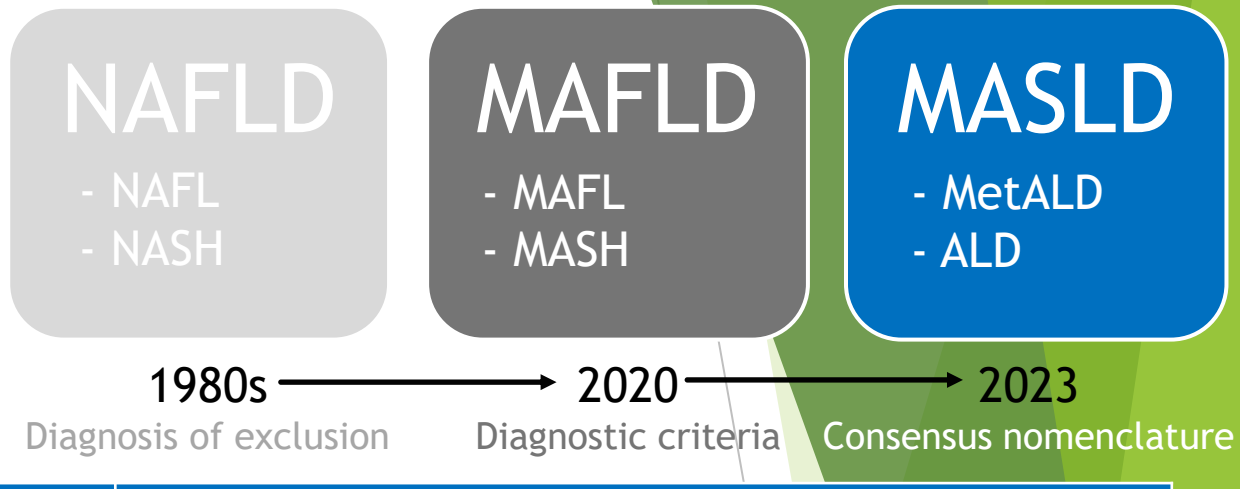
- BMI 32 kg/m$^3$
- WC 102 cm
- BP 134/78 mmHg
- A1C 6.7
- LDL 1.9 mmol/L
- nHDL 2.3 mmol/L
- eGFR 54 mL/min
- ALT 35 U/L
- AST 32 U/L
- Plt 165 x E9/L

*Image generated using Meta AI 2026.*

*T2D = type 2 diabetes; BMI = body mass index; WC = waist circumference; BP = blood pressure; A1C = glycated hemoglobin; LDL = low-density lipoprotein; eGFR = estimated glomerular filtration rate; ALT / AST = alanine / aspartate aminotransferase; plt = platelets*

# MASLD – Definition (1)

- "Nonalcoholic" = inaccurate
- "Fatty" = stigmatising




| Prior | New | Nomenclature | Definition |
|---|---|---|---|
| NAFLD | MASLD | Metabolic dysfunction-associated steatotic liver disease | "Fatty liver" (imaging/biopsy) + ≥ 1 metabolic risk factor w/o *alcohol |
| ▪NAFL | ▪MASL | Metabolic dysfunction-associated steatotic liver | Non-progressive subtype |
| ▪NASH | ▪MASH | Metabolic dysfunction-associated steatohepatitis | Progressive subtype |
| ▪ At-risk | | MASH + ≥ stage 2 fibrosis | |
| - | MetALD | MASLD + increased EtOH intake | MASLD + *alcohol ♀20-50/♂30-60 g/day |
| ALD | ALD | Alcohol-associated liver disease | *Alcohol ♀>50/♂>60 g/day |

*NAFLD = non-alcoholic fatty liver disease; NAFL = non-alcoholic fatty liver; NASH = non-alcoholic steatohepatitis*

[1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024, [5]Chopra 2025, [6]Bae 2024

# MASLD - Definition (2)

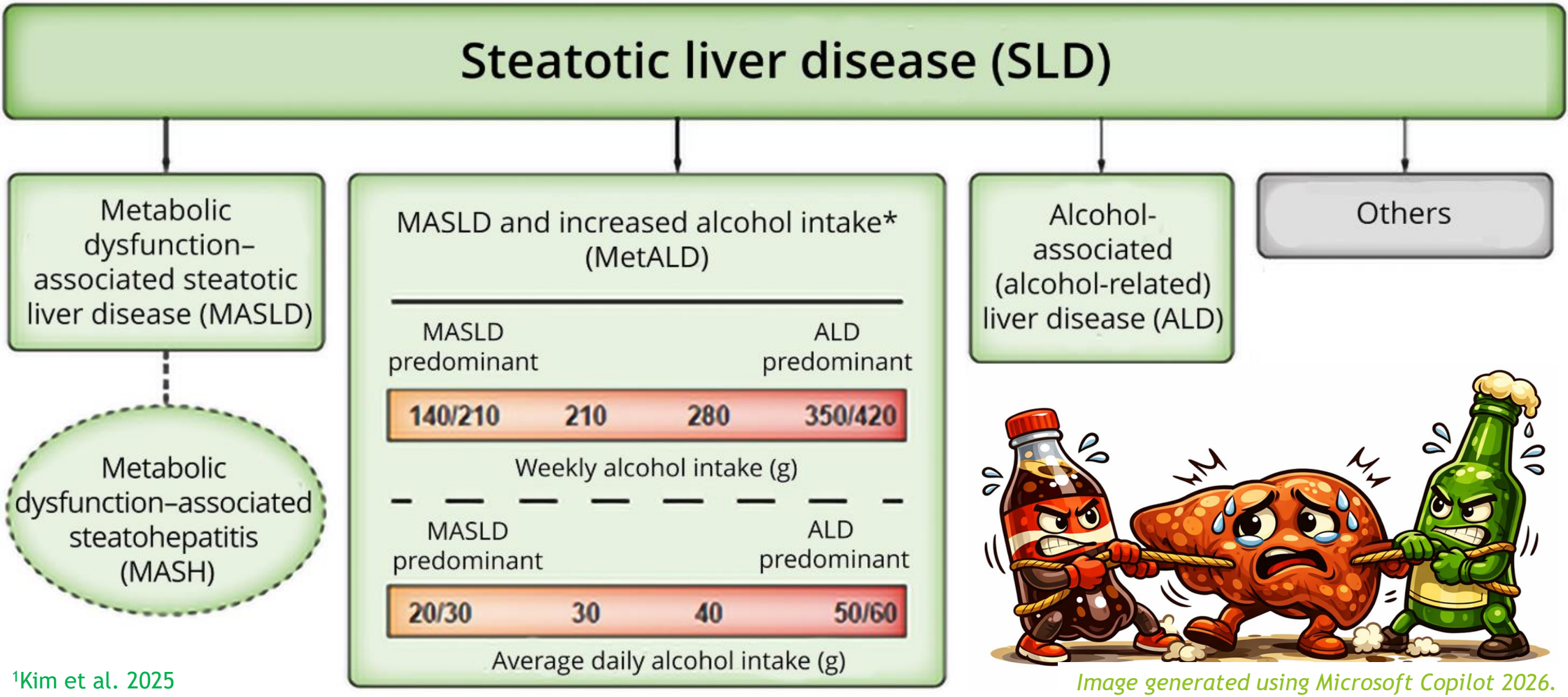





*Image generated using Microsoft Copilot 2026.*

[1]Kim et al. 2025

# MASLD - Progression (1)

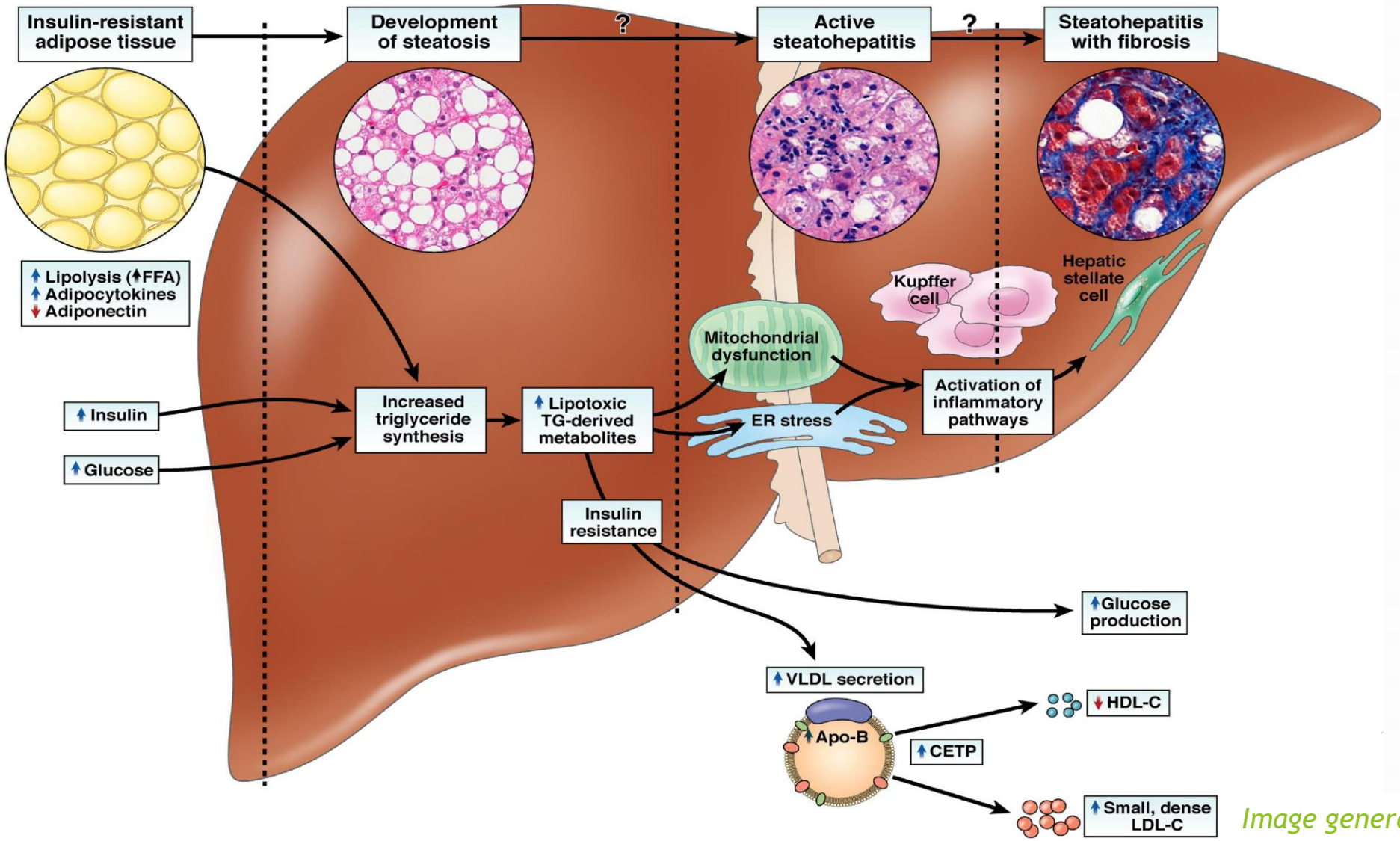
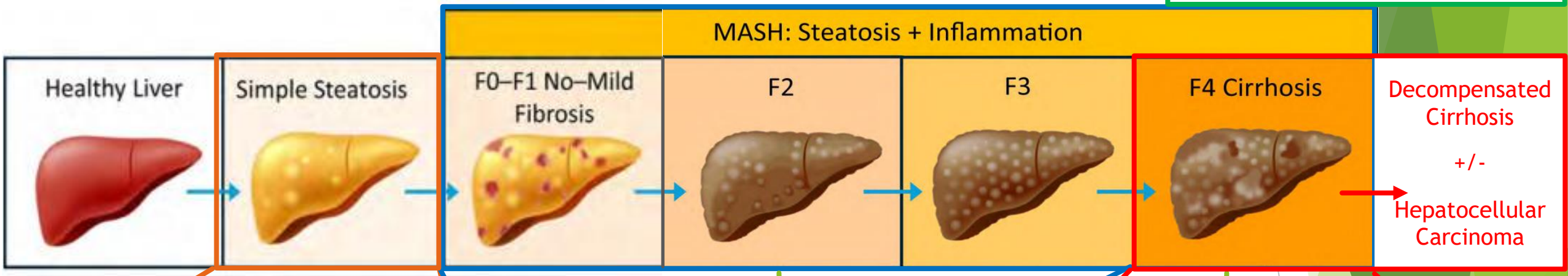




*Image generated using Microsoft Copilot 2026.*

*MASLD = metabolic dysfunction-associated steatotic liver disease; FFA = free fatty acids; ER = endoplasm reticulum; HDL = high density lipoprotein; VLDL = very-low density lipoprotein; LDL = low density lipoprotein; CETP = Cholesteryl ester transfer protein;* [1]Kim et al 2025, [9]Cusi 2012

# MASLD – Progression (2)




- Triglyceride accumulation within hepatocytes (steatosis)
- Minimal clinical symptoms

- Hepatocyte ballooning
- Lipotoxic/immune response
- Hepatic sellate cell activation
- Fibrosis

- Fibrosis leads to nodular formation (continuous liver injury)→cirrhosis
- Decompensation 5-7% per year

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASL = metabolic dysfunction-associated steatotic liver; MASH = metabolic dysfunction-associated steatohepatitis* [1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024, [6]Bae 2024

# Key Point # 1 - Impact

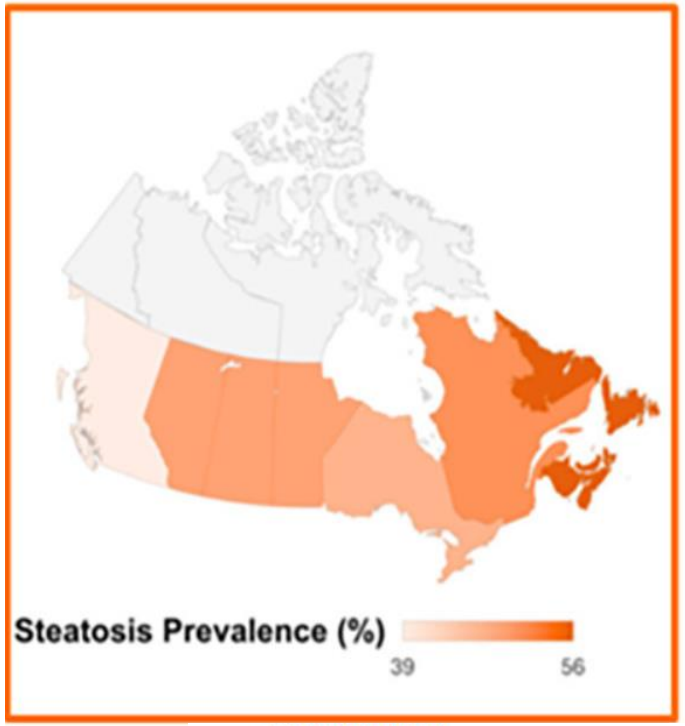
MASLD = common in NB (and under-explored)

