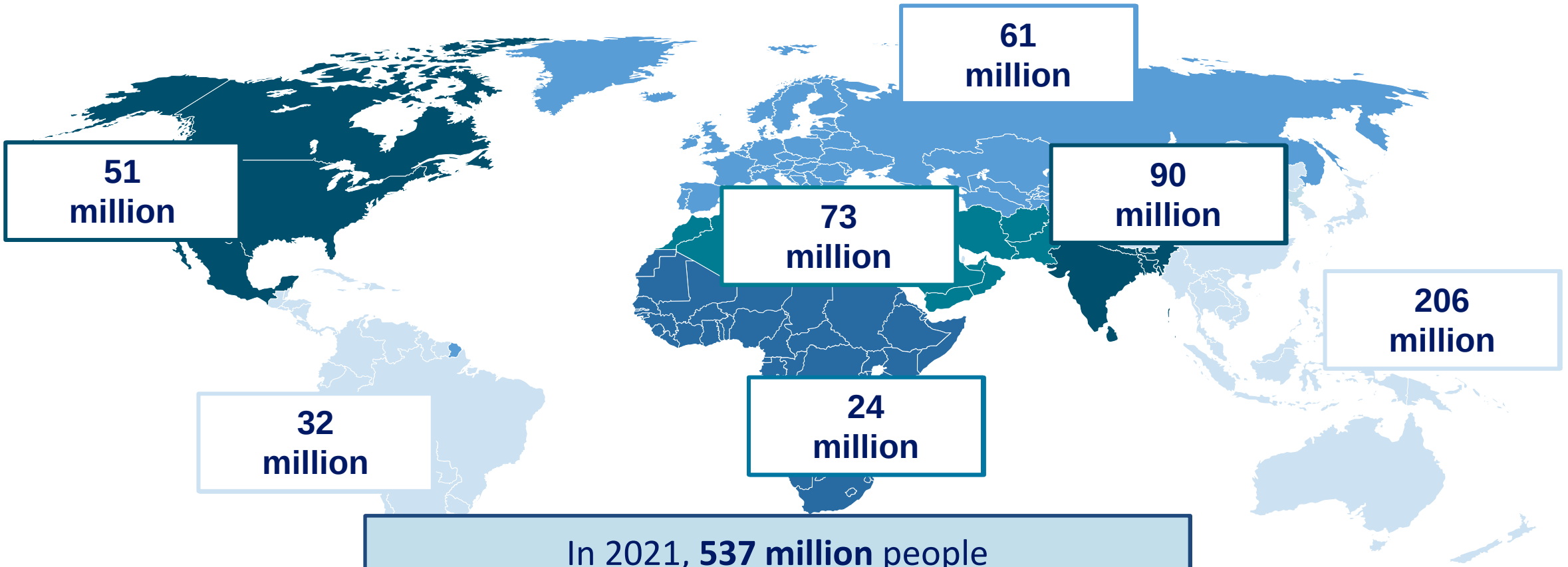
Practical strategies to strengthen expertise in managing obesity in Type 2 Diabetes

Livestream 17 October 2023

Diabetes prevalence is increasing worldwide



Estimated number of people with diabetes worldwide per region (20–79 years) in 2021. International Diabetes Federation (IDF) Diabetes Atlas. 10th edn. 2021. IDF: Brussels, Belgium. Available at: https://diabetesatlas.org/atlas/tenth-edition/. Accessed November 2021.

In people with T2D, Excess Weight Is Associated with Increased Risk of T2D-Related Complications

Prevalence of diabetes occurred across all ranges of BMI but increased with higher BMI

- 23% more likely to experience microvascular complications (chronic kidney disease, retinopathy or lower-extremity disease)
- 56% more likely to have a history of cardiovascular disease, congestive heart failure, heart attack or stroke

EPIC-Potsdam study: Association of microvascular complications with pre-diagnosis BMI in people with T2D2†

Microvascular complications	**20% higher risk per 5 kg/m²** **(HR, 1.2; 95% CI, 1.07–1.35)**
Kidney disease	**38% higher risk per 5 kg/m²** **(HR, 1.38; 95% CI, 1.20–1.58)**
Neuropathy	**12% higher risk per 5 kg/m²** **(HR, 1.12; 95% CI, 0.96–1.31)**

† Analysis was based on age- and sex-adjusted model.

