Adiposity: The Gateway to Cardiometabolic diseases: tackling the unmet need in CV risk reduction

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Declarations

- I engage in education and/or advisory board activities with Novo Nordisk A/S, Eli-Lilly, Slovakia, Boehringer-Ingelheim
- I have no conflicts of interest with regards to this presentation

Overweight and obesity in European population

1 out of 2 adults
are living with overweight or obesity
185–190 million adults

1 out 3 children (7–9 years)
are living with overweight or obesity

1 in 5 adolescents
are living with overweight or obesity

~20–25 million children and adolescents

OECD & European Commission. Health at a Glance: Europe 2024: State of Health in the EU Cycle. Paris: OECD Publishing; 2024.
WHO Regional Office for Europe. WHO European Childhood Obesity Surveillance Initiative (COSI), Round 6 (2022–2024). Copenhagen: WHO Europe; 2025.
Eurostat / EU-SILC data reported in Health at a Glance: Europe 2024.

Epidemiology and consequences of adiposity in Europe

Mortality

- contribute to **more than 1.2 million deaths annually in Europe**, accounting for over **13% of total mortality**
- the leading causes of disability and premature death and is a major contributor to CVD, type 2 diabetes, CKD, MASLD,
  several cancers

Cardiovascular Morbidity

- substantially increases the risk of coronary artery disease, heart failure (particularly HFpEF), atrial fibrillation, hypertension, stroke, peripheral arterial disease

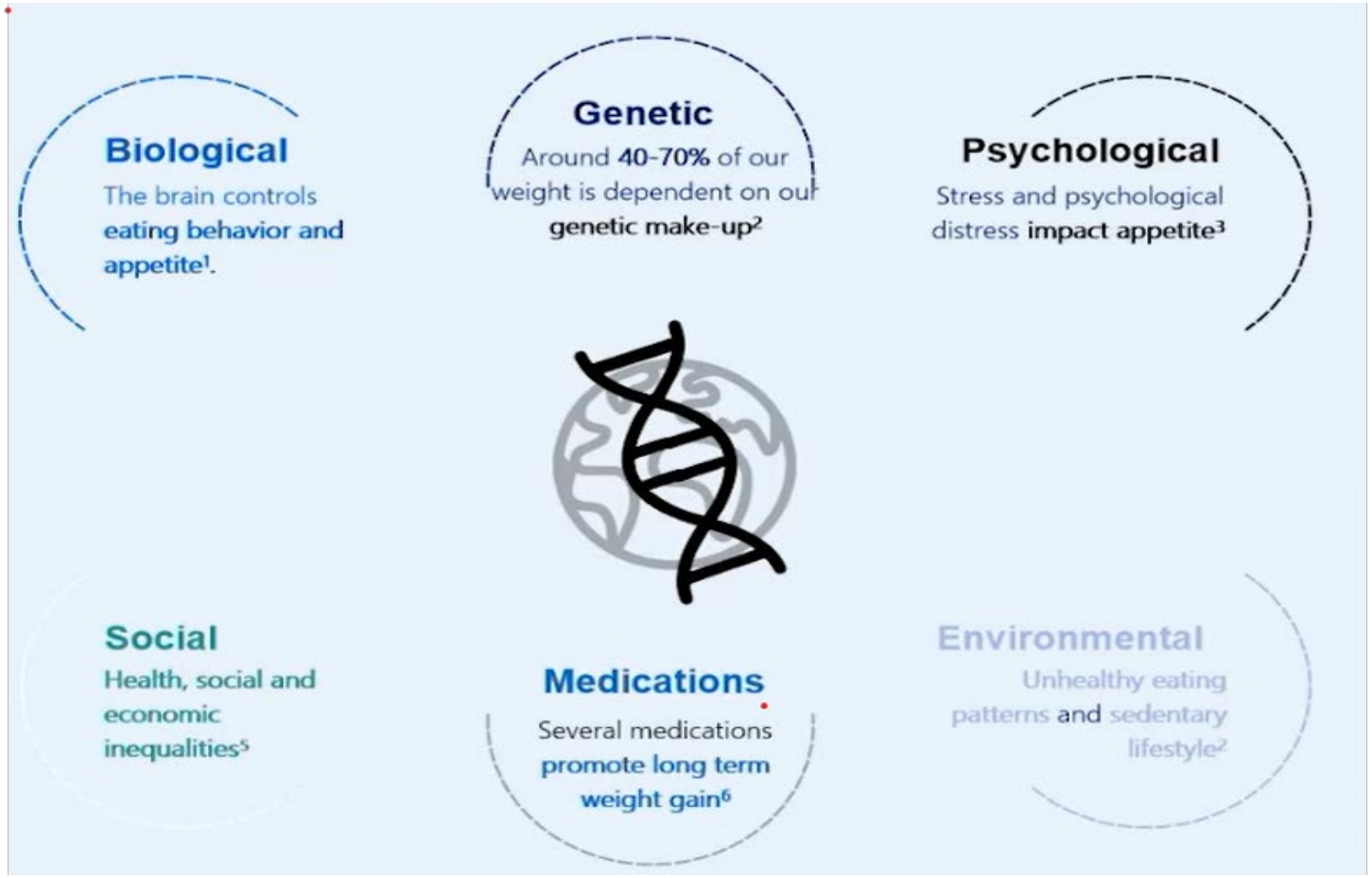
Economic Burden

- estimated to account for **2–8% of total healthcare expenditures** across European countries.

Beyond direct healthcare costs, adiposity drives substantial indirect costs

- reduced productivity, disability, work absenteeism, premature retirement, informal caregiving requirements.