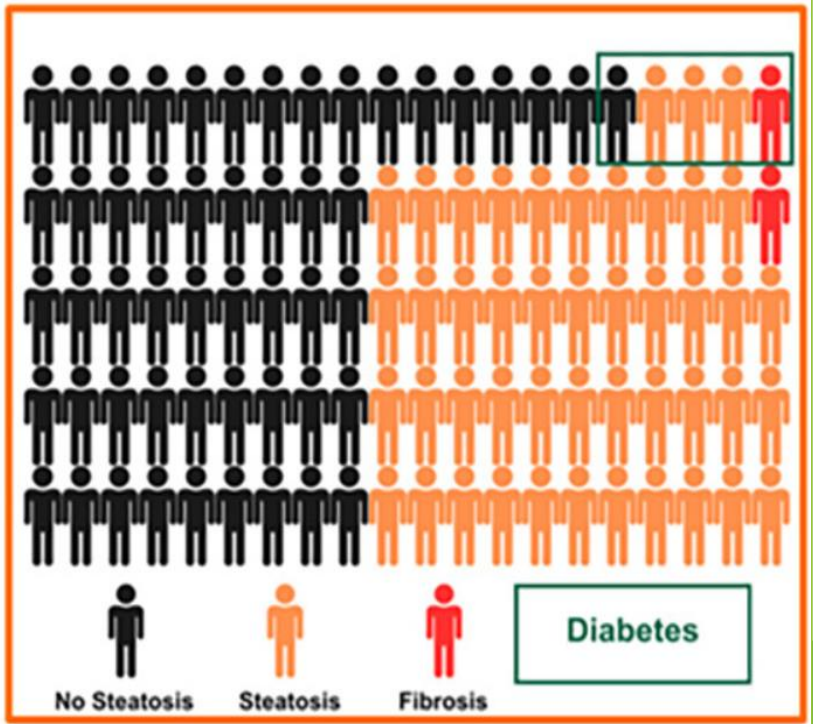
*Image generated using Microsoft Copilot 2026.*

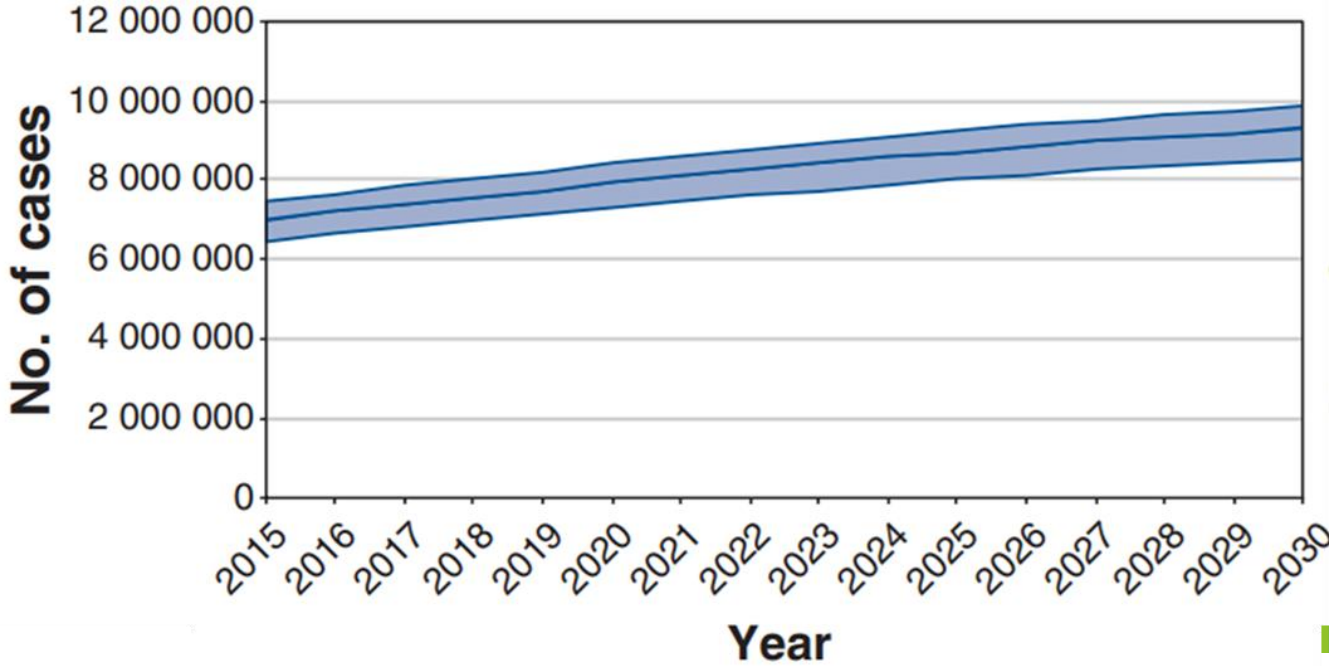
*MASLD = metabolic dysfunction-associated steatotic liver disease*

# MASLD - Impact (1)

- Steatosis in **33-50%** of Canadian adults
- Steatosis more common in **T2D**
  - Progresses faster
- MASLD prevalence projected to increase




*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes* [7]Romano et al. 2025, [8]Swain et al. 2020

# MASLD - Impact (2)

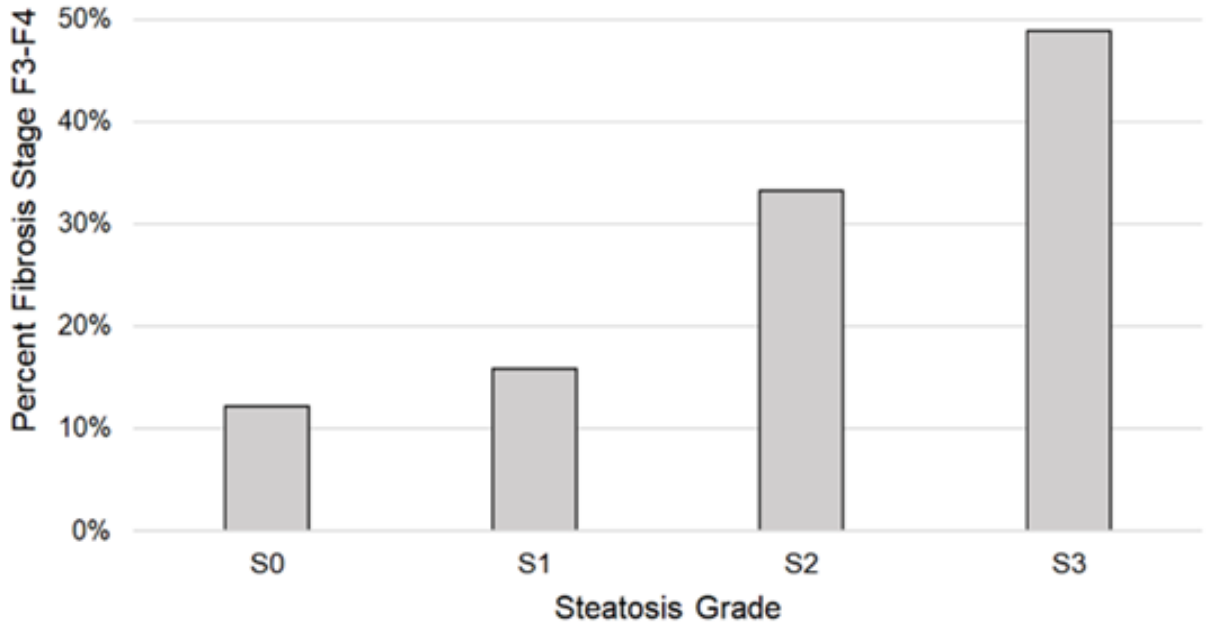
## Local data (Moncton):

- **2064** patients 35-74 y with diabetes (elevated A1C) for FIB-4
  - 402 (19.5%) FIB-4 **>1.3**
    - 192 (47.8%) had Fibroscan
      - 60.4% obesity
      - 49.0% hepatic steatosis
      - 24.5% advanced fibrosis

**Prevalence of Metabolic Dysfunction-Associated Steatotic Liver Disease in patients with diabetes at a Regional Hospital in New Brunswick**

John Igoe MD, FRCPC[a], Anissa Belkaid PhD[b], Valerie Dery DSS[c], Muhammad Rasul MD, FRCPC[d], Donaldo D. Canales, PhD[e], Louis-Jacques Cartier MD, PhD[f]

Figure 2: Advanced Liver Fibrosis (F3F4) in Relation to Steatosis Grade in Patients with Diabetes




| | | | | |
|---|---|---|---|---|
| BMI, M (SD) | 29.80 (5.10) | 33.52 (4.71) | 32.91 (6.27) | 35.80 (5.78) |
| % obesity | 43.9 | 68.4 | 66.6 | 86.7 |
| N | 98 | 19 | 30 | 45 |

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; BMI = body mass index A1C = glycated hemoglobin;* [10]Igoe et al. 2026

# MASLD - Impact (3)

| Patients | Primary Care Providers |
| --- | --- |
| ➢ Often asymptomatic<br>▪ 96% unaware of MASLD<br>▪ Often seen as “benign” disease<br>➢ Often unrecognized until end stage<br>▪ <20% of MASLD undiagnosed<br>▪ Most with MASH/significant fibrosis go undiagnosed<br>➢ Formal education enhances knowledge/following care plan | ➢ Early diagnosis can help minimize progression<br>➢ 95% of high-risk patients seen in primary care (*pre-covid)<br>➢ >40% of PCPs unfamiliar with MASLD screening<br>▪ Tend to screen low-risk patients (c.f. hepatologists) |

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis*

[11]Allen et al. 2024, [12]Golabi et al. 2023; [13]Blais et al 2015; [14]Forlano et al. 2023; [15]Sebastiani et al. 2023

# MASLD – Screening (1)

## Guideline differences in recommendations

| Diabetes Canada | ADA | AACE | EASL-EASD-EASO |
|---|---|---|---|
| ▪ Consider for MASLD-related fibrosis in prediabetes and T2D | ▪ T2D or prediabetes (esp. with cardio-metabolic risk factors or CVD) | ▪ Prediabetes or T2D<br>▪ Obesity ± ≥2 cardiometabolic risk factors<br>▪ Hepatic steatosis on imaging<br>▪ AST or ALT >30 IU/L | ▪ T2D<br>▪ Obesity + 1 cardiometabolic risk factor<br>▪ Persistently elevated liver enzymes |

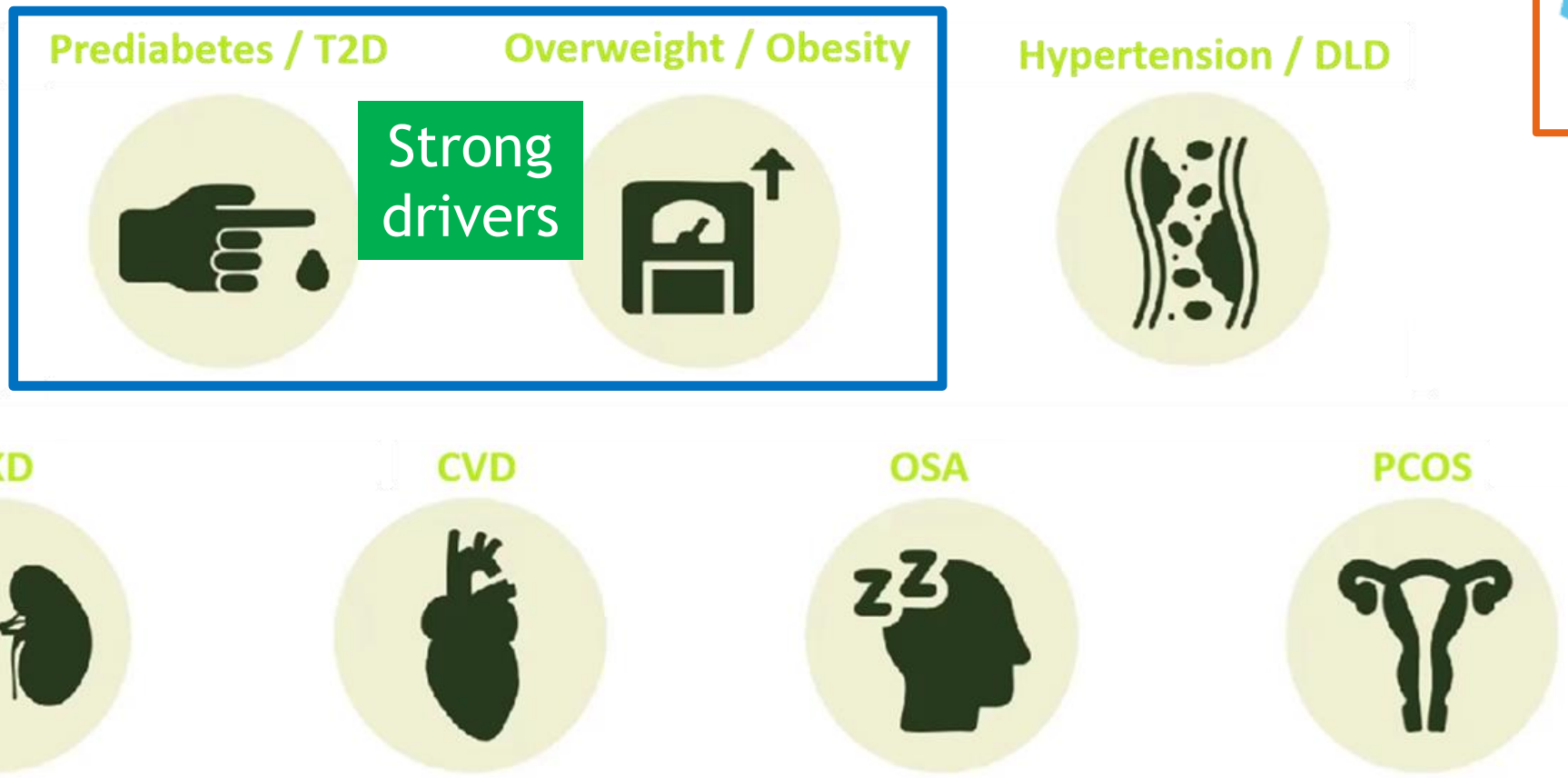
**All guidelines recommend screening in T2D**