1. Fang M, et al. Diabetes Care. 2021;44(3): 699-706.
2. Polemiti E, et al. Diabetologia. 2021;64(4): 814-825.

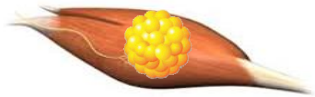
Subcutaneous Fat Depot
Favourable body fat distribution

Increased Demand for Energy Storage

Visceral Fat Depot
Unfavourable body fat distribution

↑ Insulin resistance
↑ FFA and cytokines release
↓ Adiponectin

Low Muscle Fat



Muscle, insulin resistance and mitochondrial dysfunction

↓ ATP synthesis
↓ NO production
↓ FFA oxidation
↓ Glucose uptake

Subcutaneous Adipose Tissue

Absence of Metabolic Dysfunction

Low Epicardial Fat

↑ miR-378, ↓ FAM13A

↑ WNT5A/SFRP5,
↓ BMP2, ↑ GREM1

No Lipid Spillover
No Ectopic Fat

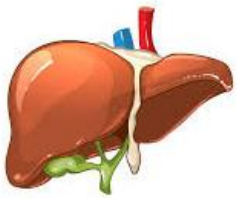
Healthy SAT expansion

Lipid Spillover
Ectopic fat

Limited SAT expansion

Heart, coronary atherosclerosis and CVDs

↑ Epicardial fat
↑ Local proinflammatory cytokines

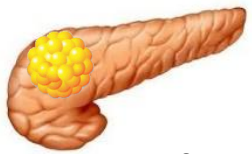


Low Liver Fat

Liver, steatosis, inflammation and insulin resistance