Many paths can lead to adiposity

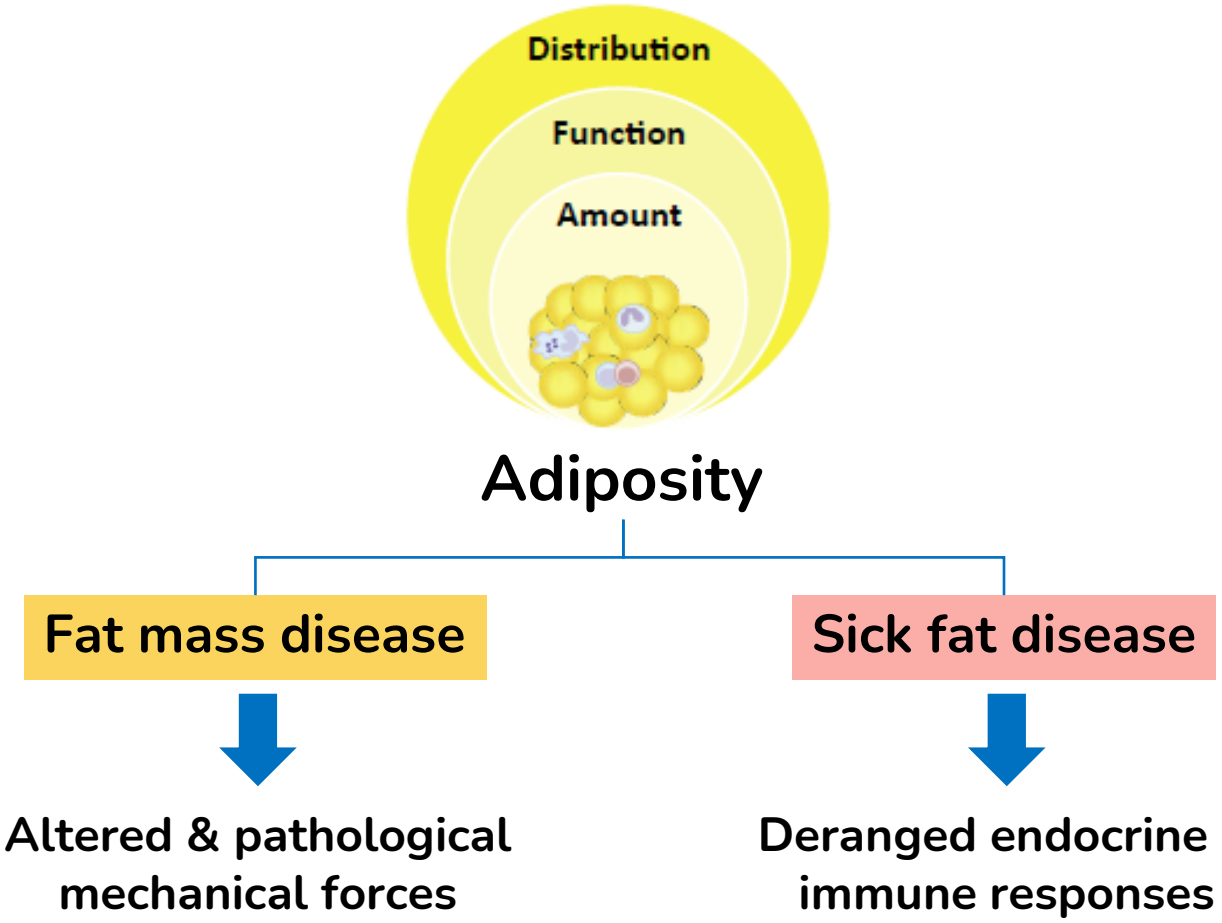


Adiposity is driven by multiple interacting causes and progression factors, including genetic susceptibility, biological mechanisms, psychosocial influences, environmental exposures, socioeconomic conditions and health behaviours.

Adiposity is a chronic, relapsing disease in which abnormal excess adiposity is gateway for impairs health, increases the risk of long-term medical complications and reduces life span.

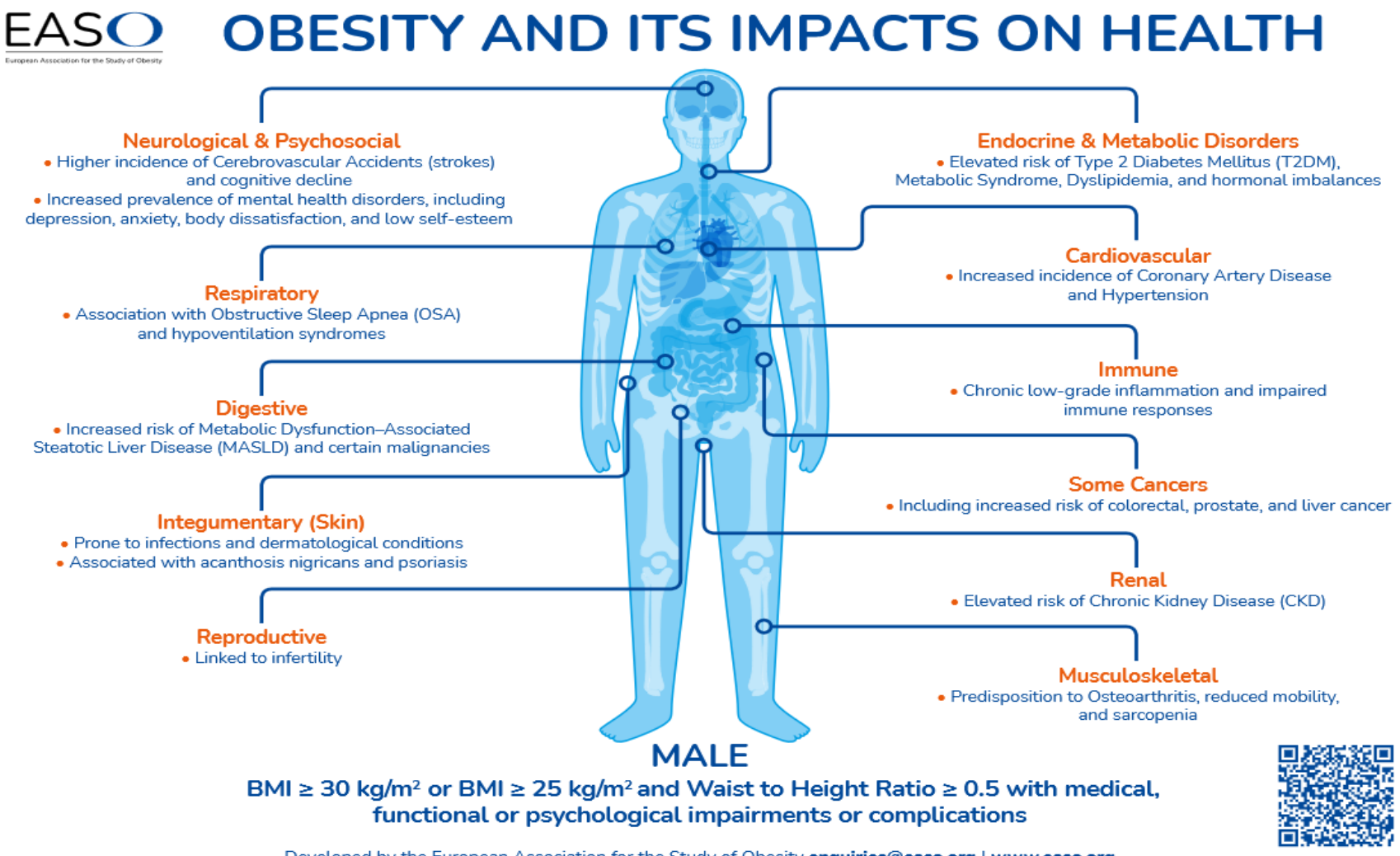
Bowman-Busato J, Schreurs L, Halford JCG, et al. Providing a common language for obesity: the European Association for the Study of Obesity obesity taxonomy. Int J Obes. 2024. doi:10.1038/s41366-024-01565-9.
Donini LM, Ballesteros-Pomar MD, Batsis JA, Boirie Y, Cappellari GG, Poggiogalle E, Barazzoni R. Obesity is always a clinically relevant chronic disease. Eat Weight Disord. 2026 Apr 18;31(1):35. doi: 10.1007/s40519-026-01820-0. PMID: 41999564; PMCID: PMC13091861.