*MASLD = metabolic dysfunction-associated steatotic liver disease; ADA = American Diabetes Association; AACE = American Association of Clinical Endocrinology; EASL = European Association for the Study of the Liver; EASD = European Association for the Study of Diabetes; EASO = European Association for the Study of Obesity; CVD = cardiovascular disease; ALT / AST = alanine / aspartate aminotransferase*

[1]Kim et al. 2025, [3]Cusi et al. 2025, [16]Cusi et al. 2022, [4]EASL 2024

# MASLD – Screening (2)

## Comorbidities in (or at risk of) MASLD:




*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes; DLD = dyslipidemia; CKD = chronic kidney disease; CVD = cardiovascular disease; OSA = obstructive sleep apnea; PCOS = polycystic ovarian syndrome* [1]Kim et al. 2025, [4]EASL 2024

# MASLD – Risk Factors (1)

**Red Flags**/High-risk:

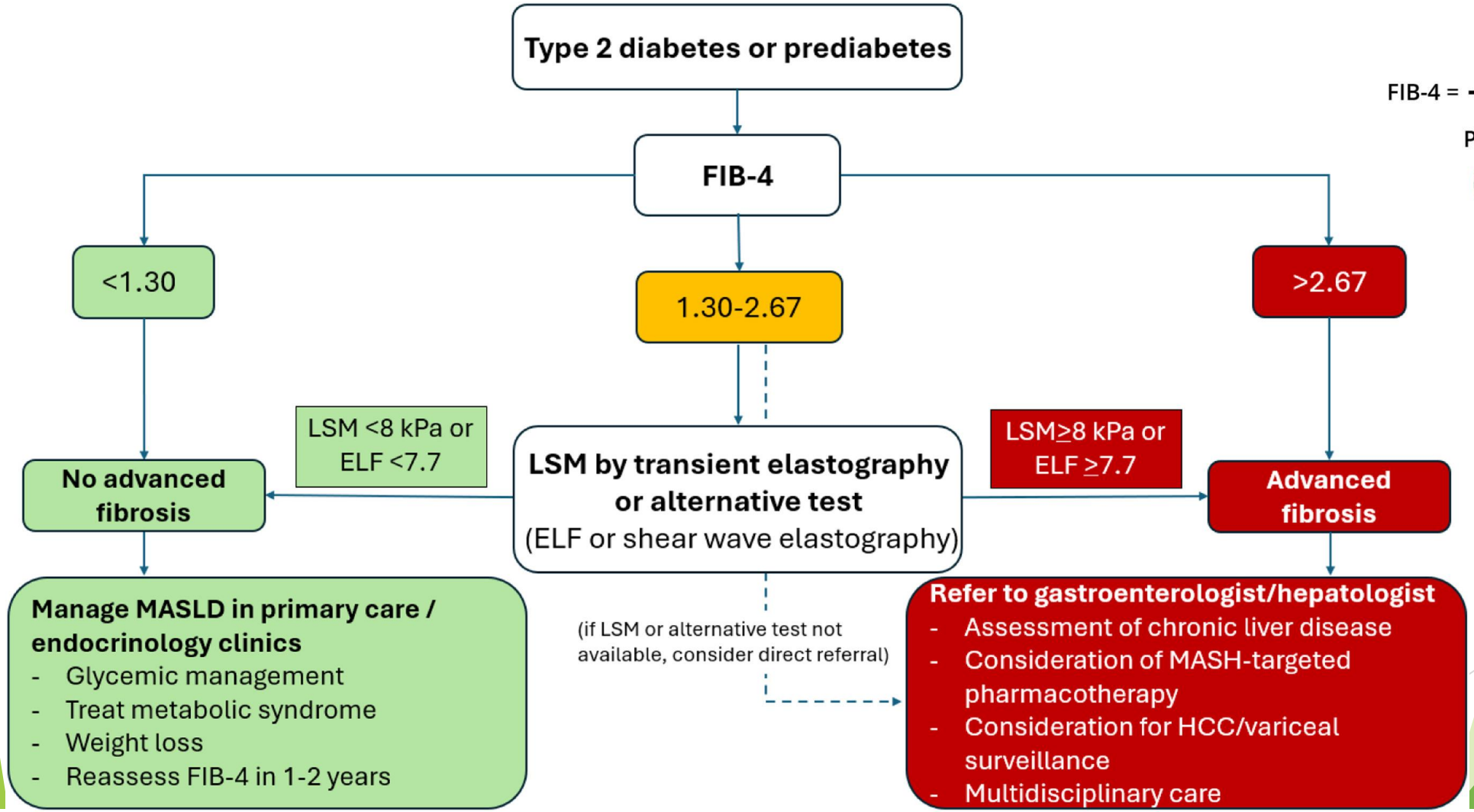
- Strong predictors MASH/fibrosis
  - Older adults
  - **T2D**
  - 1st-degree relative (MASLD/MASH cirrhosis)

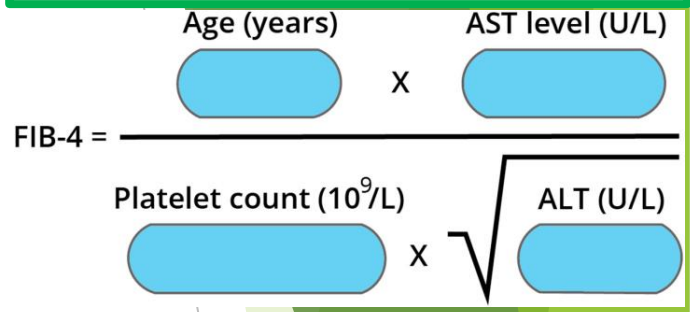
- Important risk factors
  - Sedentary
  - High fructose diet
  - Overweight/obesity
  - Metabolic syndrome
  - Atherogenic DLD
  - PCOS
  - OSA
  - Endocrinopathies
    - e.g. panhypopituitarism

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; T2D = type 2 diabetes; DLD = dyslipidemia; OSA = obstructive sleep apnea; PCOS = polycystic ovarian syndrome* [17]Rinella et al. 2023

# MASLD – Screening (3)

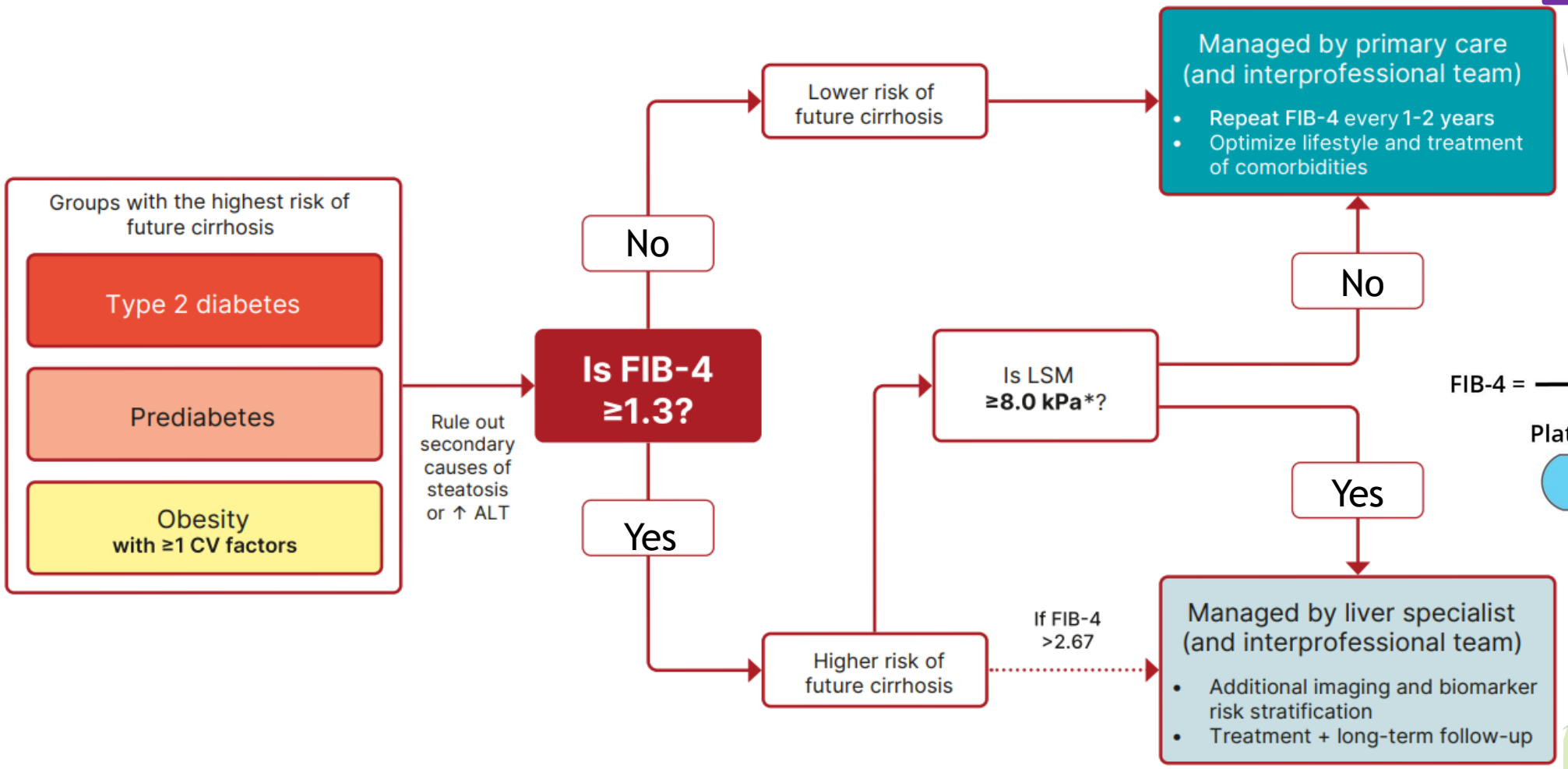
**Figure 6.** Overview of screening for advanced liver fibrosis and MASLD management




*MASLD = metabolic dysfunction-associated steatotic liver disease; LSM = liver stiffness measurement; ELF = enhanced liver fibrosis test*
*ALT / AST = alanine / aspartate aminotransferase* [1]Kim et al 2025

# MASLD - Screening (4)



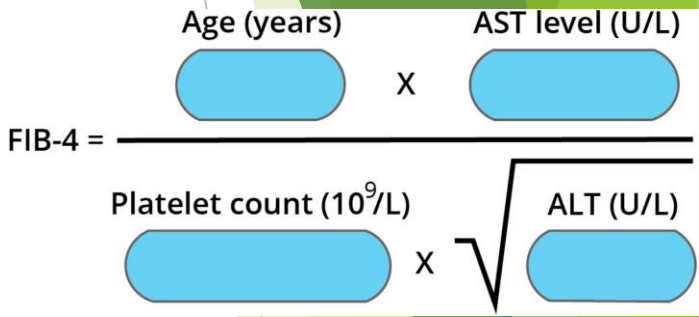




**Figure 2**—Diagnostic algorithm for risk stratification and the prevention of cirrhosis in individuals with MASLD. *In the absence of LSM, consider the blood-based ELF test as a diagnostic alternative. If ELF score is ≥9.8, a referral to a liver specialist is recommended, as there is a high risk of MASH with advanced liver fibrosis. Adapted from "Standards of Care of Diabetes—2025" (59).

*MASLD = metabolic dysfunction-associated steatotic liver disease; LSM = liver stiffness measurement; ELF = enhanced liver fibrosis test*
*ALT / AST = alanine / aspartate aminotransferase; CV = cardiovascular* [3]Cusi et al. 2025

*Image generated using Meta AI 2026.*

# Case - John (2)

- 56M with T2D, hypertension, dyslipidemia, obesity, obstructive sleep apnea
- Metformin 1000mg BID, atorvastatin 20mg, perindopril 8mg, amlodipine 5mg
- Do I have fatty liver?

**Metabolic syndrome**

- BMI 32 kg/m$^3$
- WC 102 cm
- BP 134/78 mmHg
- A1C 6.7
- LDL 1.9 mmol/L
- nHDL 2.3 mmol/L
- eGFR 54 mL/min
- ALT 35 U/L
- AST 32 U/L
- Plt 165 x E9/L

**MASLD?**

**Next steps:**
FIB-4 2.3
LSM = 7.2 kPa

*T2D = type 2 diabetes; BMI = body mass index; WC = waist circumference; BP = blood pressure; A1C = glycated hemoglobin; LDL = low-density lipoprotein; eGFR = estimated glomerular filtration rate; ALT / AST = alanine / aspartate aminotransferase; plt = platelets*
*LSM = liver stiffness measurement; MASLD = metabolic dysfunction-associated steatotic liver disease*

# Key Point # 1 - Summary

MASLD = common in NB (and under-explored)

- Most patients with MASLD/MASH are **unaware**
- Rates in NB are high, especially with **T2D**
- Use Fib-4 to screen **high-risk** patients