↑ VLDL production
↑ Oxidative stress
↓ Glucose uptake and insulin clearance

Low Pancreas Fat



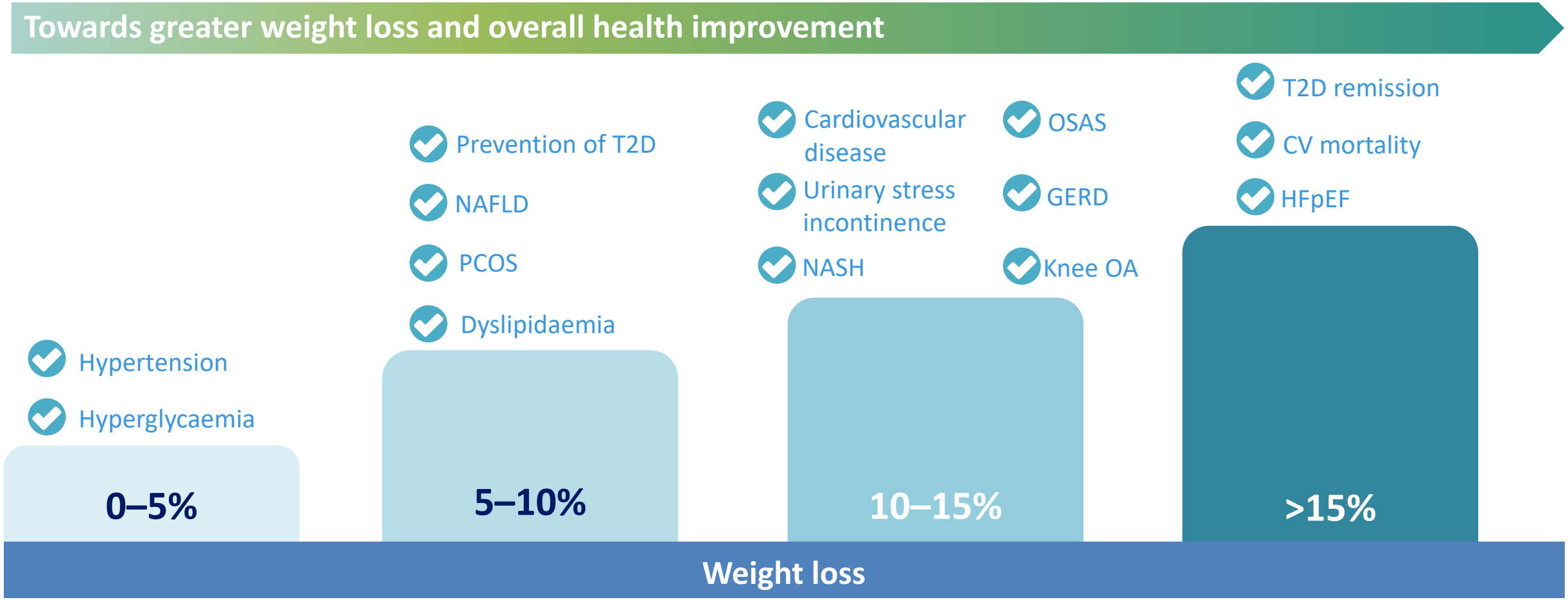
Pancreas, β-cell dysfunction and T2DM

↓ Insulin secretion
↑ β-cell apoptosis

Metabolic Dysfunction

Porro S. et al, J Endocrinol Invest 2021

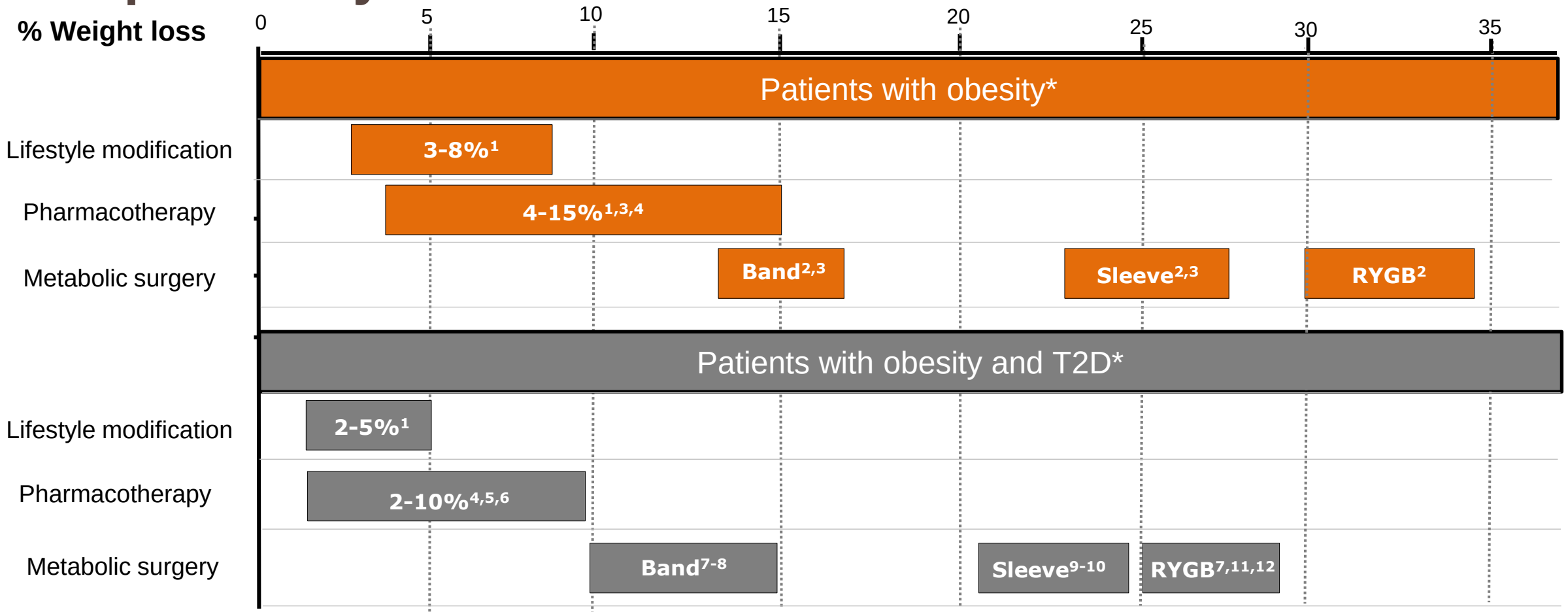
Weight Loss and Obesity-related Comorbidities



CV, cardiovascular; GERD, gastro-oesophageal reflux disease; HFpEF, heart failure with preserved ejection fraction; NAFLD, non-alcoholic fatty liver disease; NASH, non-alcoholic steatohepatitis; OA: osteoarthritis; OSAS, obstructive sleep apnoea syndrome; PCOS, polycystic ovary syndrome; TG, triglycerides.

1. Garvey WT et al. Endocr Pract 2016; 22(Suppl. 3):1–203; 2. Look AHEAD Research Group. Lancet Diabetes Endocrinol 2016; 4:913–21; 3. Lean ME et al. Lancet 2018; 391:541–51; 4. Benraoune F and Litwin SE. Curr Opin Cardiol 2011; 26:555–61; 5. Sundström J et al. Circulation 2017; 135:1577–85.