Obesity is an Adiposity Based Chronic Disease (ABCD)



Frühbeck G, Busetto L, Dicker D, Yumuk V, Goossens GH, Hebebrand J, Halford JGC, Farpour-Lambert NJ, Blaak EE, Woodward E, Toplak H. The ABCD of Obesity: An EASO Position Statement on a Diagnostic Term with Clinical and Scientific Implications. Obes Facts. 2019;12(2):131-136. doi: 10.1159/000497124. Epub 2019 Mar 7. PMID: 30844811; PMCID: PMC6547280. Preda A, Carbone F, Tirandi A, Montecucco F, Liberale L. Obesity phenotypes and cardiovascular risk: From pathophysiology to clinical management. Rev Endocr Metab Disord. 2023 Oct;24(5):901-919. doi: 10.1007/s11154-023-09813-5. Epub 2023 Jun 26. PMID: 37358728; PMCID: PMC10492705.

Adiposity and its impacts on health



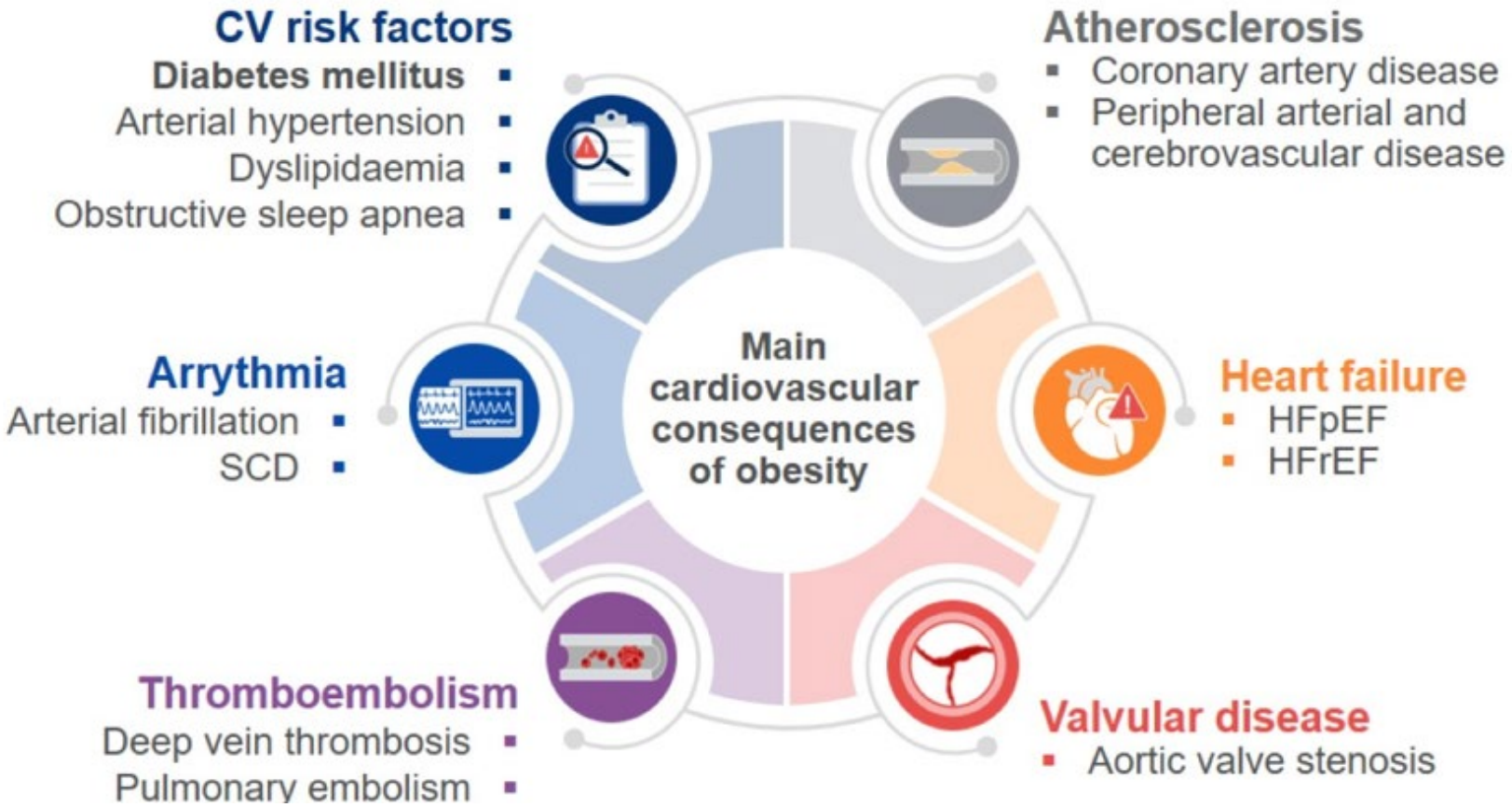
A **multi-system chronic disease driver affecting nearly every major organ system**

It increases risk across:

- metabolic
- cardiovascular
- respiratory
- cancer
- reproductive
- musculoskeletal
- renal
- mental health systems