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; T2D = type 2 diabetes*

# MASLD - Management (1)

*Image generated using Microsoft Copilot 2026.*

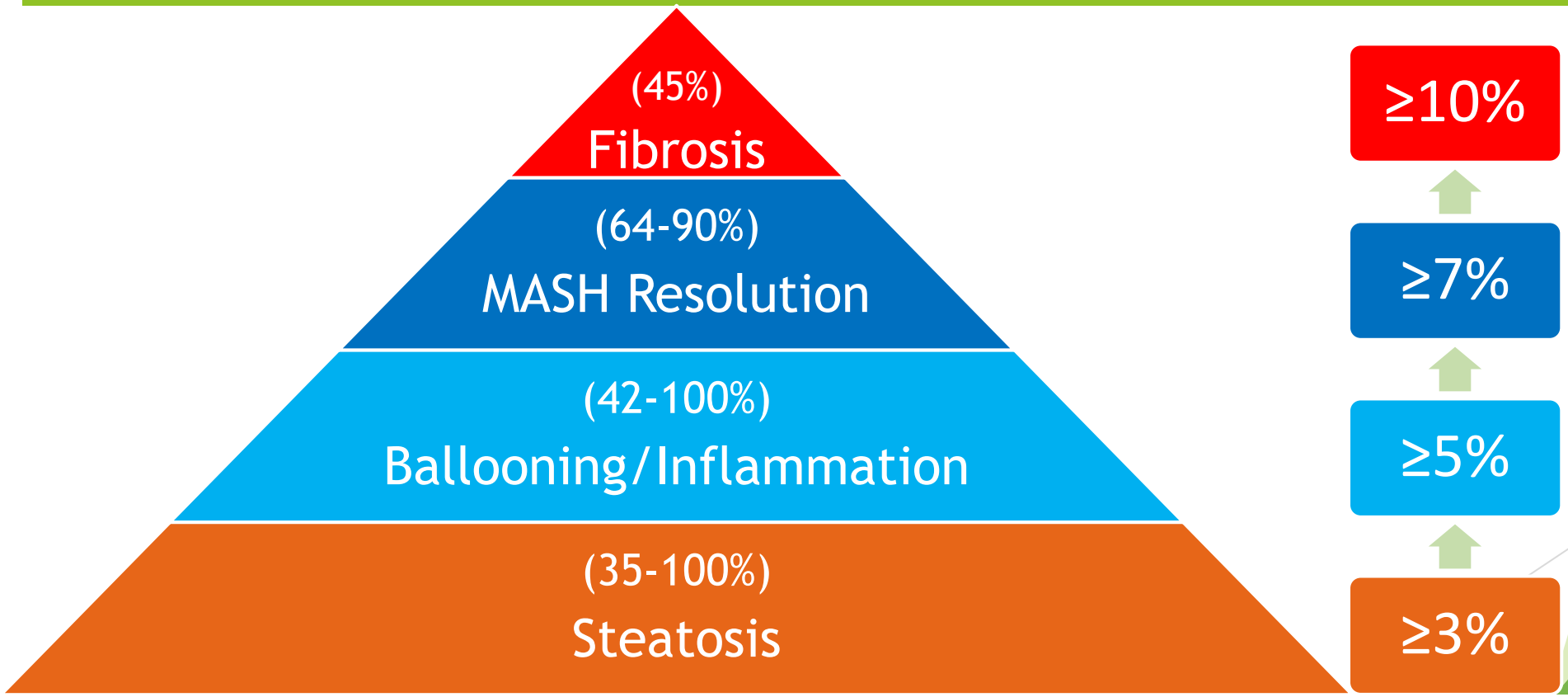

Goals:

1. **Cardiovascular** protection
2. Optimize **comorbidities**
   - T2D, obesity, HTN, DLD, OSA, CKD
3. Resolve/stabilize **MASH** ± **fibrosis**
4. Prevent **progression**/complications
   - Cirrhosis, HCC, liver-related death

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; T2D = type 2 diabetes; HTN = hypertension; DLD = dydlipidemia; OSA = obstructive sleep apnea; CKD = chronic kidney disease; HCC = hepatocellular carcinoma*

# Key Point # 2 - Weight Loss

Weight loss = effective MASLD prevention & treatment




*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis*

[18]Hannah et al. 2016, [4]EASL 2024

# Weight Loss (1)

- **1st-line** treatment for MASLD
  3. Individuals with T2D and MASLD-related liver fibrosis should aim for sustained reductions in body weight of 5% to 10% to improve glycemia and insulin sensitivity and decrease hepatic steatosis. A weight loss of ≥10% is recommended to increase the chance to reverse fibrosis [Grade B, Level 2].
- Reduces steatosis, inflammation/steatohepatitis, fibrosis
  - Sustained loss can **reverse** MASH or slow progression
    - Histologic improvement associated with degree of weight loss
- Lifestyle: possible
  - Difficult to sustain to reverse steatohepatitis/fibrosis
- Most require **medication** AND/OR bariatric surgery

Health Canada

Currently approved for weight loss: Contrave (wellbutrin/ naltrexone), Saxenda (liraglutide), Wegovy (semaglutide), Xenical (orlistat), Zepbound (tirzepatide)

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis*

[1]Kim et al 2025, [2]Pedersen et al. 2025, [3]Cusi et al. 2025

## Medical Nutrition Therapy (MNT)

**MNT is used in managing chronic diseases and focuses on nutrition assessment, diagnostics, therapy and counselling. MNT should:**

**a.** be personalized and meet individual values, preferences and treatment goals to promote long term adherence
**b.** be administered by a registered dietitian to improve weight-related and health outcomes

## Physical Activity

**30-60 mins of aerobic activity on most days of the week, at moderate to vigorous intensity, can result in:**

**a.** small amount of weight and fat loss
**b.** improvements in cardiometabolic parameters
**c.** weight maintenance after weight loss

obesity canada

ⓘ **Remember nutrition and physical activity recommendations are important for all Canadians regardless of body size or composition.**

## The Three Pillars of Obesity Management that Support Nutrition and Activity

### Psychological Intervention

**a.** Implement multicomponent behaviour modification
**b.** Manage sleep, time, and stress
**c.** Cognitive behavioural therapy and/ or acceptance and commitment therapy should be provided for patients if appropriate

### Pharmacological Therapy

**a.** semaglutide
**b.** liraglutide
**c.** naltrexone/bupropion
*(in a combination tablet)*
**d.** orlistat
e. tirzepatide

criteria
**BMI ≥30kg/m2** or
**BMI ≥27 kg/m2** with obesity (adiposity) related complications

### Bariatric Surgery

ⓘ Procedure should be decided by surgeon in discussion with the patient.

**a.** Sleeve gastrectomy
**b.** Roux-en-Y gastric bypass
**c.** Biliopancreatic diversion with/without duodenal switch

criteria
**BMI ≥40 kg/m²** or
**BMI ≥35 - 40 kg/m²** with an obesity (adiposity) related complication or
**BMI ≥30 kg/m²** with poorly controlled type 2 diabetes

Treating the root causes of obesity is the foundation of obesity management refer to the 4m framework - ***mechanical, metabolic, mental and social milieu***

*BMI = body mass index*
[2]Pedersen et al. 2025

# Weight Loss – Medications (1)

9. Pharmacotherapy may be offered, in conjunction with health behaviour changes, in treating people living with MASH, for weight loss and:
   - Resolution of MASH without worsening of fibrosis:
     - **semaglutide** 2.4 mg weekly [Level 2a, Grade B]
     - liraglutide 1.8 mg daily (BMI ≥25 kg/m$^2$) [Level 3, Grade C]
     - tirzepatide 5/10/15 mg weekly (BMI 27-50 kg/m$^2$) [Level 3, Grade C]
   - Improvement in fibrosis without worsening of MASH:
     - **semaglutide** 2.4 mg weekly [Level 2a, Grade B]
     - tirzepatide 5/10/15 mg weekly (BMI 27-50 kg/m$^2$) [Level 3, Grade C]

*MASH = metabolic dysfunction-associated steatohepatitis; BMI = body mass index* [2]Pedersen et al. 2025

# Weight Loss - Medications (2)

obesity canada

| | Liraglutide | Naltrexone/ Bupropion | Orlistat | Semaglutide | Tirzepatide |
|---|---|---|---|---|---|
| **Effect on type 2 diabetes (A1c, placebo subtracted)** | -1.0%[24] | -0.5%[25] | -0.4%[26] | -1.2%[22] | −1·6% (10 mg)<br>−1·6% (15 mg)[23] |
| **Effect on MASH** | Resolution of MASH without worsening of fibrosis (39% with liraglutide 1.8 mg vs. 9% with placebo)[28] | Not studied | No benefit[138] | Resolution of MASH without worsening of fibrosis (62.9% vs 34.3% with placebo)[27]<br><br>Improvement in fibrosis without worsening of steatohepatitis (36.8% vs 22.4% with placebo)[27] | Resolution of MASH without worsening of fibrosis:<br><br>44% (5mg)<br>56% (10mg)<br>62% (15 mg)<br>10% (placebo)[29]<br><br>Improvement in fibrosis without worsening of MASH:<br>55% (5 mg)<br>51% (10 mg)<br>51% (15 mg)<br>30% (placebo)[29] |

*MASH = metabolic dysfunction-associated steatohepatitis; A1C = glycated hemoglobin; BMI = body mass index* [2]Pedersen et al. 2025

# Weight Loss - Bariatric Surgery

- Recommended for MASH in **select** patients
  - Substantial weight loss improves glucose regulation and reduces hepatic fat content within 1 year
- Improvement in liver histology reported in several studies
  - Improved steatosis in 70-80%
  - Resolved ballooning/inflammation in 50-75%
  - Resolved fibrosis in 30-40%
- Sleeve gastrectomy and Roux-en-Y **similar**
  - MASH resolution without worsening fibrosis (57% vs. 56%)
  - Improved fibrosis without worsening MASH (39% vs. 37%)
- Laparoscopic sleeve gastrectomy can be performed in patients with **compensated cirrhosis** at experienced centers (>100/yr)

*MASH = metabolic dysfunction-associated steatohepatitis* [1]Kim et al 2025, [2]Pedersen et al. 2025, [3]Cusi et al. 2025

# Key Point # 2 - Summary

Weight loss = effective MASLD prevention and treatment

- Weight loss **≥3%** can be impactful
- **MASH** / **fibrosis** resolution possible
- Most require **medication** and/or surgery

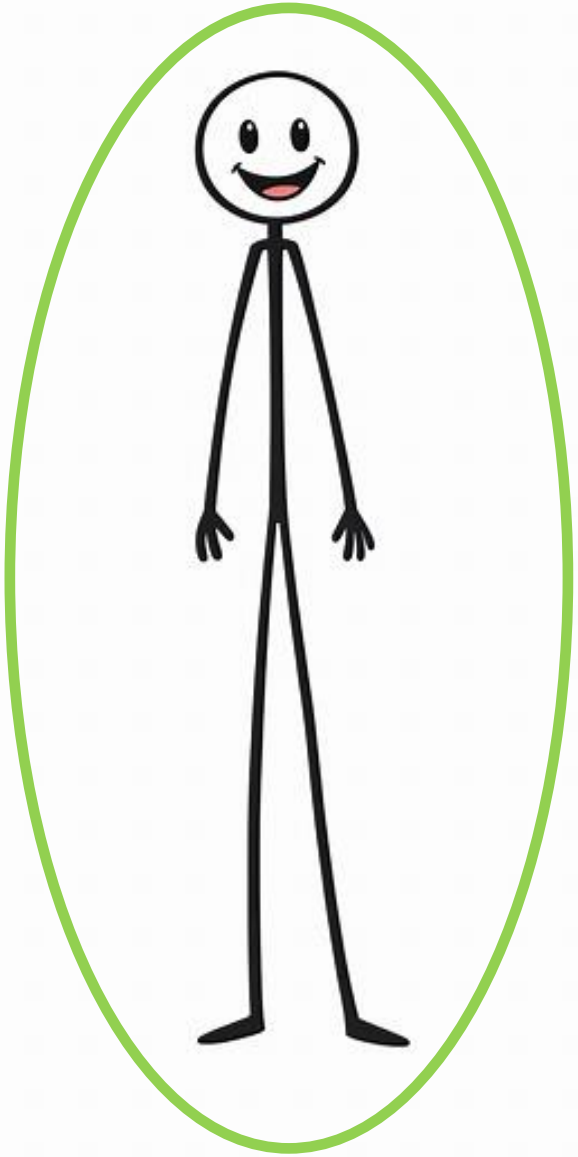
*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis*

*Image generated using Microsoft Copilot 2026.*

# Lean MASLD

**10-20%** of patients have normal (or low) BMI

- Higher waist circumference (**visceral** adiposity)
- Higher-risk **ethnicity**
  - Hispanic, Indigenous Canadian, African, South Asian
- Higher genetic risk factors
- Pathogenesis similar, but **less progression**
  - Lower rates of inflammation, MASH, fibrosis

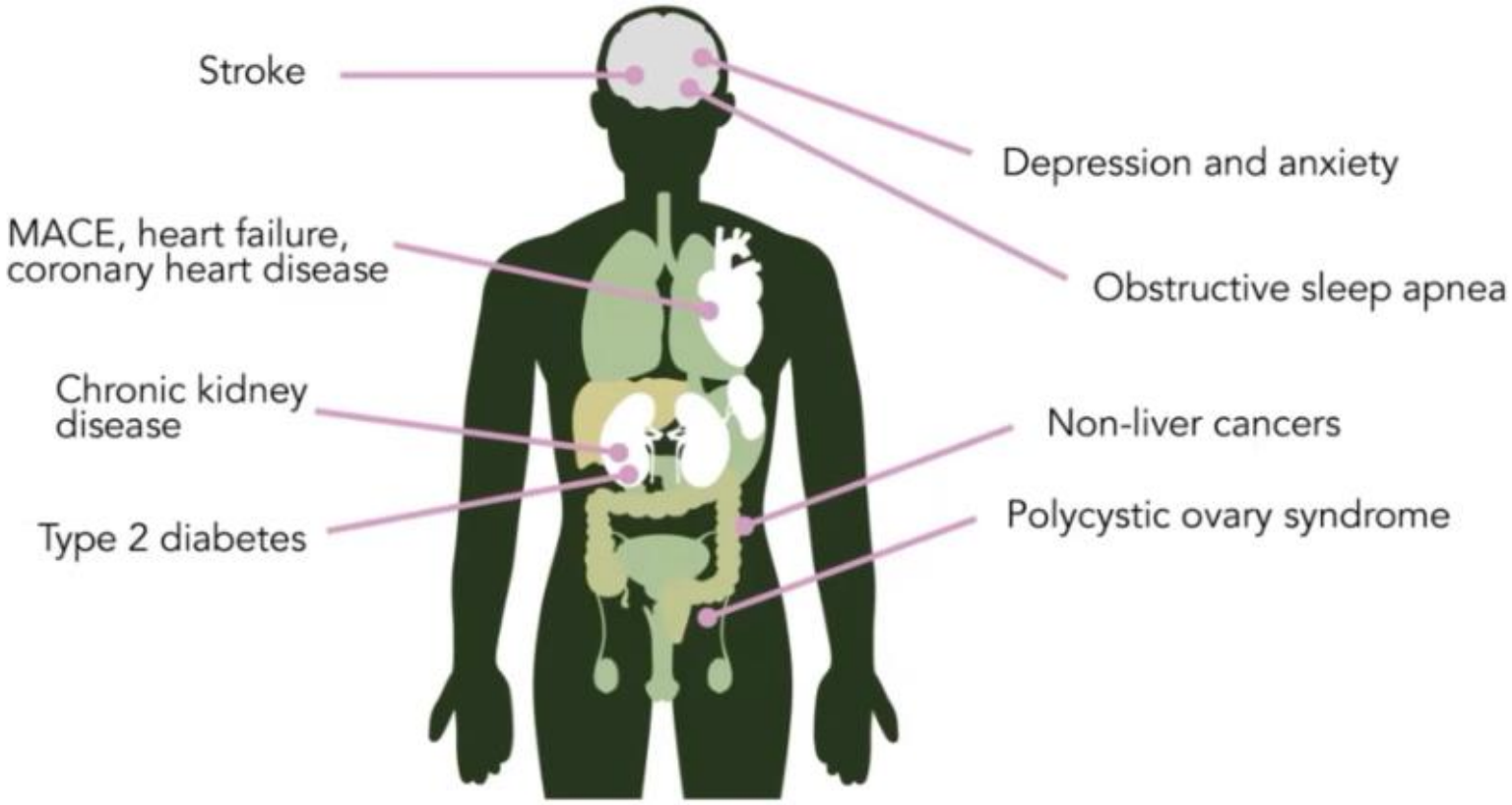


*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; BMI = body mass index*

[19]Njei et al. 2024; [20]Wong 2024

# Key Point # 3 – Risk Factors

Managing MASLD risk factors = crucial support




There is a bidirectional relationship between the incidence of MASLD and CKD, T2D, PCOS, etc.