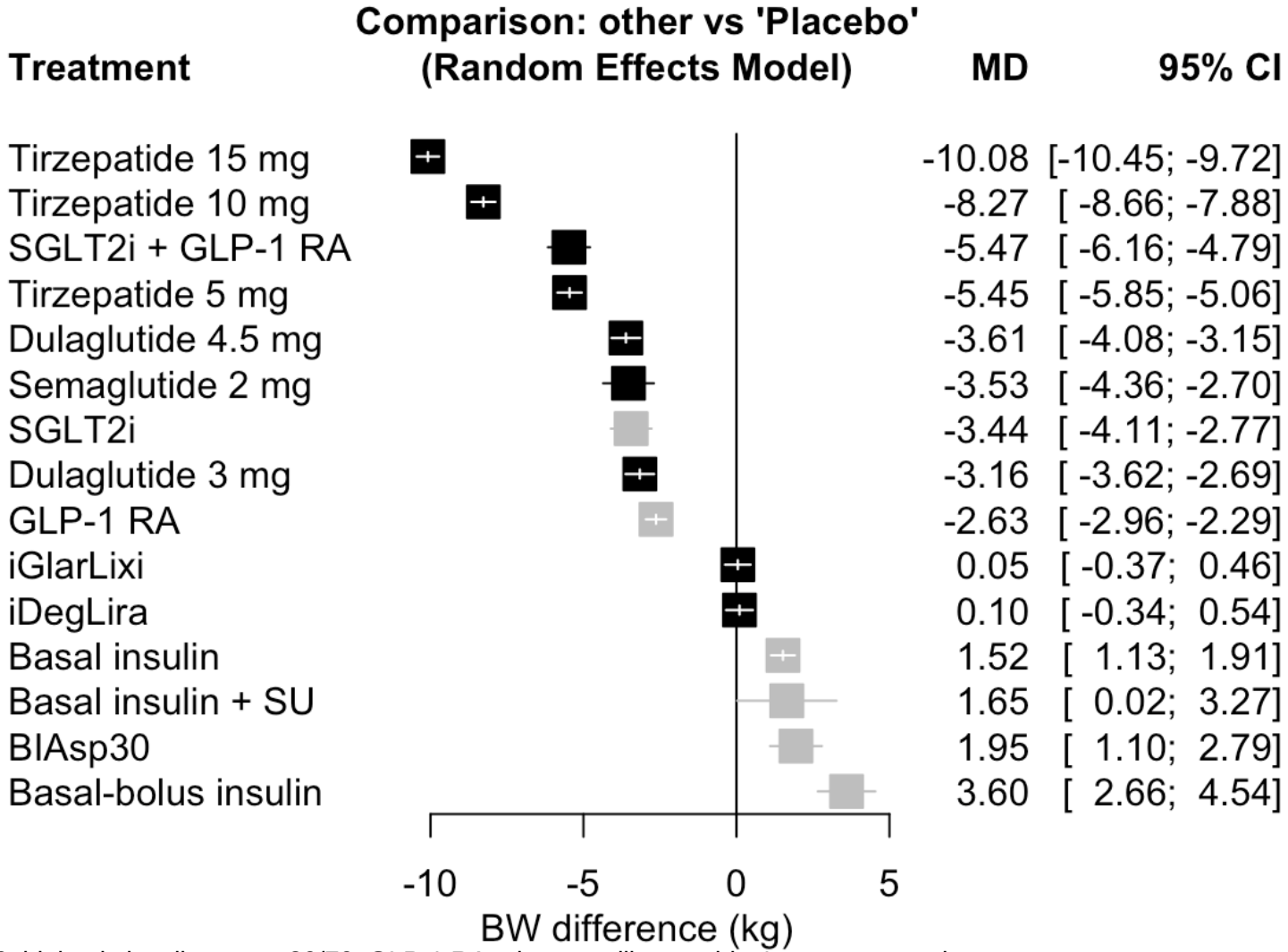
Weight Loss in People with Obesity Is Impacted by Presence of T2D



T2D: Type 2 diabetes; RYGB: Roux-en-Y gastric bypass * Not head to head trials. Between trial comparisons should be interpreted carefully.

1. Jensen et al. Circulation 2014;129(25 Suppl 2):S102–38; 2. Courcoulas et al. JAMA 2013;310:2416–25; 3. Obesity Drug Outcome Measures: A Consensus Report of Considerations Regarding Pharmacologic Intervention. Available at: http://sphhs.gwu.edu/pdf/releases/obesitydrugmeasures.pdf (accessed 15 February 2016); 4. WEGOVY ® Prescribing information Jun 2021 4. Contrave Prescribing Information: https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/200063s013lbl.pdf; 5. Qysmia Prescribing Information: https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/022580s016lbl.pdf; 6. Wentworth JM, et al. Obes Surg. 2015 Dec;25(12):2400-7; 7. Courcoulas AP, et al. JAMA Surg. 2015 Oct;150(10):931-40; 8. Sally Abbott et al. / Surgery for Obesity and Related Diseases 16 (2020) 1723–1730; 9. Schauer PR, et al. N Engl J Med. 2017 Feb 16;376(7):641-651; 10. Keidar A, et al. Diabetologia. 2013 Sep;56(9):1914-8. doi: 11.1007/s00125-013-2965-2; 12. Hofsø D, et al. Lancet Diabetes Endocrinol. 2019 Dec;7(12):912-924.