Adiposity is a major driver of CVD development

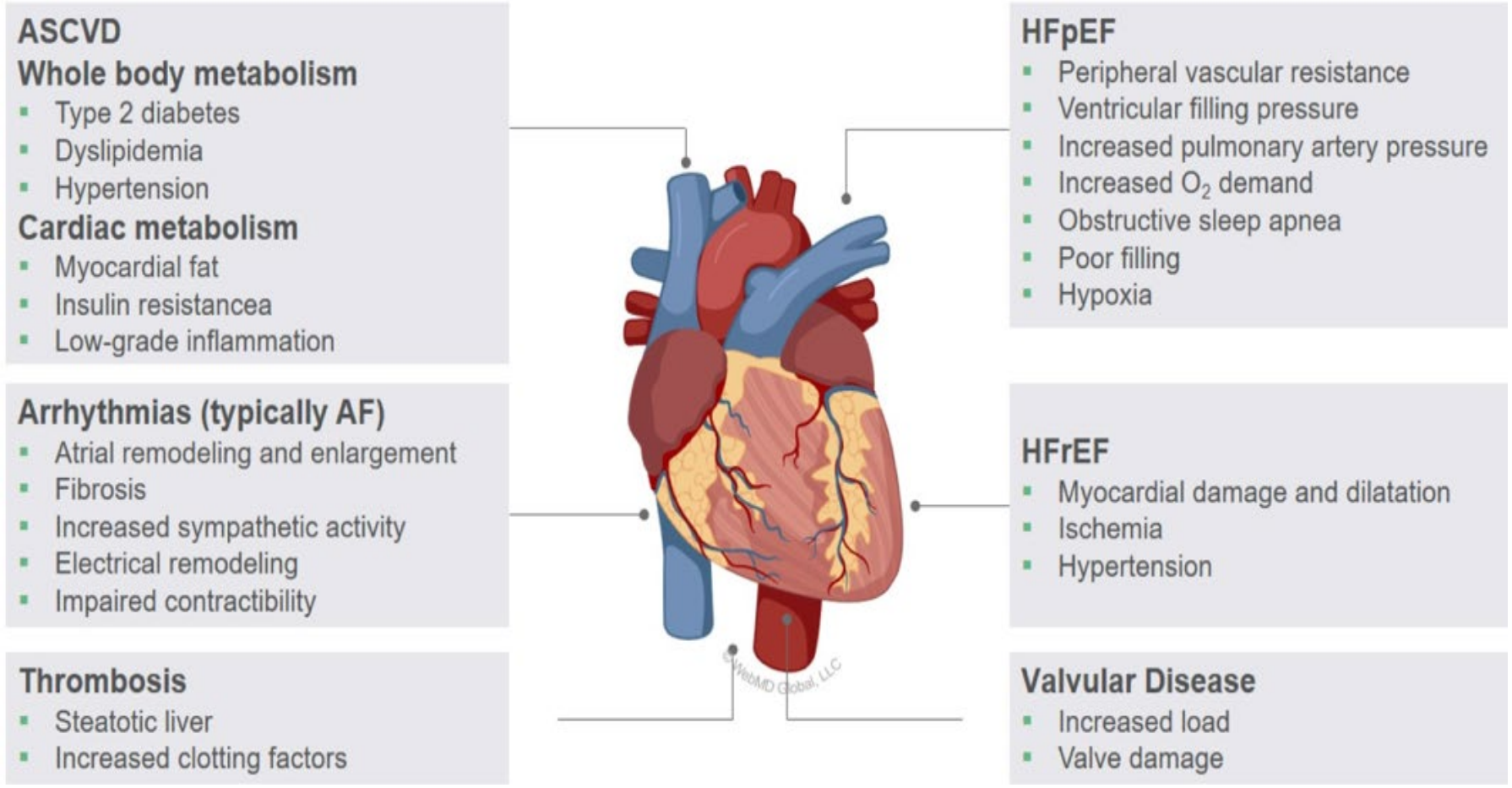
Main CV consequences of adiposity



Koskinas et al, ESC Clinical Consensus Statement, EHJ, 4063 – 4098, 2024

Pathophysiological mechanisms linking excess adiposity to CVD

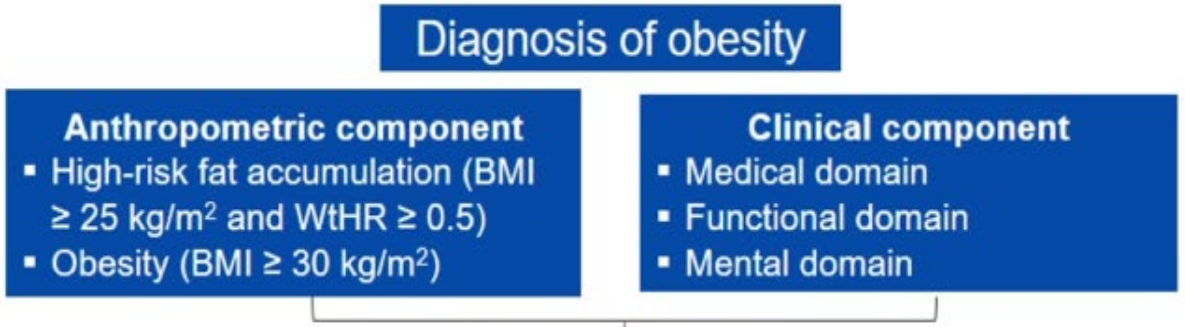
- IR and metabolic dysfunction
- Chronic low-grade inflammation
- Endothelial dysfunction
- Ectopic fat depositio
- Adipokine dysregulation
- Neurohormonal activation (RAAS and sympathetic nervous system)
- Prothrombotic and procoagulant state
- Cardiac remodeling and myocardial fibrosis



Koskinas et al, ESC Clinical Consensus Statement, EHJ, 4063 – 4098, 2024, Powell-Wiley TM et al.,Circulation 2021 e-984-e1010

A new framework for diagnosis, staging and management of obesity in adults

The European Association for the Study of Obesity presents a new framework for the diagnosis, staging and management of obesity in adults to better align with the concept of obesity as an adiposity-based chronic disease.



Diagnosis of obesity
BMI ≥ 30 kg/m² or BMI ≥ 25 kg/m² and WtHR ≥ 0.5 plus medical, functional or psychological impairments or complications

Staging of obesity

Discussion of personalized therapeutic targets

Initial level of intervention

Intensification of therapy
if initial level is not sufficient to achieve personalized therapeutic targets