*MASLD = metabolic dysfunction-associated steatotic liver disease; CKD = chronic kidney disease; T2D = type 2 diabetes; PCOS = polycystic ovarian syndrome; MACE = major adverse cardiovascular events*

# MASLD – Risk Factors (2)

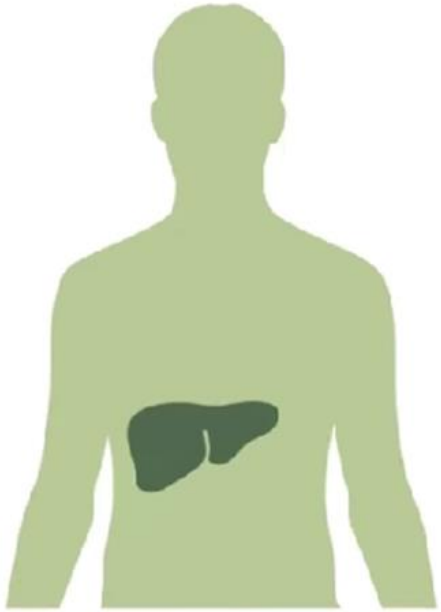
- Identify targets to modify risk

**Metabolic**

- Overweight and obesity (ethnic-based cutoffs for BMI and WC)
- Prediabetes or T2D
- Dyslipidemia (low HDL-C or high TGs)
- Hypertension
- Metabolic syndrome

**Genetics**

- Variety of genetic variations increase the risk of developing MASLD (PNPLA3, TM6SF2, MBOAT7, HSD17B13)



**Lifestyle and Socioeconomic**

- High sugar and saturated fat intake
- Western diet
- Physical inactivity
- Low socioeconomic status

**Other**

- Age (≥ 50 years)
- Menopausal women
- Ethnicity (Asian, Hispanic, Arabic)
- Chronic kidney disease
- Polycystic ovary syndrome
- Medications (e.g. alcohol, corticosteroids, NSAIDs, reverse transcriptase inhibitors)

*Potentially modifiable

*MASLD = metabolic dysfunction-associated steatotic liver disease; BMI = body mass index; WC = waist circumference; T2D = type 2 diabetes HDL-C = high density lipoprotein; TGs = triglycerides; NSAIDs = nonsteroidal anti-inflammatory drugs* [4]EASL 2024

# MASLD – Risk Factors (3)

## History

- Smoking, alcohol, diet, exercise, body weight
- HTN, DLD, T2D, hyperuricemia, OSA, PCOS
- Medications
- Family history: obesity, MASLD, T2D, CAD, stroke, cirrhosis

## Exam

- Height, weight, waist circumference, blood pressure, insulin resistance (e.g. acanthosis nigricans)
- Advanced liver disease
  - Hepatomegaly, splenomegaly, abdominal veins, edema, jaundice

## Labs

- General
  - ALT, AST, CBC (platelets), eGFR, albumin:creatinine, fasting glucose, A1C, lipids
- Consider
  - Hepatitis B / C

*MASLD = metabolic dysfunction-associated steatotic liver disease; HTN = hypertension; DLD = dyslipidemia; T2D = type 2 diabetes; OSA = obstructive sleep apnea; PCOS = polycystic ovarian syndrome; CAD = coronary artery disease; CBC = complete blood count; A1C = glycated hemoglobin; eGFR = estimated glomerular filtration rate; ALT / AST = alanine / aspartate aminotransferase;* [21]Fan et al. 2024

# Lifestyle Interventions

American Diabetes Association®

### Weight loss

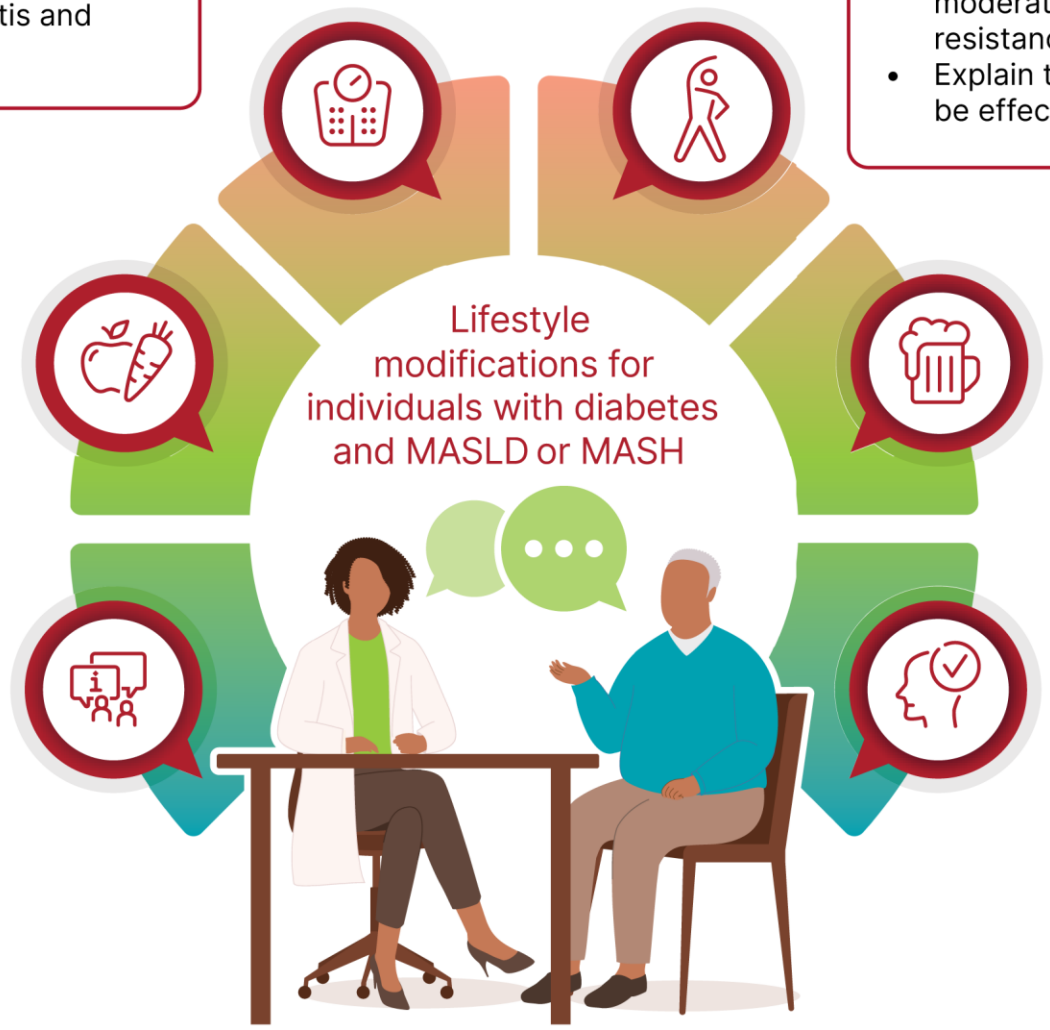
- Encourage calorie deficit that promotes weight loss
- ~5% weight reduction to reduce steatosis
- ~7-10% to reverse steatohepatitis and liver fibrosis

### Physical activity

- Discuss goal of performing ≥150 min/week moderate-intensity aerobic activity and resistance activities 2-3 times/week
- Explain that brief sessions (~10 min) can be effective ways to reach goal

### Nutrition (healthy eating)

- Emphasize a high-fiber, whole foods eating pattern with personalized goals, that is low in saturated fat and added sugar
- Individuals should abstain from sugar-containing beverages and minimize consumption of ultraprocessed foods




### Alcohol

- Assess intake at every visit
- Recommend minimizing alcohol intake in MASLD
- Individuals should abstain if moderate fibrosis is present (≥F2)

### DSMES

- Support behavior change to address factors complicating diabetes management
- Address lifestyle modification with medical nutrition therapy

### Behavioral health

- Promote stress reduction via positive health behaviors
- Screen for depression and anxiety at least annually and refer to behavioral health professionals when indicated
- Advise adequate sleep and quitting smoking

*MASLD = metabolic dysfunction-associated steatotic liver disease*

[3]Cusi et al. 2025

# Lifestyle - Diet

**Cornerstone** of MASLD management

- **Saturated fat/sugar** increase MASH risk
- **Fructose** linked to fibrosis severity
  - Regardless of total caloric intake
- Optimal diets should be personalized, practical, sustainable
  - **Mediterranean**: strongest data on cardiometabolic/mortality benefit
  - Not adequately studied in MASLD
    - DASH, high-protein meal replacement, intermittent fasting

Choices to **support** MASLD

- Whole grains
- Health protein
  - Seafood, low-fat dairy, lean meat
- Reduce red/processed meats
  - Less saturated/trans fat, ultra-processed, added sugar
- Deeply coloured fruits/vegetables
- Liquid plant cooking oil

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis;* [1]Kim et al 2025, [22]Zeng et al. 2014, [3]Cusi et al. 2025

# Lifestyle - Exercise

Liver benefits beyond **weight loss**:

- Increased insulin **sensitivity**
- Decreased **AST / ALT**
- Decreased **steatosis**
- Improved **cardiovascular health**

Exercise **prescription**:

- ≥150 min/week of moderate intensity
- ≥75min/week of vigorous intensity
- Resistance activity 2-3x/week

*MASLD = metabolic dysfunction-associated steatotic liver disease; ALT / AST = alanine / aspartate aminotransferase;* [1]Kim et al 2025, [3]Cusi et al. 2025

# Lifestyle - Smoking

Tobacco **significantly** worsens MASLD outcomes

- Worsen **progression** to MASH/advanced fibrosis
- Increased risk of **hepatocellular carcinoma**
- Increased risk of **cardiovascular disease**

**Abstinence** is best

*Image generated using Microsoft Copilot 2026.*

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis* [3]Cusi et al. 2025

# Lifestyle - Alcohol

Even moderate alcohol use can **accelerate** MASLD

- Worsen **steatosis**
- Worsen **fibrosis**
- Increased risk of **hepatocellular carcinoma**
- Increased risk of **cardiovascular disease**

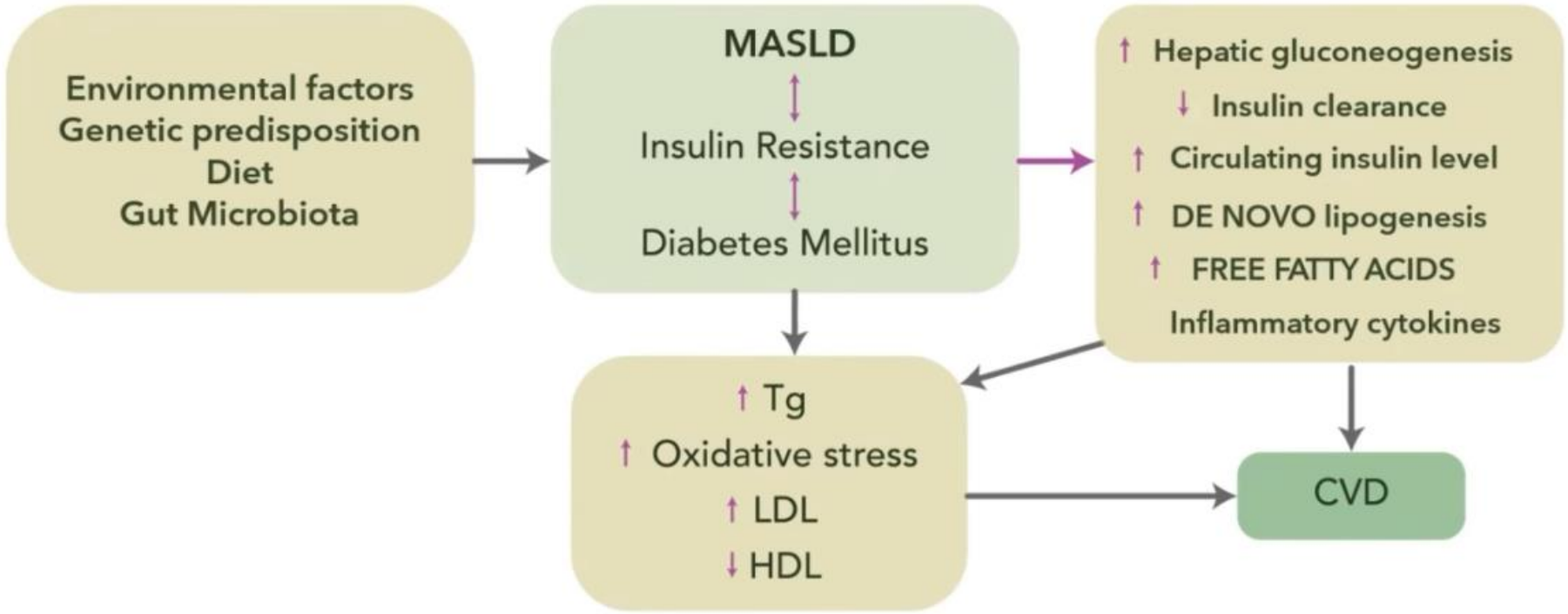
**Abstinence** is best

*Image generated using Microsoft Copilot 2026.*

*MASLD = metabolic dysfunction-associated steatotic liver disease; ALT / AST = alanine / aspartate aminotransferase;* [3]Cusi et al. 2025

# Diabetes (1)

- Bidirectional pathophysiological link between MASLD and T2D
- Fortunately, treatment can address both!