Change from Baseline in Body Weight vs Placebo: A Network Meta-analysis of 40 Trials (26,490 patients)



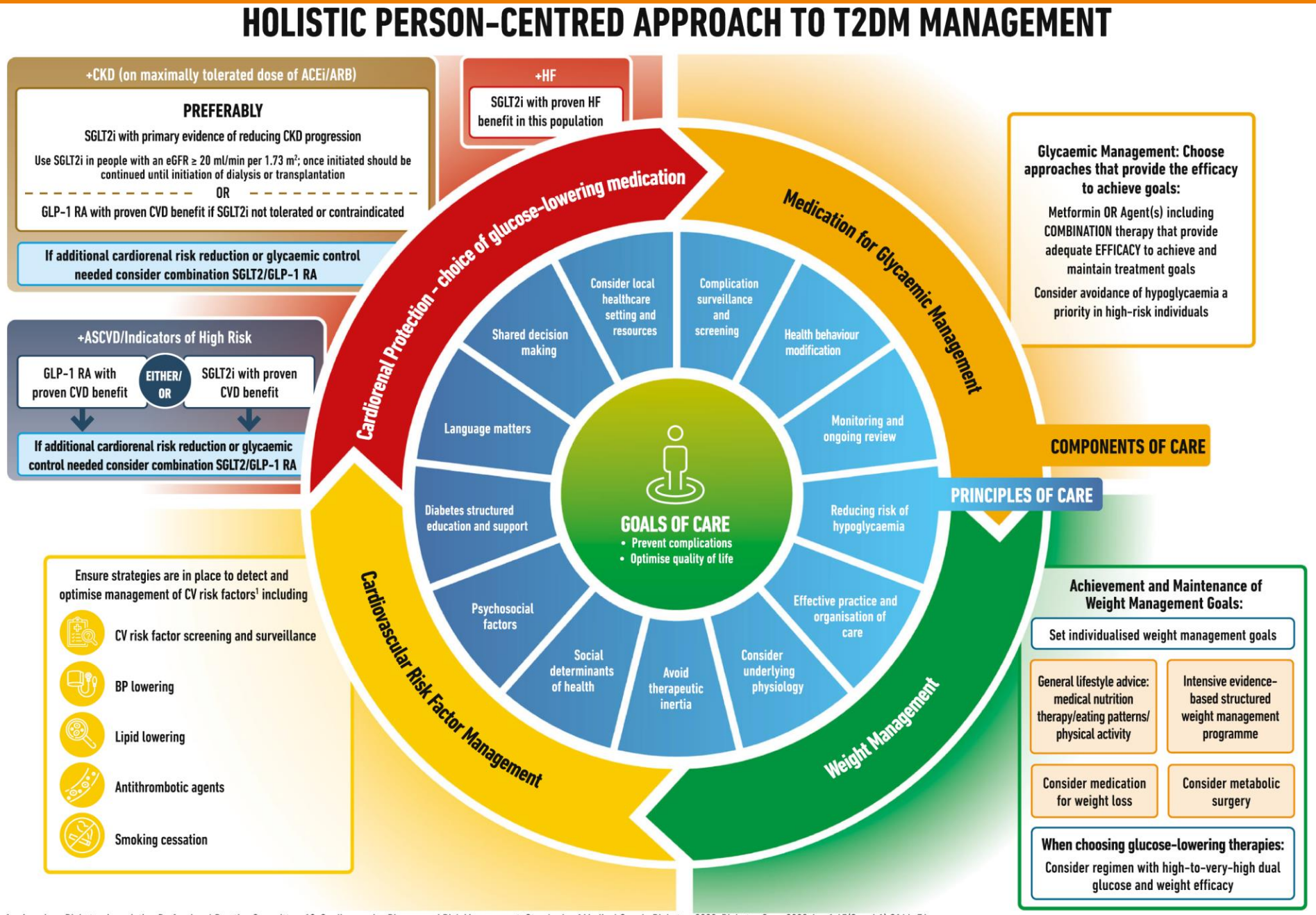
Treatments are presented according to their effect estimate compared with placebo. Effect sizes are presented as mean difference (MD) and 95% confidence intervals (CI).