Pillars of treatment for obesity management in adults

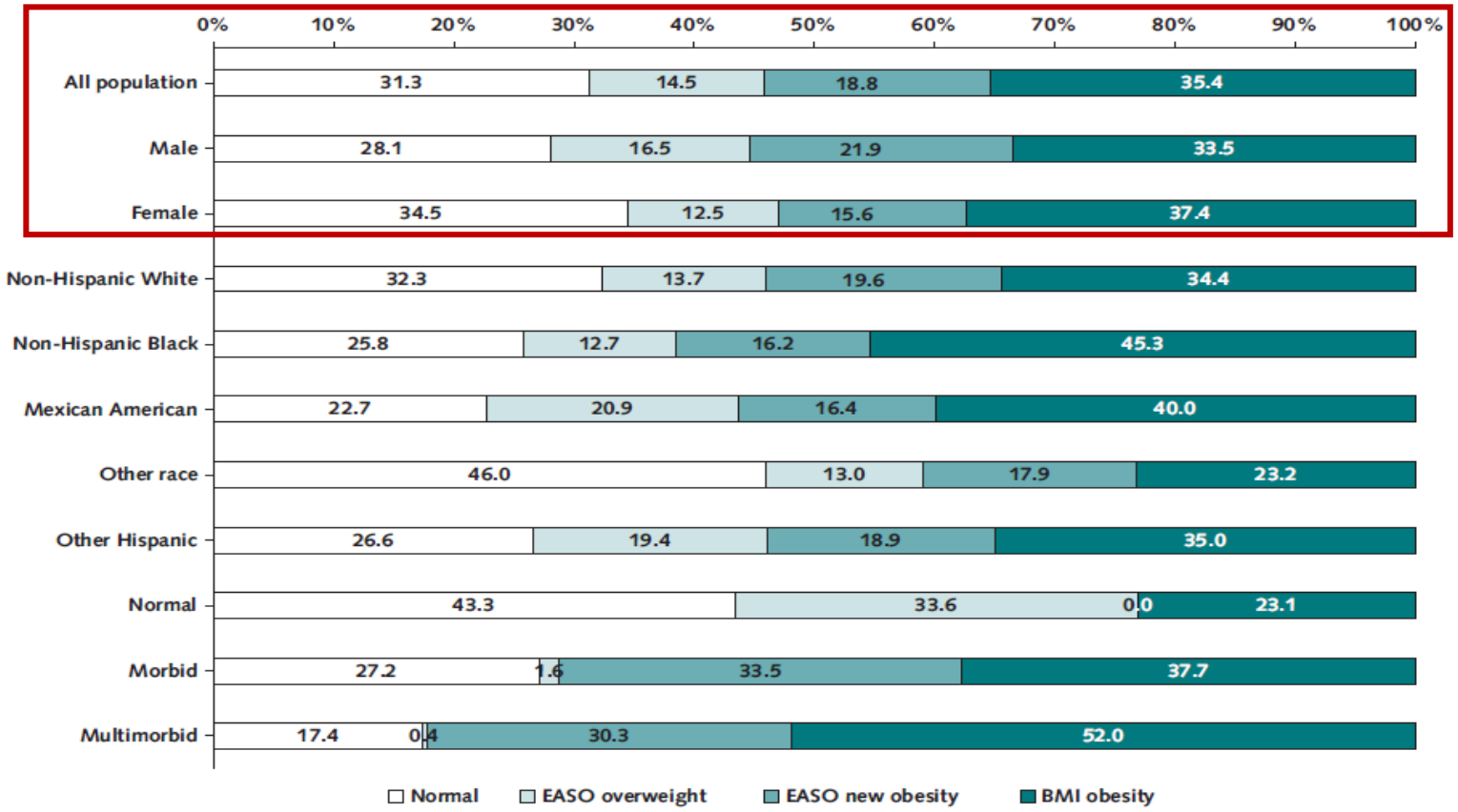
- Behavioral modifications (including nutritional therapy, physical activity, stress reduction, sleep improvement)
- Psychological therapy
- Obesity medications
- Metabolic/bariatric (surgical and endoscopic) procedures

Assess medical, functional, and psychological status (mental health and eating behavior) in any person with obesity

WtHR, waist to height ratio.
Busetto L, et al. Nat Med. 2024;30:2395-2399.

Implications of the EASO's new framework definition of obesity: prevalence and association with all-cause mortality

Figure 1. Distribution of the population by the EASO definition.



BMI = body mass index; EASO = European Association for the Study of Obesity.

The additional 18.8% of people identified as having obesity by the EASO framework are at increased risk of mortality

Dicker D et al. Implications of the EASO's New Framework Definition of Obesity: Prevalence and Association With All-Cause Mortality. Ann Intern Med. 2025 Aug;178(8):1065-1072. doi: 10.7326/ANNALS-24-02547. Epub 2025 Jul 8. PMID: 40623308

Clinical characteristics of the study population by the new criteria for obesity diagnosis