*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes*; TG = triglycerides; *LDL = low-density lipoprotein; HDL = high-density lipoprotein;* CVD = cardiovascular disease [1]Kim et al 2025, [23]Michalopoulou et al. 2025

# Diabetes (2)

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- Guidelines now recognize MASLD as an important factor in choosing T2D pharmacotherapy (2026)

**If additional cardiovascular and kidney risk reduction, management of other metabolic comorbidities, and/or glycemic lowering is needed**

↓

**+Mitigating risk of MASLD or MASH**

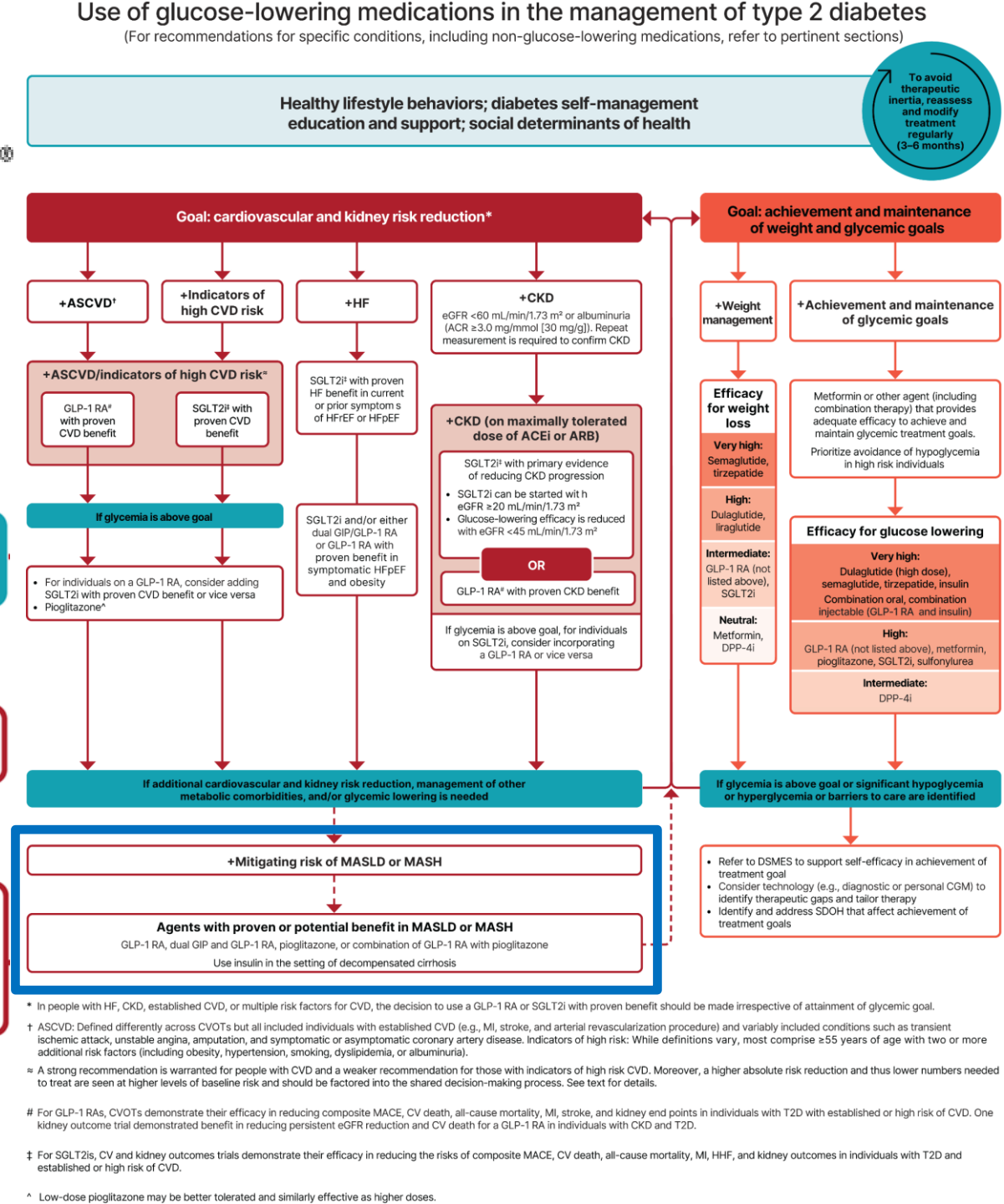
↓

**Agents with proven or potential benefit in MASLD or MASH**

GLP-1 RA, dual GIP and GLP-1 RA, pioglitazone, or combination of GLP-1 RA with pioglitazone

Use insulin in the setting of decompensated cirrhosis

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; T2 = type 2 diabetes GLP-1 RA = glucagon-like peptide-1 receptor agonist; GIP = glucose-dependent insulinotropic polypeptide* [24]Bajaj et al. 2026



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## e 5—Liver and cardiorenal effects of glucose-lowering medications

| Medication | Effect in MASLD and MASH* | | | | Cardiovascular, renal, and other relevant clinical effects | | | |
|---|---|---|---|---|---|---|---|---|
| | Hepatic steatosis | Steatohepatitis | Fibrosis regression | Reduction of fibrosis progression | ASCVD* | CKD* | HF* | Hypoglycemia¶ |
| Semaglutide** | Beneficial | Beneficial | Beneficial | Potential benefit | Beneficial | Beneficial | Beneficial | Low risk |
| Tirzepatide***† | Potential benefit | Potential benefit | Potential benefit | Potential benefit | ? | ? | Beneficial | Low risk |
| Pioglitazone† | Potential benefit | Potential benefit | Potential benefit | Potential benefit | Beneficial | Neutral | Not recommended in HF stage B, C, or D | Low risk |
| SGLT2 inhibitors | Potential benefit | ? | ? | ? | Beneficial | Beneficial | Beneficial | Low risk |
| Metformin¶ | Neutral | Neutral | Neutral | Neutral | Potential benefit? | Neutral | Neutral | Low risk |
| DPP-4 inhibitors¶ | Neutral | ? | ? | ? | Neutral | Neutral | Neutral (except saxagliptin, alogliptin?) | Low risk |
| Insulin¶ | Potential benefit | ? | ? | ? | Neutral | Neutral | Neutral | High risk |
| Sulfonylureas¶ | Neutral | ? | ? | ? | Neutral | Neutral | Neutral | High risk |

ASCVD, atherosclerotic cardiovascular disease; CKD, chronic kidney disease; HF, heart failure. ? indicates unknown. *Includes people with and without type 2 diabetes. ¶Only in people with type 2 diabetes. **Only semaglutide among GLP-1RA has been reported to be of benefit in a phase 2 RCT (154) with improvement in steatohepatitis and more recently in a phase 3 RCT with histological outcomes in MASH, including improvements in steatohepatitis and fibrosis (11). Liraglutide may offer potential benefit, based on results of a phase 2 RCT (157). Other GLP-1RA have not been tested in RCTs with liver histological outcomes. ***Tirzepatide is the only dual GIP/GLP-1RA available and tested with histological outcomes in a phase 2 RCT in MASH (155). †Tirzepatide and pioglitazone are considered of potential benefit based on phase 2 trials.

American Diabetes Association®

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; RCT = randomized control trial; GLP-1 RA = glucagon-like peptide-1 receptor agonist; GIP = glucose-dependent insulinotropic polypeptide; SGLT2 = sodium-glucose co-transporter-2; DPP-4 = dipeptidyl peptidase-4* [3]Cusi et al. 2025

# Reducing Cardiovascular Risk

## Medical therapy integral to manage MASLD risk

| Statins | Antihypertensives | GLP1-RA | SGLT2i |
|---|---|---|---|
| ▪ Safe for all MASLD<br>• *Not decompensated cirrhosis<br>▪ Underused due to unfounded concerns<br>▪ Add on ezetimibe or PCSK9 | ▪ 1st line: ACEi or ARB<br>▪ May reduce liver inflammation/ fibrosis<br>▪ BP target <130/80 | ▪ Indicated in ASCVD or T2D to reduce cardiovascular events and improve renal function | ▪ Proven to reduce ASCVD and CKD progression with or without T2D<br>▪ Role in CHF |

**Significant overlap in co-management of risk among conditions**

*MASLD = metabolic dysfunction-associated steatotic liver disease; PCSK9i = Proprotein Convertase Subtilisin/Kexin type 9 inhibitor; GLP-1 RA = glucagon-like peptide-1 receptor agonist; SGLT2i = sodium-glucose co-transporter-2 inhibitor; ACEi = for Angiotensin-Converting Enzyme Inhibitors; ARB = Angiotensin II Receptor Blocker; T2D = type 2 diabetes*; ASCVD = atherosclerotic cardiovascular disease; CKD = chronic kidney disease CHF = congestive heart failure [1]Kim et al 2025, [3]Cusi et al. 2025, [21]Fan et al. 2024, [23]Michalopoulou et al. 2025

# Key Point # 3 - Summary

**Managing MASLD risk factors = crucial support**

- Modifying risk factors can **improve** disease state
- Focus on reducing **cardiovascular** risk
- Significant **overlap** in MASLD and T2D

*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes*

# Key Point # 4 - Medication

Semaglutide = only currently ~~indicated~~ MASLD treatment*

- *Approved for MASH (with conditions)

Health Canada

WEGOVY®, indicated for:

- the treatment of non-cirrhotic metabolic dysfunction-associated steatohepatitis (MASH) in adults with moderate to advanced liver fibrosis (consistent with stages F2 to F3 fibrosis).

has been issued market authorization with conditions, pending the results of trials to verify its clinical benefit. Patients should be advised of the nature of the authorization. For further information for WEGOVY® please refer to Health Canada's Notice of Compliance with conditions - drug products web site.

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis*

# Pharmacology - Vitamin E

## 800 IU PO daily

- 2 RCTs (MASLD without T2D)
  - Improved steatohepatitis
  - Improved ALT/AST
  - Improved lobular inflammation
- Not recommended – **not** approved for MASH
  - No fibrosis benefit
  - Lack of Phase III data
  - Safety (hemorrhagic stroke, prostate cancer)

Health Canada

*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes; MASH = metabolic dysfunction-associated steatohepatitis*
*RCT = randomized controlled trial; ALT / AST = alanine / aspartate aminotransferase* [1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024

# Pharmacology - Pioglitazone

30,45 mg PO daily (TZD, i.e. PPAR-γ agonist)

- Meta-analysis/systematic review (10 RCTs)
  - Improved liver histology in MASH
  - Improved liver enzymes
- **Recommended** over other T2D pharmacotherapy
  - T2D and MASLD-related liver fibrosis (F2 or F3) [Grade A, Level 1A] – **not** approved for MASH
  - Safety (weight gain)

Health Canada

*TZD = thiazolidinedione; PPAR-γ = peroxisome proliferator-activated receptor gamma; MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes; MASH = metabolic dysfunction-associated steatohepatitis RCT = randomized controlled trial*

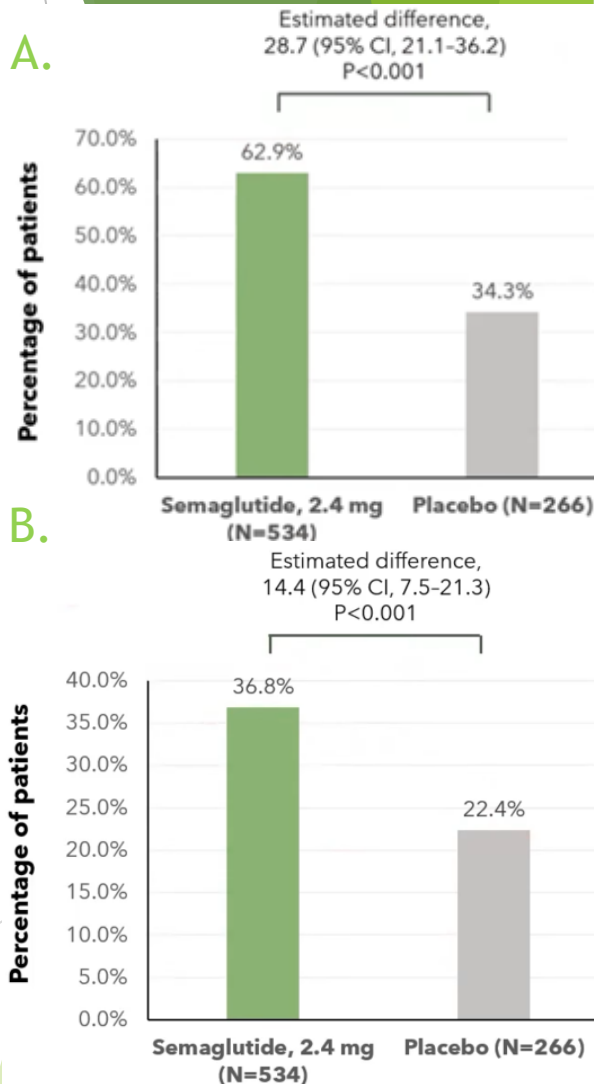
[25]Sanyal et al. 2010, [1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024

# Semaglutide

[Grade D, Level 4]

## 2.4mg SC weekly (GLP-1 receptor agonist)

- Multi-centre, double-blinded, placebo-controlled **Phase III** RCT (ESSENCE): n = 1197 (MASH, F2/3)
  - Included **T2D**
  - Primary endpoint:
    - A. MASH resolution (no fibrosis)
    - B. Fibrosis improvement (without MASH worsening)
- **Significant** histological improvement
- Improved **cardiovascular** risk factors




Health Canada

*T2D = type 2 diabetes; MASH = metabolic dysfunction-associated steatohepatitis; T2D = type 2 diabetes; RCT = randomized controlled trial; GLP-1 = glucagon-like peptide-1* [26]Sanyal et al. 2025, [1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024

# Key Point # 4 - Summary

**Semaglutide = only currently approved MASLD treatment***

- Approved with **conditions** (pending study results)
- Improved **MASH**, **fibrosis**, and **CV** risk factors
- Treats **comorbidities**