New GLP-1 RA-based treatments are highlighted in black, other treatments in grey.

BIAsp30, biphasic insulin aspart 30/70; GLP-1 RA, glucagon-like peptide-1 receptor agonists; SGLT2i, sodium glucose cotransporter-2 inhibitors, (SGLT-2i); SU, sulfonylurea.

Caruso I, Di Gioia L, Di Molfetta S, et al. eClinicalMedicine 2023; 64:102181.

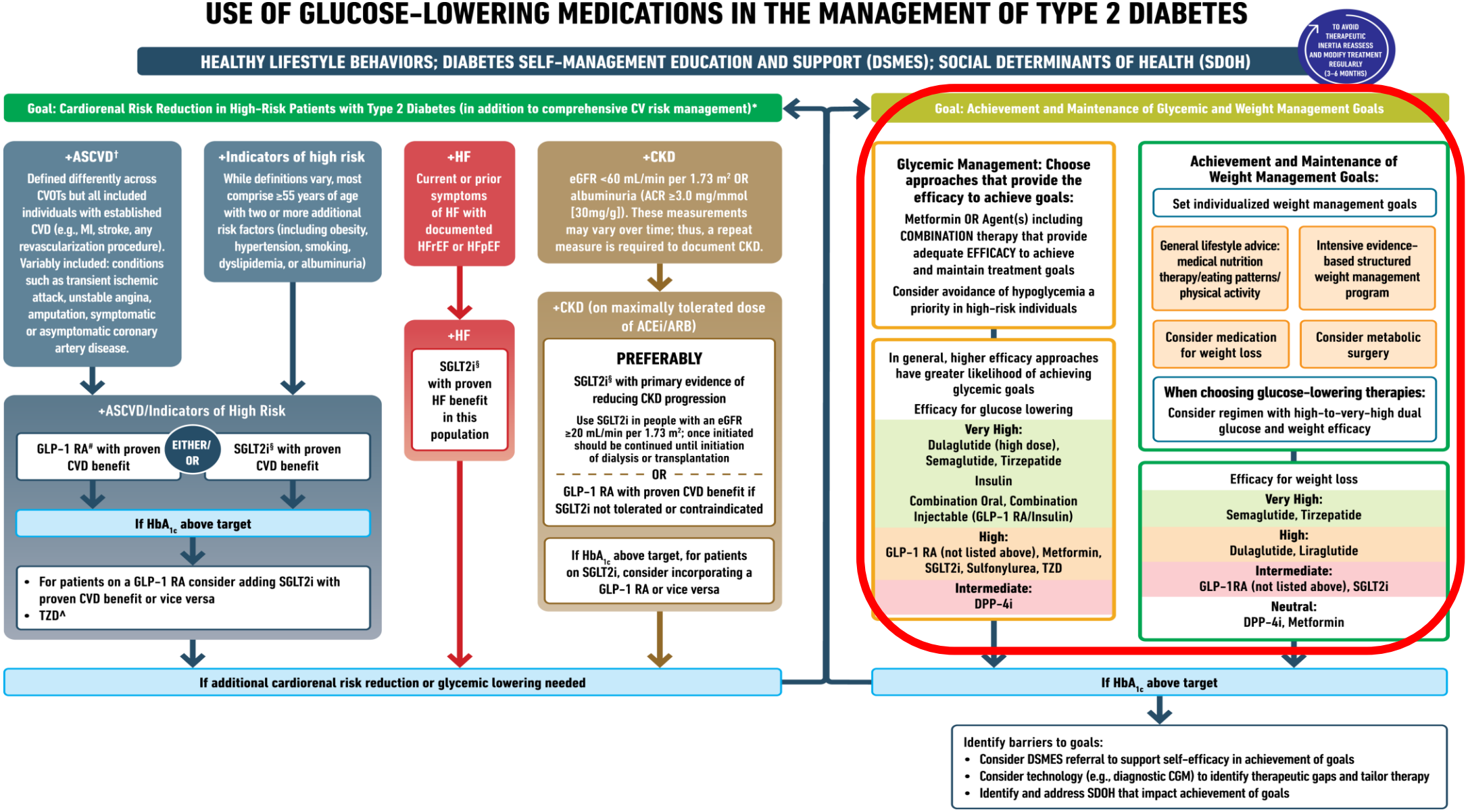
2022 ADA/EASD Consensus Report



1 = American Diabetes Association Professional Practice Committee. 10. Cardiovascular Disease and Risk Management: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022 Jan 1;45(Suppl 1):S144–74.