Variable	Total Population	Normal Weight	EASO Overweight	EASO New Obesity	BMI Obesity
Participants, *n* (%)*	44 030 (100)	13 440 (31.3)	6001 (14.5)	8626 (18.8)	15 963 (35.4)
Mean age (SD), *y*	43.4 (15.6)	39.5 (15.8)	36.5 (12.2)	51.3 (14.5)	45.4 (15.0)
Women, *n* (%)	21 752 (49.5)	6792 (54.6)	2643 (42.6)	3546 (41.0)	8771 (52.3)
Ethnicity, *n* (%)					
Non-Hispanic White	17 069 (65.7)	5504 (67.7)	2114 (61.9)	3512 (68.7)	5939 (63.8)
Non-Hispanic Black	9982 (11.8)	2688 (9.7)	1149 (10.3)	1736 (10.2)	4409 (15.1)
Mexican American	8835 (9.1)	2147 (6.6)	1602 (13.0)	1747 (7.9)	3339 (10.2)
Other race, including multiracial	4284 (7.3)	2114 (10.7)	527 (6.5)	798 (6.9)	845 (4.8)
Other Hispanic	3860 (6.1)	987 (5.2)	609 (8.2)	833 (6.2)	1431 (6.1)
Education level, *n* (%)					
Less than 9th grade	4757 (5.4)	1062 (4.1)	569 (5.4)	1361 (7.5)	1765 (5.5)
9th to 11th grade	6090 (10.9)	1643 (10.0)	721 (9.3)	1343 (12.2)	2383 (11.7)
High school graduate	9356 (23.2)	2527 (20.3)	1115 (20.6)	1953 (24.5)	3761 (26.1)
Some college or associate degree	11 584 (29.9)	3134 (27.2)	1512 (28.3)	2194 (29.0)	4744 (33.5)
College graduate or higher	8746 (26.8)	3166 (31.8)	1355 (31.1)	1662 (25.9)	2563 (21.1)
Unknown	3497 (3.8)	1908 (6.6)	729 (5.3)	113 (0.8)	747 (2.1)
Marital status, *n* (%)					
Married/living with partner	24 788 (61.4)	6695 (55.7)	3395 (62.1)	5521 (68.0)	9177 (62.6)
Single/alone	15 220 (31.9)	5378 (36.9)	2133 (32.1)	2321 (24.9)	5388 (31.2)
Widowed	2077 (3.3)	443 (2.3)	78 (1.0)	640 (5.5)	916 (4.0)
Unknown	1945 (3.3)	924 (5.1)	395 (4.8)	144 (1.6)	482 (2.1)
Mean income-to-poverty ratio (SD)	3.0 (1.7)	3.0 (1.7)	3.0 (1.7)	3.1 (1.6)	2.9 (1.6)
0 to 4.99	33 311 (69.6)	9990 (67.7)	4505 (68.9)	6331 (66.2)	12 485 (73.3)
≥5	6894 (23.5)	2286 (25.1)	955 (24.1)	1496 (26.6)	2157 (20.1)
Unknown	3825 (7.0)	1164 (7.3)	541 (7.0)	799 (7.2)	1321 (6.6)
Health insurance coverage, *n* (%)	10 662 (19.5)	3442 (20.9)	1912 (24.4)	1759 (16.1)	3549 (18.1)
Smoking status, *n* (%)					
Never	25 709 (56.0)	8197 (57.6)	3967 (61.9)	4289 (49.0)	9256 (55.8)
Past	9122 (22.2)	2008 (16.9)	912 (18.0)	2484 (29.2)	3718 (24.8)
Current	9199 (21.9)	3235 (25.6)	1122 (20.1)	1853 (21.8)	2989 (19.4)
Alcohol misuse, *n* (%)	5697 (13.2)	1516 (11.5)	595 (10.8)	1421 (16.2)	2165 (14.0)
Mean weight (SD), *kg*	82.7 (20.9)	64.1 (9.1)	79.3 (10.0)	79.6 (10.6)	102.1 (19.1)
Mean height (SD), *cm*	169.2 (10.0)	168.9 (9.7)	170.4 (9.9)	169.7 (10.2)	168.7 (10.1)
Mean BMI (SD), *kg/m²*	28.8 (6.6)	22.4 (1.7)	27.2 (1.4)	27.5 (1.4)	35.8 (5.6)
Mean WC, *cm*	98.0 (16.3)	82.2 (7.2)	93.4 (7.0)	97.9 (6.9)	114.0 (12.9)
Mean WHtR (SD)	0.6 (0.1)	0.5 (0.0)	0.5 (0.0)	0.6 (0.0)	0.7 (0.1)
Mean systolic blood pressure (SD), *mm Hg*	121.6 (16.9)	117.1 (16.2)	112.9 (9.3)	128.7 (17.8)	125.2 (16.6)
Diastolic blood pressure (SD), *mm Hg*	71.5 (12.1)	69.1 (11.4)	67.0 (9.0)	75.1 (12.9)	73.4 (12.4)
Mean glucose (SD)					
mmol/L	5.40 (1.77)	5.00 (1.29)	4.96 (0.64)	5.65 (2.09)	5.79 (2.12)
mg/dL	97.3 (31.9)	90.1 (23.2)	89.3 (11.5)	101.8 (37.6)	104.4 (38.2)
Mean cholesterol (SD)					
mmol/L	5.05 (1.07)	4.86 (1.03)	5.00 (1.01)	5.31 (1.12)	5.11 (1.07)
mg/dL	195.1 (41.5)	187.6 (39.9)	193.0 (38.9)	205.0 (43.4)	197.3 (41.5)
Mean triglycerides (SD)					
mmol/L	1.68 (1.51)	1.23 (0.97)	1.50 (1.20)	1.94 (1.80)	2.02 (1.72)
mg/dL	149.0 (133.6)	108.5 (85.6)	133.1 (106.5)	171.7 (159.1)	178.7 (151.8)
Mean creatinine (SD)					
µmol/L	79.56 (26.52)	70.72 (35.36)	79.56 (17.68)	79.56 (35.36)	79.56 (26.52)
mg/dL	0.9 (0.3)	0.8 (0.4)	0.9 (0.2)	0.9 (0.4)	0.9 (0.3)
Chronic disease, *n* (%)					
Diabetes mellitus	6461 (11.0)	872 (4.3)	20 (0.3)	1877 (15.6)	3692 (19.0)
Hypertension	21 577 (46.3)	4411 (30.3)	218 (3.2)	7053 (79.9)	9895 (60.3)
CVD	3346 (6.2)	642 (3.6)	6 (0.1)	1060 (10.5)	1638 (8.6)
Arthritis	9339 (20.5)	1758 (13.5)	43 (0.7)	2852 (33.2)	4686 (28.2)
Chronic obstructive pulmonary disease	2509 (5.9)	579 (4.5)	20 (0.4)	708 (9.1)	1202 (7.8)
Renal disease	2631 (5.0)	533 (3.4)	6 (0.1)	877 (8.8)	1215 (6.3)
Depression	2900 (5.8)	696 (4.8)	28 (0.5)	734 (7.8)	1442 (7.9)
Morbidity status, *n* (%)					
Normal	17 356 (41.4)	7501 (57.4)	5717 (95.7)	0 (0.0)	4138 (27.0)
Morbid	13 522 (32.2)	3640 (28.0)	235 (3.5)	4552 (57.5)	5095 (34.3)
Multimorbid	13 152 (26.4)	2299 (14.6)	49 (0.8)	4074 (42.5)	6730 (38.7)
Death, *n* (%)	4158 (7.3)	1094 (6.3)	148 (2.0)	1306 (11.2)	1610 (8.2)
Mean time to death (SD), *mo*	122.7 (68.1)	129.1 (68.5)	130.3 (68.9)	121.2 (66.5)	114.7 (67.3)

BMI = body mass index; CVD = cardiovascular disease; EASO = European Association for the Study of Obesity; WC = waist circumference; WHtR = waist-to-height ratio.
* *n* = absolute number, % = weighted.

Dicker D et al. Implications of the EASO's New Framework Definition of Obesity: Prevalence and Association With All-Cause Mortality. Ann Intern Med. 2025 Aug;178(8):1065-1072. doi: 10.7326/ANNALS-24-02547. Epub 2025 Jul 8. PMID: 40623308

EASO pharmacological management framework: 2026 UPDATE

Our 2026 update to the EASO pharmacological management framework for obesity management reflects the rapidly evolving evidence base for obesity management medications, particularly incretin-based therapies. The framework remains a practical, evidence-informed algorithm to support clinical decision-making, not a rigid treatment sequence.

The updated framework is based on 62 randomised controlled trials, incorporating evidence published up to 21 November 2025. It refines the 2025 EASO algorithm by strengthening the evidence around total body weight loss, clarifying the comparative position of available medications, and expanding the liver disease domain to include MASH resolution and, newly for 2026, liver fibrosis improvement.

KEY UPDATES IN THE FRAMEWORK

1. A LIVING FRAMEWORK, NOT A ONE-OFF ALGORITHM

The 2026 update confirms EASO's intention to maintain the pharmacological framework as a living evidence map, updated as new trials, outcomes, medications and formulations emerge.

2. CLEARER EVIDENCE FOR BODY WEIGHT MANAGEMENT

For total body weight loss, all medications assessed showed clinically meaningful benefit versus placebo. The strongest weight-loss effects were seen with tirzepatide and semaglutide, with tirzepatide maintained above semaglutide in the body weight management domain.

3. STRONGER FOCUS ON OBESITY-RELATED COMPLICATIONS

The framework distinguishes between:

- Body weight management in obesity, where no complications are present and the aim is to prevent dysfunction in non-adipose organs.
- Complications management in obesity, where complications are already present and the aim is to reverse or improve dysfunction in non-adipose organs.