*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; CV = cardiovascular*

# Key Point # 5 - Future

Newer MASLD medications = likely even more effective

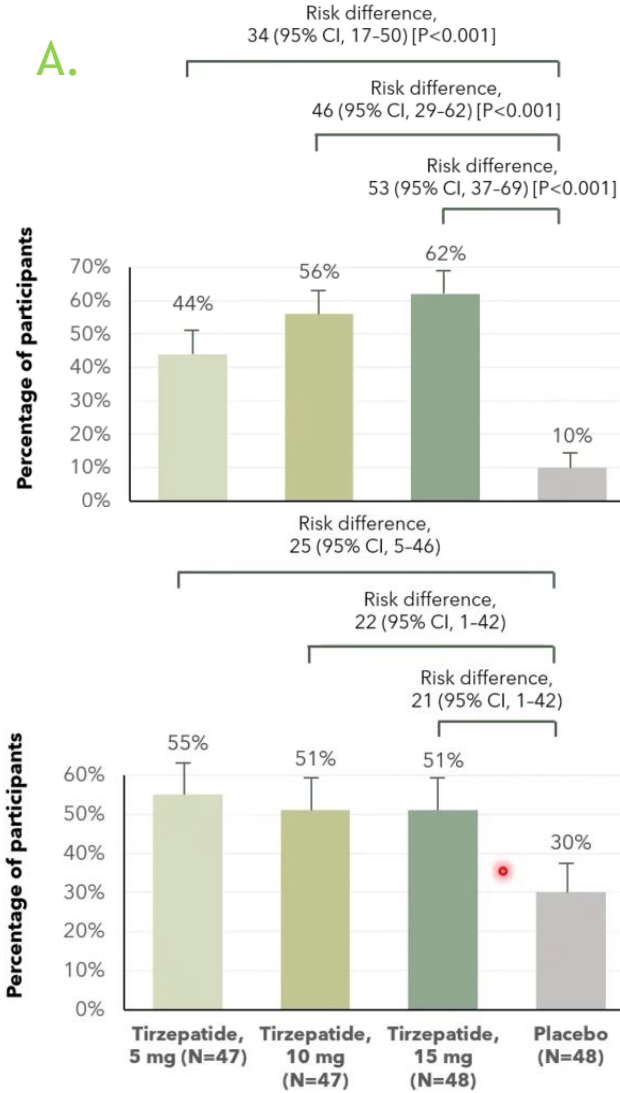

*Image generated using Microsoft Copilot 2026.*

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; CV = cardiovascular*

# Pharmacology - Tirzepatide

5,10,15mg SC weekly (GLP-1/GIP receptor agonist)

- Multi-centre, double-blinded, placebo-controlled **Phase II** RCT (SYNGERY-NASH):
  n = 190 (BMI > 30, MASH, F2/3)
  - Primary endpoint:
    - A. MASH resolution (without worsening fibrosis)
      - Decrease in ≥1 F stage (without worsening MASH)
- **Phase III** pending (SYNERGY-Outcomes)
  - **Not** approved for MASH

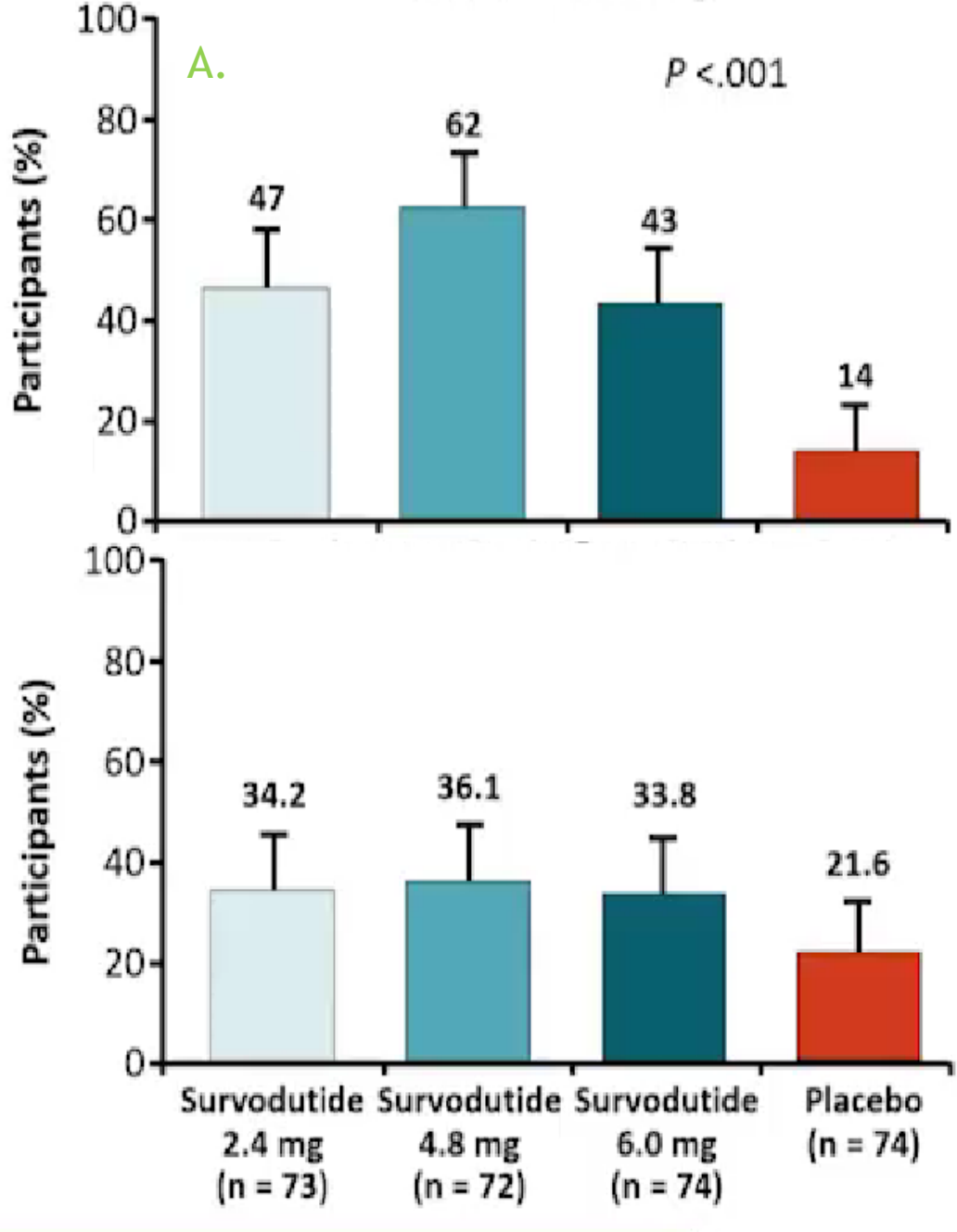



*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; RCT = randomized controlled trial; GLP-1 RA = glucagon-like peptide-1 GIP = glucose-dependent insulinotropic polypeptide* [27]Loomba et al. 2024, [3]Cusi et al. 2025

# Pharmacology - Survodutide

2.4,4.8,6.0mg SC weekly (GLP-1/glucagon receptor agonist)

- Multi-centre, double-blinded, placebo-controlled parallel group **Phase II** RCT: n = 295 (MASH, F1-3)
  - Primary endpoint:
    - A. MASH reduction (without worsening fibrosis)
      - Decrease in ≥1 F stage (without worsening MASH)
- **Phase III** pending (LIVERAGE / LIVERAGE CIRRHOSIS)
  - **Not** approved for MASH

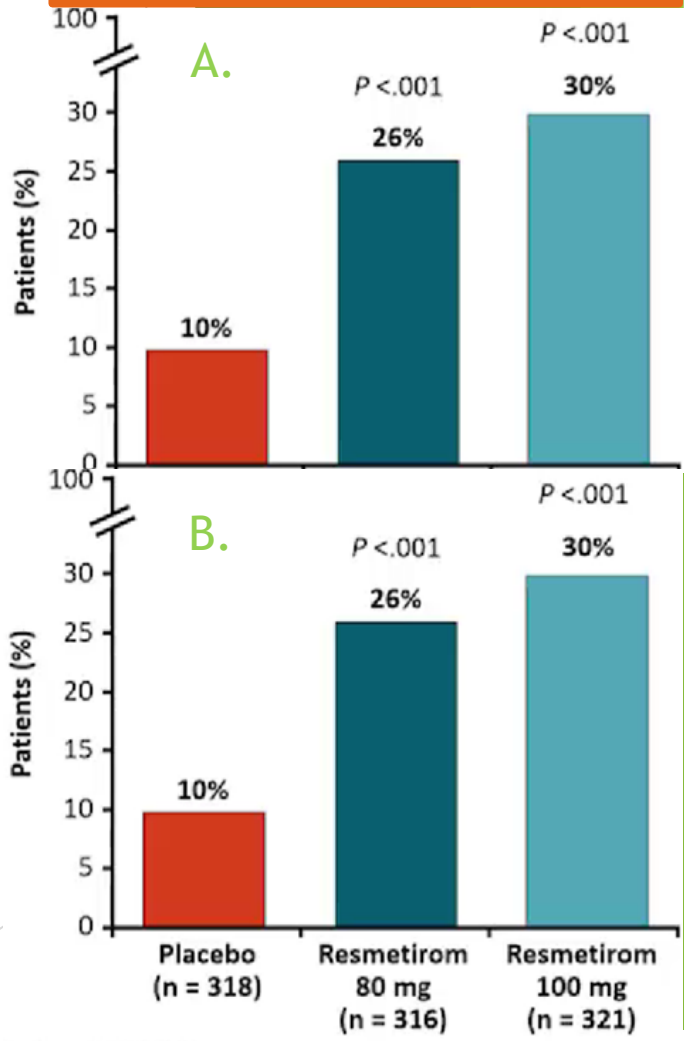



*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes; MASH = metabolic dysfunction-associated steatohepatitis RCT = randomized controlled trial; GLP-1 RA = glucagon-like peptide-1* [28]Sanyal et al. 2024

# Pharmacology - Resmetirom

## 80,100mg PO daily (THR-β agonist)

- Multi-centre, double-blinded, placebo-controlled **Phase III** RCT (MAESTRO-NASH): n = 966 (MASH, F1-3)
  - Primary endpoint:
    - A. MASH resolution (without worsening fibrosis)
    - B. Decrease in ≥1 F stage (without worsening MASH)
- **Not** approved for MASH Health Canada
  - Approved in other countries




*MASLD = metabolic dysfunction-associated steatotic liver disease; T2D = type 2 diabetes; MASH = metabolic dysfunction-associated steatohepatitis RCT = randomized controlled trial; THR-β = thyroid hormone receptor-beta* [29]Harrison et al. 2024

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# MASLD Pharmacology - Summary

| Semaglutide | Vitamin E | Pioglitazone | Tirzepatide | Survodutide | Resmetirom |
|---|---|---|---|---|---|
| GLP-1 | Anti-oxidant | PPAR-γ | GLP-1/GIP | GLP-1/ glucagon | THR-β |
| 2.4mg SC weekly | 800IU PO daily | 30,40mg PO daily | 5,10,15mg SC weekly | 2.4,4.8,6mg SC weekly | 80,100mg PO daily |
| Phase III | 2 RCTs | 10 RCTs | Phase II | Phase II | Phase III |
| Resolution | Reduction | Reduction | Resolution | Reduction | Resolution |
| Reduction | - | - | Reduction | Reduction | Reduction |
| Loss | - | Gain | Loss | Loss | Loss |
| GI | Prostate Ca? | Bladder Ca? | GI | GI | Diarrhea |
| ✓ | ✋ | ✋ | ✋ | ✋ | ✋ |

DIABETES CANADA

American Diabetes Association®

EASL

MASH
Fibrosis
Weight

Health Canada

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; GLP-1 RA = glucagon-like peptide-1 GIP = glucose-dependent insulinotropic polypeptide; RCT = randomized controlled trial; PPAR-γ = peroxisome proliferator-activated receptor gamma; THR-β = thyroid hormone receptor-beta; GI = gastrointestinal; Ca = cancer* [1]Kim et al. 2025, [3]Cusi et al. 2025, [4]EASL 2024

# Key Point # 5 - Summary

**Newer MASLD medications = likely even more effective**

- Dual GLP-1 RA/GIP: **tirzepatide**
- Dual GLP-1/glucagon: **survodutide**
- THR-β: **resmetirom**




*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; GLP-1 RA = glucagon-like peptide-1 GIP = glucose-dependent insulinotropic polypeptide; THR-β = thyroid hormone receptor-beta*

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# MASLD Management (2)

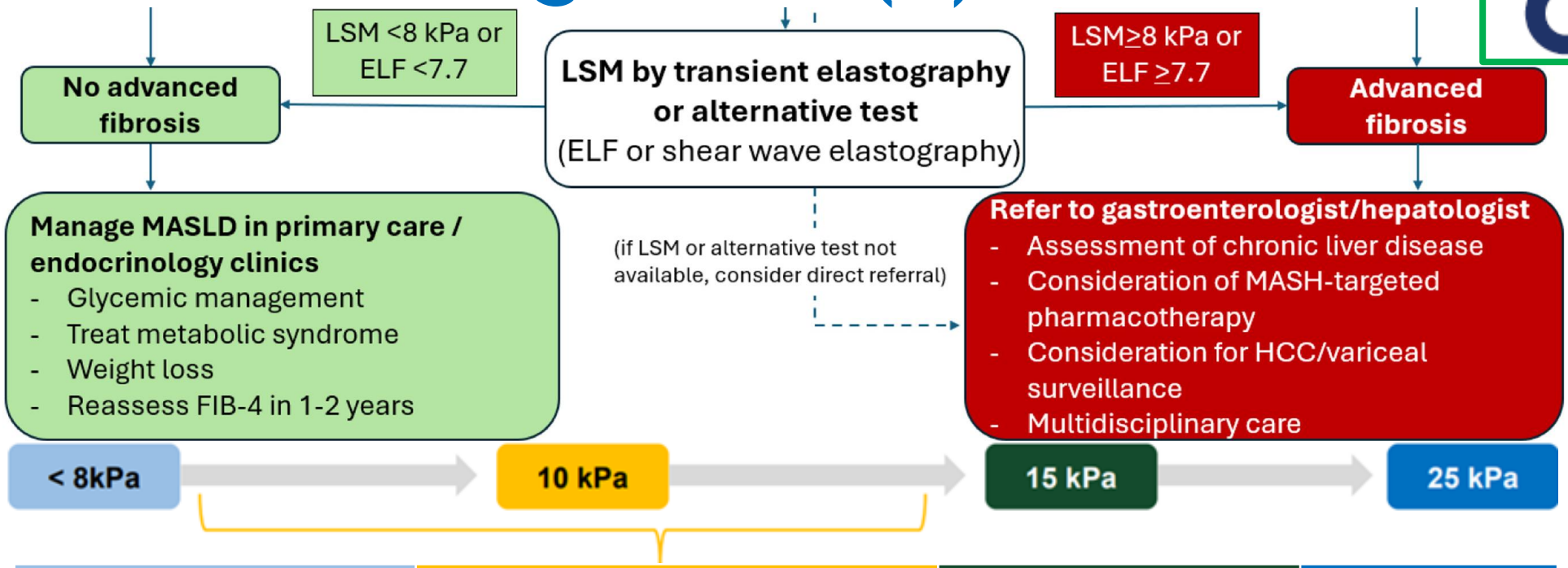
## Guideline differences in recommendations

| Diabetes Canada | ADA | AACE | EASL-EASD-EASO |
|---|---|---|---|
| ▪ Nutrition (Medit.)<br>▪ Exercise<br>▪ Weight loss | ▪ Nutrition (healthy)<br>▪ Weight loss<br>▪ Exercise<br>▪ Minimize alcohol | ▪ Nutrition (Medit.)<br>▪ Weight loss | ▪ Nutrition (Medit.)<br>▪ Weight loss<br>▪ Exercise<br>▪ Smoking cessation<br>▪ Avoid alcohol |
| ▪ Pioglitazone<br>▪ Semaglutide | ▪ GLP-1 RA<br>▪ GIP/GLP-1RA<br>▪ Pioglitazone (or SGLT2i) | ▪ Pioglitazone<br>▪ Semaglutide<br>▪ Vitamin E | ▪ Resmetirom*<br>▪ Vitamin E<br>▪ GLP-1 RA<br>▪ Pioglitazone |
| ▪ Optimize CV risk | ▪ Optimize | ▪ Manage (standard of care) | ▪ Manage |