ACEi, Angiotensin-Converting Enzyme Inhibitor; ARB, Angiotensin Receptor Blockers; ASCVD, Atherosclerotic Cardiovascular Disease; BP, Blood Pressure; CKD, Chronic Kidney Disease; CV, Cardiovascular; eGFR, Estimated Glomerular Filtration Rate; GLP-1 RA, Glucagon-Like Peptide-1 Receptor Agonist; HF, Heart Failure; SGLT2i, Sodium-Glucose Cotransporter-2 Inhibitor; T2D, Type 2 Diabetes.

ADA/EASD consensus treatment algorithm



Davies MJ, et al. Diabetes Care 2022;45(11):2753-2786.

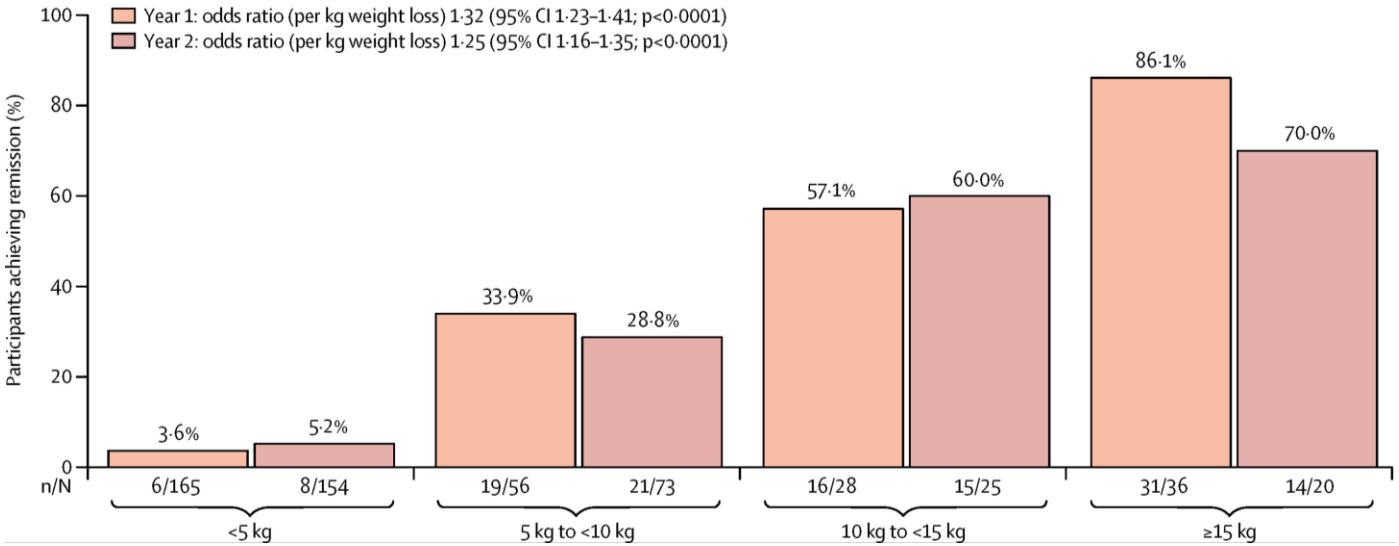
Barriers to Successful Weight Management in T2D: Conclusions

- Excess body fat fosters the development of T2D and is associated with worse outcomes (micro/macrovascular complications, life expectancy) in people with T2D.
- Large extents of weight loss are required to significantly reduce vascular outcomes (10-15%) and achieve remission of hyperglycemia (>15%) in people with T2D.
- The metabolic and CV benefits of weight loss are greater if intervention is implemented in people with shorter disease duration.
- People with T2D experience more diffculty to lose weight compared to people without T2D due to multiple factors including use of insulin.
- Newer incretin-based therapies may effectively target body weight in people with T2D.

CV, cardiovascular; T2D, type 2 diabetes

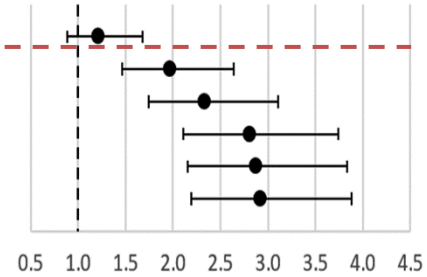
What is required to achieve diabetes remission?