4. NEW LIVER DISEASE EMPHASIS

The most substantive 2026 update is in the liver domain. The framework now includes:

- MASH resolution, where current evidence supports benefit for both semaglutide and tirzepatide.
- Liver fibrosis improvement, newly added in 2026, where current evidence is strongest for semaglutide, while evidence for tirzepatide remains less mature.

5. MECHANISM-INFORMED CARE

The framework supports a more precise understanding of obesity through two concepts:

- Metabolic adiposity: linked to deranged endocrine and immune responses, contributing to complications such as prediabetes, type 2 diabetes, cardiovascular disease, heart failure and MASLD/MASH.
- Mechanical adiposity: linked to altered physical forces, contributing to complications such as obstructive sleep apnoea and knee osteoarthritis.

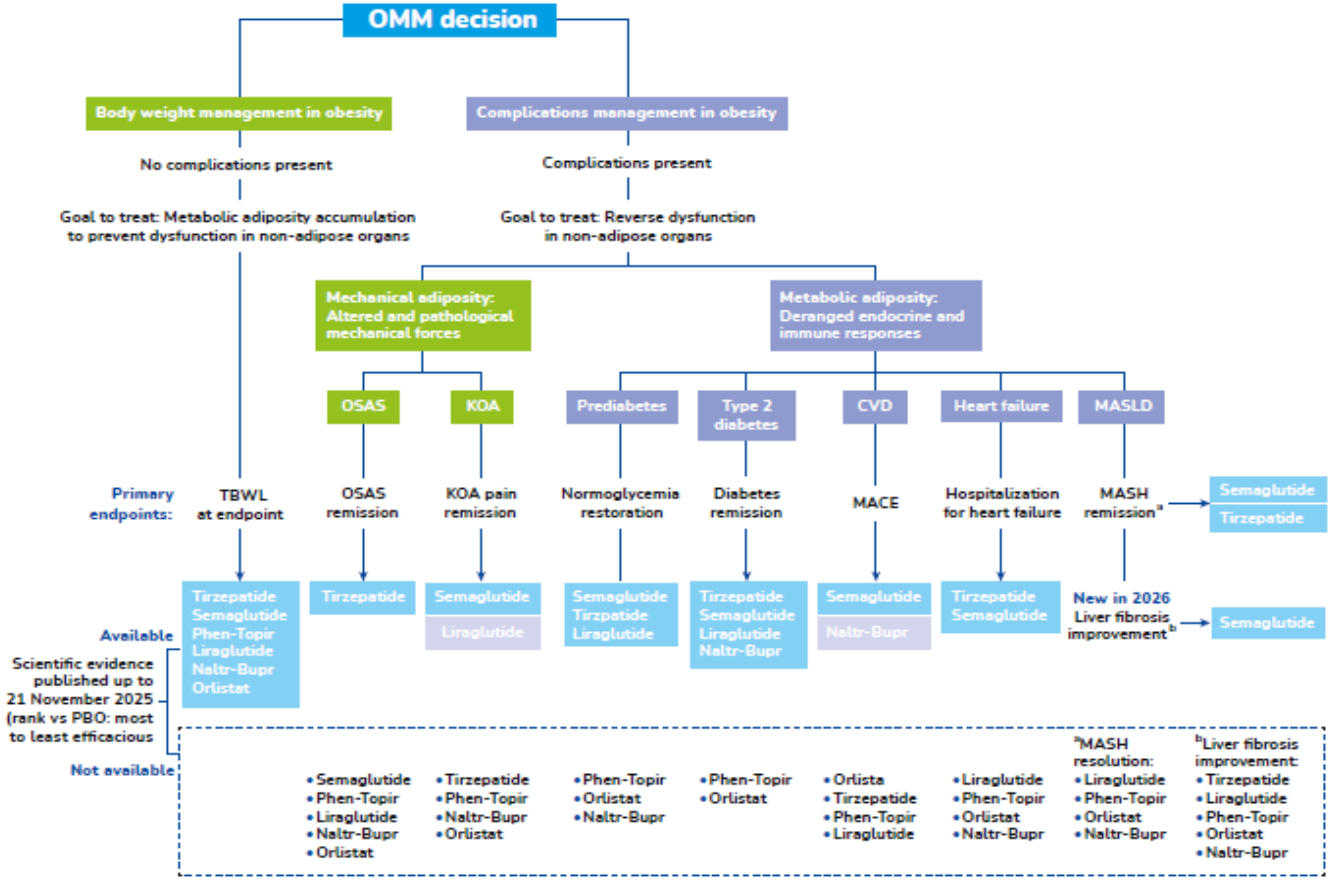
KEY MESSAGE

Pharmacological obesity management should be personalised. Treatment decisions should consider not only body weight outcomes, but also the presence and severity of obesity-related complications, including type 2 diabetes, cardiovascular disease, heart failure, obstructive sleep apnoea, knee osteoarthritis and MASLD/MASH.

https://doi.org/10.1038/s41591-026-04397-4

EASO pharmacological management framework: 2026 UPDATE

TREATMENT ALGORITHM FOR INDIVIDUALS WITH OBESITY



This algorithm is based on the presence or absence of obesity related complications and RCT evidence available up to 21 November 2025. Medications are listed in order of efficacy for each endpoint indicated. Within each domain, medications are positioned to reflect comparative efficacy for the stated endpoint(s) based on trial evidence available up to the cut-off; this is not a prescribing sequence and should not be interpreted as a universal ranking across domains. Medications shown at the same level have comparable effects for that domain and/or endpoint. Where comparative evidence is indirect or limited, apparent differences should be interpreted alongside uncertainty and evidence maturity. Blue shading indicates statistically significant effects versus control; grey shading indicates no statistically significant effect or no available evidence for that domain. Algorithm entries reflect doses licensed for chronic weight management in adults in the European Union at the evidence cut-off; higher-dose regimens (for example, semaglutide at 7.2 mg) are acknowledged but are not included as separate nodes. Medications and doses: liraglutide, 3.0 mg; naltrexone–bupropion (Naltr–Bupr), 32 or 360 mg; orlistat, 360 mg; phentermine-topiramate (Phen-Topir), 15 or 92 mg; semaglutide, 2.4 mg; and tirzepatide, 10–15 mg. aLimited trial numbers and/or substantial between-study heterogeneity may reduce reliability for selected estimate(s), and clinical judgement is recommended. CVD, cardiovascular disease; HF, heart failure (with preserved ejection fraction); KOA, knee osteoarthritis; MACE, major adverse cardiovascular event; MASLD, metabolic dysfunction-associated steatotic liver disease; OSAS, obstructive sleep apnea; PBO, placebo.