*MASLD = metabolic dysfunction-associated steatotic liver disease; ADA = American Diabetes Association; AACE = American Association of Clinical Endocrinology; EASL = European Association for the Study of the Liver; EASD = European Association for the Study of Diabetes; EASO = European Association for the Study of Obesity; CVD = cardiovascular disease; ALT / AST = alanine / aspartate aminotransferase* ***not available in Canada**

[1]Kim et al. 2025, [3]Cusi et al. 2025, [16]Cusi et al. 2022, [4]EASL 2024

# MASLD Management (3)

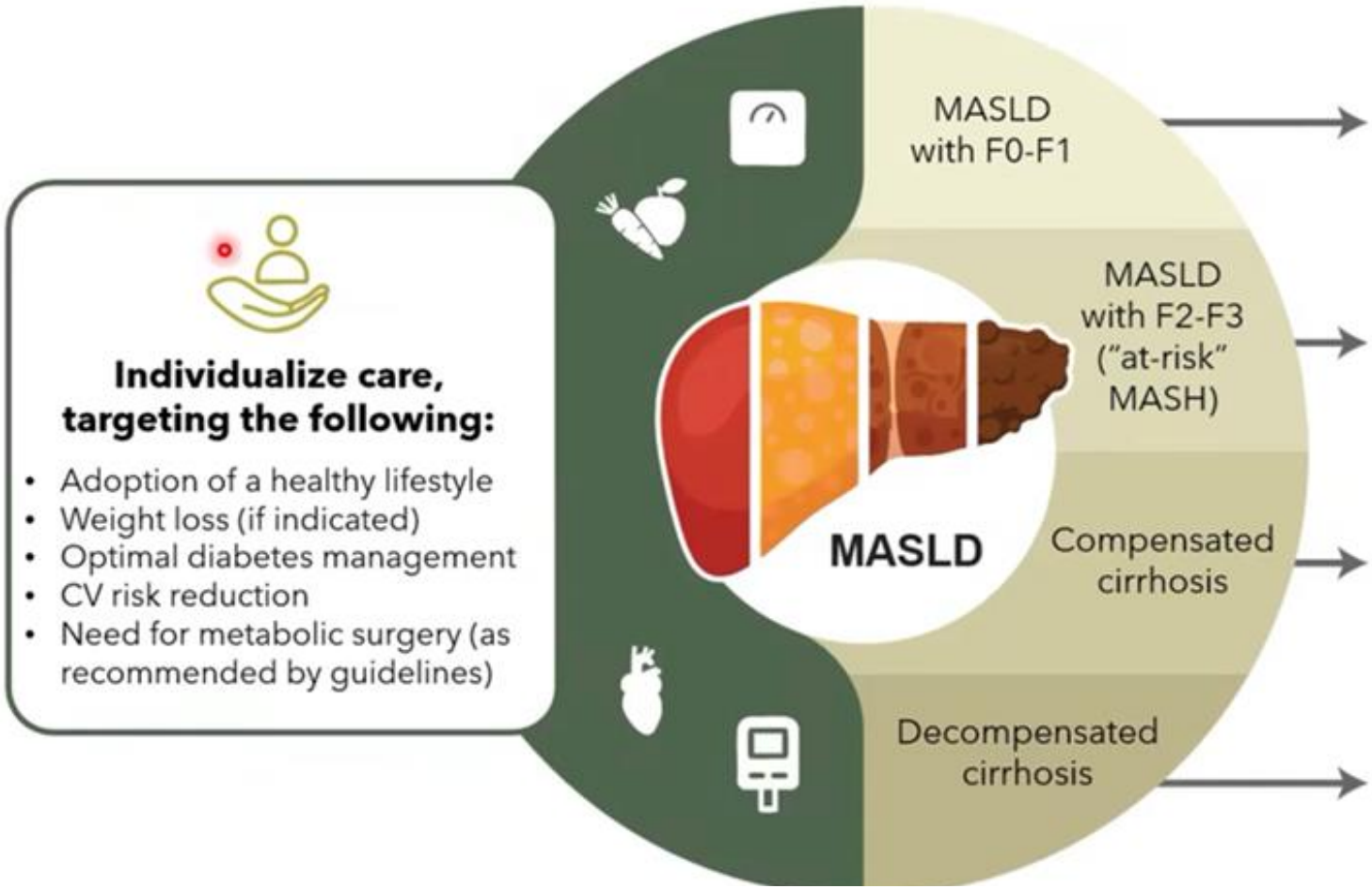



| Low-risk | High-risk | Compensated | Portal HTN |
|---|---|---|---|
| ▪ Obesity<br>▪ T2D<br>▪ HTN<br>▪ Atherogenic DLD<br>▪ Less alcohol<br>▪ R/A q1-3 y | ▪ MASH-directed therapy<br>▪ AST/ALT reduction<br>▪ LSM reduction<br>▪ CAP reduction | ▪ HCC surveillance | ▪ Carvedilol |

*MASH = metabolic dysfunction-associated steatohepatitis; LSM = liver stiffness measurement; ELF = enhanced liver fibrosis test; T2D = type 2 diabetes; HTN = hypertension; DLD = dyslipidemia; ALT / AST = alanine / aspartate aminotransferase; HCC = hepatocellular carcinoma* [1]Kim et al 2025

# MASLD Management (4)

## Guidelines for MASLD + T2D




| Obesity pharmacotherapy | Diabetes pharmacotherapy | MASH pharmacotherapy |
|---|---|---|
| Prefer GLP-1RA, dual GIP/GLP-1RA | Prefer GLP-1RA, dual GIP/GLP-1RA, pioglitazone, SGLT2i | Not indicated |

| Obesity pharmacotherapy | Diabetes pharmacotherapy | MASH pharmacotherapy |
|---|---|---|
| Prefer GLP-1RA, dual GIP/GLP-1RA | Prefer GLP-1RA, dual GIP/GLP-1RA, pioglitazone | Resmetirom GLP-1RA |

| Obesity pharmacotherapy | Diabetes pharmacotherapy | MASH pharmacotherapy |
|---|---|---|
| As with F2-F3 with caution | As with F2-F3 with caution | AVOID |

| Obesity pharmacotherapy | Diabetes pharmacotherapy | MASH pharmacotherapy |
|---|---|---|
| AVOID | Only use insulin | AVOID |

*MASLD = metabolic dysfunction-associated steatotic liver disease; MASH = metabolic dysfunction-associated steatohepatitis; GLP-1 RA = glucagon-like peptide-1 receptor agonist GIP = glucose-dependent insulinotropic polypeptide* [3]Cusi et al. 2025

№

American Diabetes Association®


## MASLD with no fibrosis (F0) or early fibrosis (F1) stage

### Care team

- Primary care physicians, physicians associates/assistants, and nurse practitioners
- Registered dietitian nutritionist, obesity management team
- Behavioral modification team, diabetes care and education specialist
- Metabolic surgery team, as per ADA Standards of Care

### Management

- Lifestyle intervention, weight loss with pharmacotherapy or metabolic surgery, as per ADA Standards of Care
- Diabetes care, as per ADA Standards of Care; favor medications that reduce CVD and steatosis (GLP-1RA, SGLT2i, pioglitazone)
- CV risk reduction, as per ADA Standards of Care

### Liver monitoring

- FIB-4 every 1-2 years. LSM by transient elastography (or ELF) if FIB-4 score is >1.3 (possible disease progression)

## MASLD with fibrosis stage F2 F3 ("at-risk" MASH)

### Care team

- Same as for MASLD with stage F0-F1, and consider referrals to:
  - Hepatologist or GI (with physician associates/assistants and nurse practitioners team)
  - Endocrinologist/diabetes specialist

### Management

- Lifestyle intervention, weight loss same as for MASLD with stage F0-F1
- Diabetes care: prefer GLP-1, dual GIP/GLP-1RA, pioglitazone, or combination to treat MASH; consider resmetirom after treatment optimization of obesity and/or diabetes for at least 6-12 months
- CV risk reduction, same as for MASLD with stage F0-F1

### Liver monitoring

- Consider annual imaging (LSM either by transient elastography or MRE) and measurement of blood-based liver fibrosis biomarkers

## Cirrhosis

### Care team

- Same as for MASLD with stage F2-F3, and consider referrals to:
  - Transplant team for decompensated cirrhosis
  - Social support team

### Management

- Lifestyle intervention same as for MASLD with stage F0-F1, but decompensated cirrhosis requires tailored nutritional planning
- Diabetes care:
  - In compensated cirrhosis: same as for MASLD with stage F2-F3 but with caution
  - In decompensated cirrhosis: insulin only
- Avoid use of resmetirom in cirrhosis
- CV risk reduction, same as for MASLD with stage F0-F1; caution with lipid-lowering medications in decompensated cirrhosis

### Liver monitoring

- Tailored to cirrhosis severity and presence of its complications.
- Screen for HCC

[3]Cusi et al. 2025

# Case - John (3)

- 56M with T2D, hypertension, dyslipidemia, obesity, obstructive sleep apnea
- Metformin 1000mg BID, atorvastatin 20mg, perindopril 8mg, amlodipine 5mg
- Do I have **fatty liver**?

**Metabolic syndrome**

- BMI 32 kg/m$^3$
- WC 102 cm
- BP 134/78 mmHg
- A1C 6.7
- LDL 1.9 mmol/L
- nHDL 2.3 mmol/L
- eGFR 54 mL/min
- ALT 35 U/L
- AST 32 U/L
- Plt 165 x E9/L

**MASLD**

FIB-4 2.3
Liver stiffness measurement = 7.2 kPa

Abdominal US:
Hepatic steatosis

Medication:
Semaglutide 0.25mg SC weekly x 4 weeks with titration to 2.4mg SC
- Addresses BMI, WC, BP, A1C, LDL, eGFR and MASLD

*T2D = type 2 diabetes; BMI = body mass index; WC = waist circumference; BP = blood pressure; A1C = glycated hemoglobin; LDL = low-density lipoprotein; eGFR = estimated glomerular filtration rate; ALT / AST = alanine / aspartate aminotransferase; plt = platelets; US = ultrasound*
*MASLD = metabolic dysfunction-associated steatotic liver disease*

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# Further Learning

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# What Can I Do in Practice Today?

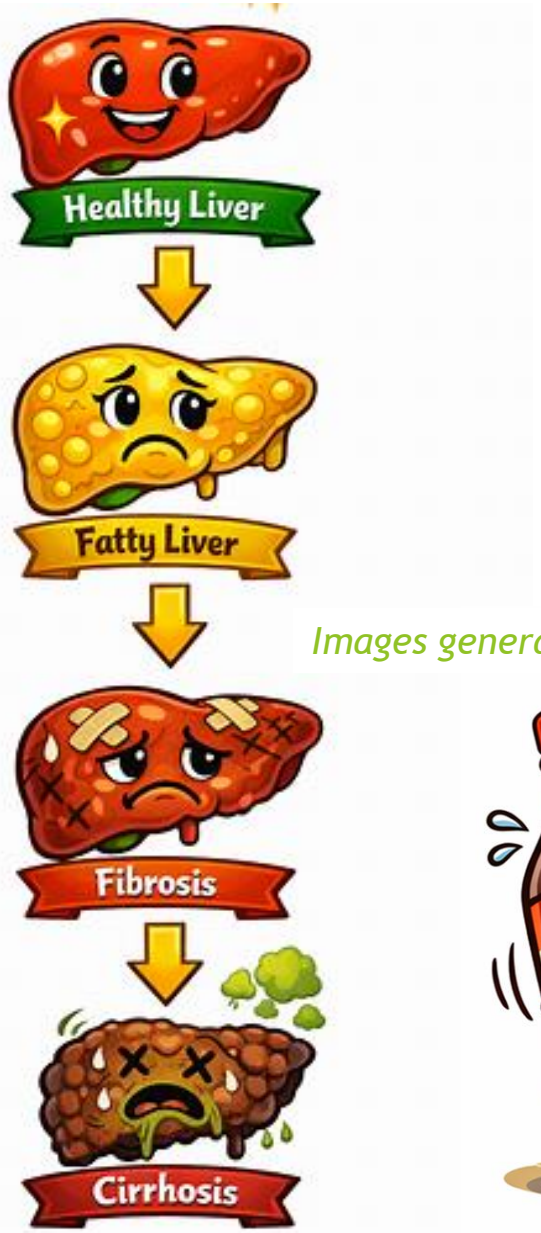
1. Start targeted **lifestyle** interventions
   - e.g. Mediterranean diet, exercise prescription, vices
2. Advise on benefits of **weight loss**
   - Start medication to assist patients in their journey
3. Address **cardiovascular** risk factors
   - e.g. HTN, DLD, tobacco/alcohol cessation
4. Start medication with **multiple** benefits
   - (e.g. GLP-1 RA)
5. Start medication approved for MASH (**semaglutide**)

Health Canada

*Image generated using Meta AI 2026.*

*HTN = hypertension; DLD = dyslipidemia; GLP-1 RA = glucagon-like peptide-1 receptor agonist; MASH = metabolic dysfunction-associated steatohepatitis*

# Questions?




*Images generated using Microsoft Copilot 2026.*

*Image generated using Meta AI 2026.*

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