KEY MESSAGE

Pharmacological obesity management should be personalised. Treatment decisions should consider not only body weight outcomes, but also the presence and severity of obesity-related complications, including type 2 diabetes, cardiovascular disease, heart failure, obstructive sleep apnoea, knee osteoarthritis and MASLD/MASH.

https://doi.org/10.1038/s41591-026-04397-4

Adressing adiposity: A chronic disease requiring whole-of-society action

ADDRESSING OBESITY: A Chronic Disease Requiring Whole-of-Society Action

Municipal leaders can help build healthier, more equitable communities

UNDERSTANDING OBESITY

- Obesity is influenced by genetic, environmental, and social factors
- Obesity is unequally distributed due to: social and economic barriers, environmental and commercial influences, healthcare access and system barriers, and life-course and structural factors
- Requires early recognition, clinical diagnosis, and long-term, person-centred management
- Development is not determined by individual behaviour alone

ENABLING HEALTHIER ENVIRONMENTS

- Shape food systems, housing, transport, and built environments to promote health and reduce the risk of non-communicable diseases, including obesity as a chronic disease
- Embed equity and access into urban planning and local services, addressing unequal risk exposure
- Collaborate across public health, healthcare, education, and community networks
- Support early recognition, referral pathways, and access to appropriate management

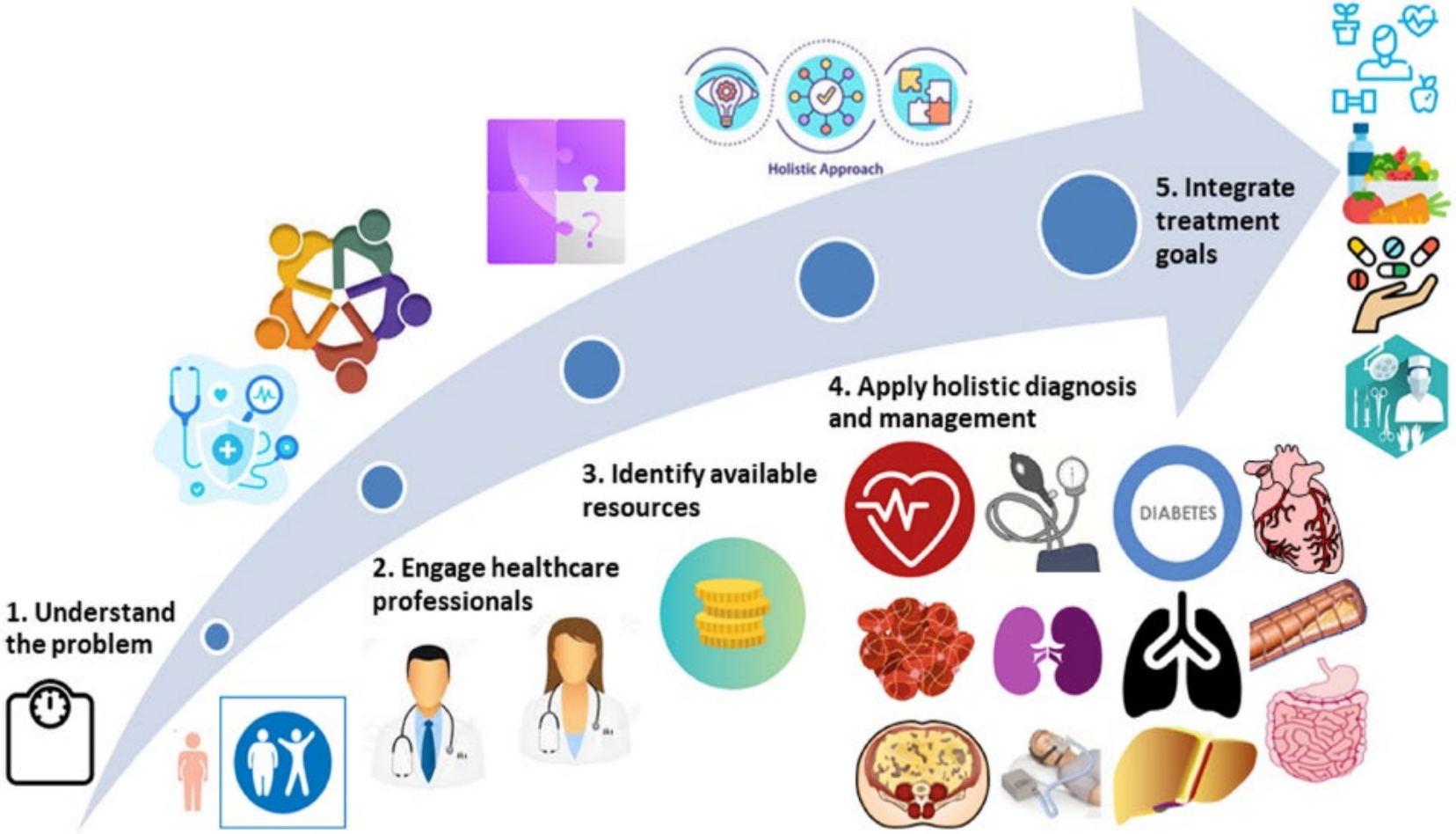
COMMUNICATING WITHOUT STIGMA

- Use person-first, non-stigmatising language (e.g. “person with obesity”, not “obese person”)
- Promote inclusive, compassionate communication of evidence-based messages that support dignity, access to care, and equity
- Recognise obesity as a biologically driven, adiposity-based chronic disease
- Reject narratives that frame obesity as controllable through willpower or behaviour alone, avoiding blame and stereotypes

www.easo.org

EASO
European Association for the Study of Obesity

Managing process to reach treatment goals



- From a strategic perspective, successful achievement of treatment goals requires
- **understanding of the disease**,
- **engagement of healthcare professionals**,
- **identification of resources** to support long-term care,
- **establishment of an accurate diagnosis** and **individualized disease management plan**,
- **implementation of timely and personalized treatment interventions**, definition of realistic treatment goals, and continuous monitoring of outcomes.

Yárnoz-Esquiroz P, Olazarán L, Aguas-Ayesa M, Perdomo CM, García-Goñi M, Silva C, Fernández-Formoso JA, Escalada J, Montecucco F, Portincasa P, Frühbeck G. 'Obesities': Position statement on a complex disease entity with multifaceted drivers. Eur J Clin Invest. 2022 Jul;52(7):e13811. doi: 10.1111/eci.13811. Epub 2022 May 12. PMID: 35514242; PMCID: PMC9285368.

Key messages

- The growing burden of obesity is driving a paradigm shift in cardiovascular prevention - from managing downstream risk factors to targeting excess adiposity as an upstream driver of cardiometabolic disease.

- Reducing excess adiposity represents one of the greatest opportunities to lower cardiovascular risk, improve population health, and decrease the burden of cardiovascular morbidity, mortality, and healthcare costs across Europe.

- **Adiposity prevention, treatment & management at *all* life stages is essential**

Greetings from Bratislava, Slovakia

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