Weight reduction program in primary health care (DiRECT)[1]



Bariatric surgery[2]

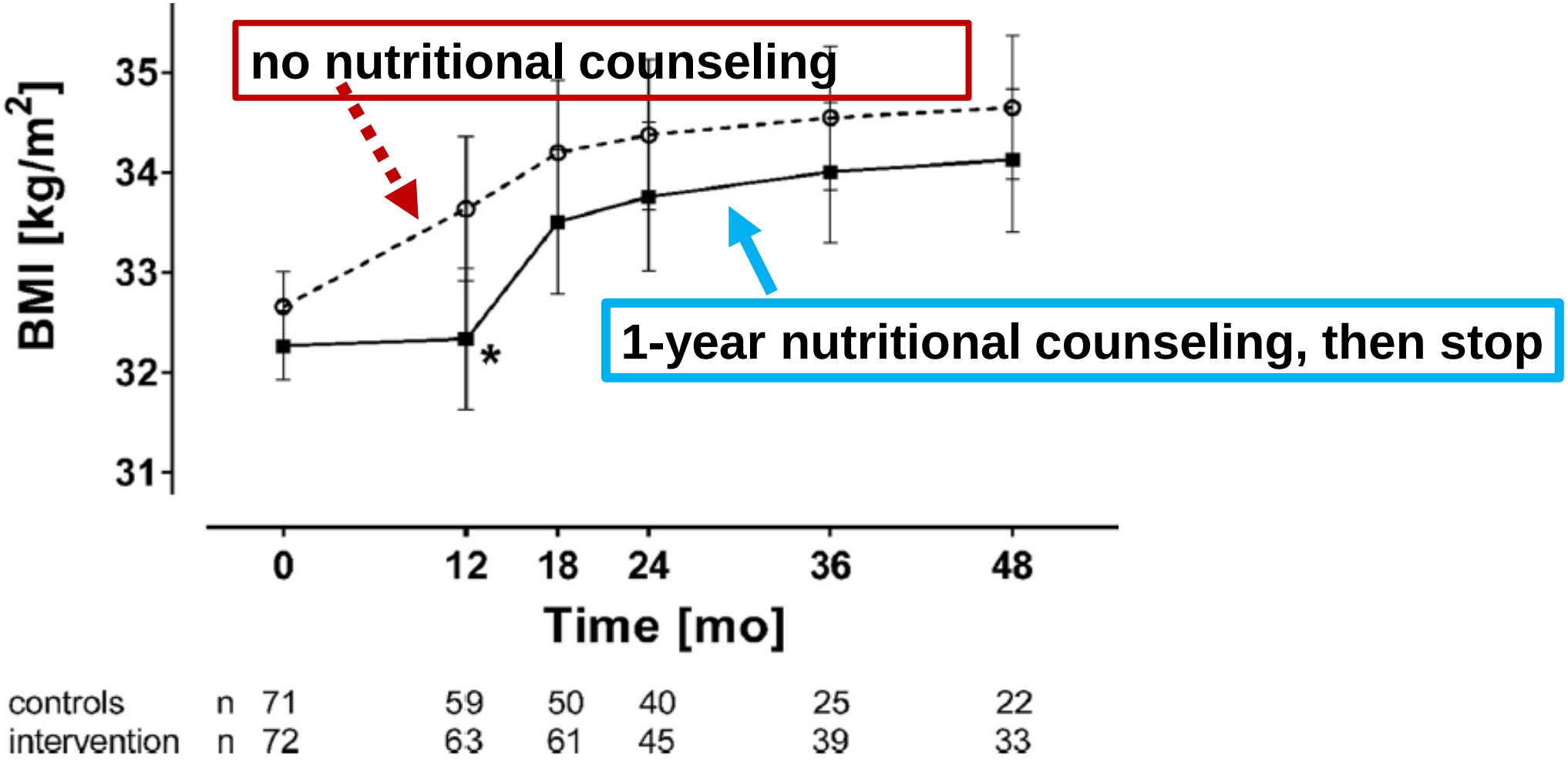
Weight loss	N	HR	p	CI
0-5%	115	Reference		
5-10%	356	1.22	0.23	(0.88 - 1.68)
10-15%	684	1.97	0.00	(1.47 - 2.64)
15-20%	1157	2.33	0.00	(1.74 - 3.11)
20-25%	1366	2.81	0.00	(2.11 - 3.75)
25-30%	1136	2.88	0.00	(2.16 - 3.83)
>30%	1114	2.92	0.00	(2.19 - 3.88)



T2D remission after Roux-en-Y gastric bypass or sleeve gastrectomy, n=5928; mean follow-up 5.9 years

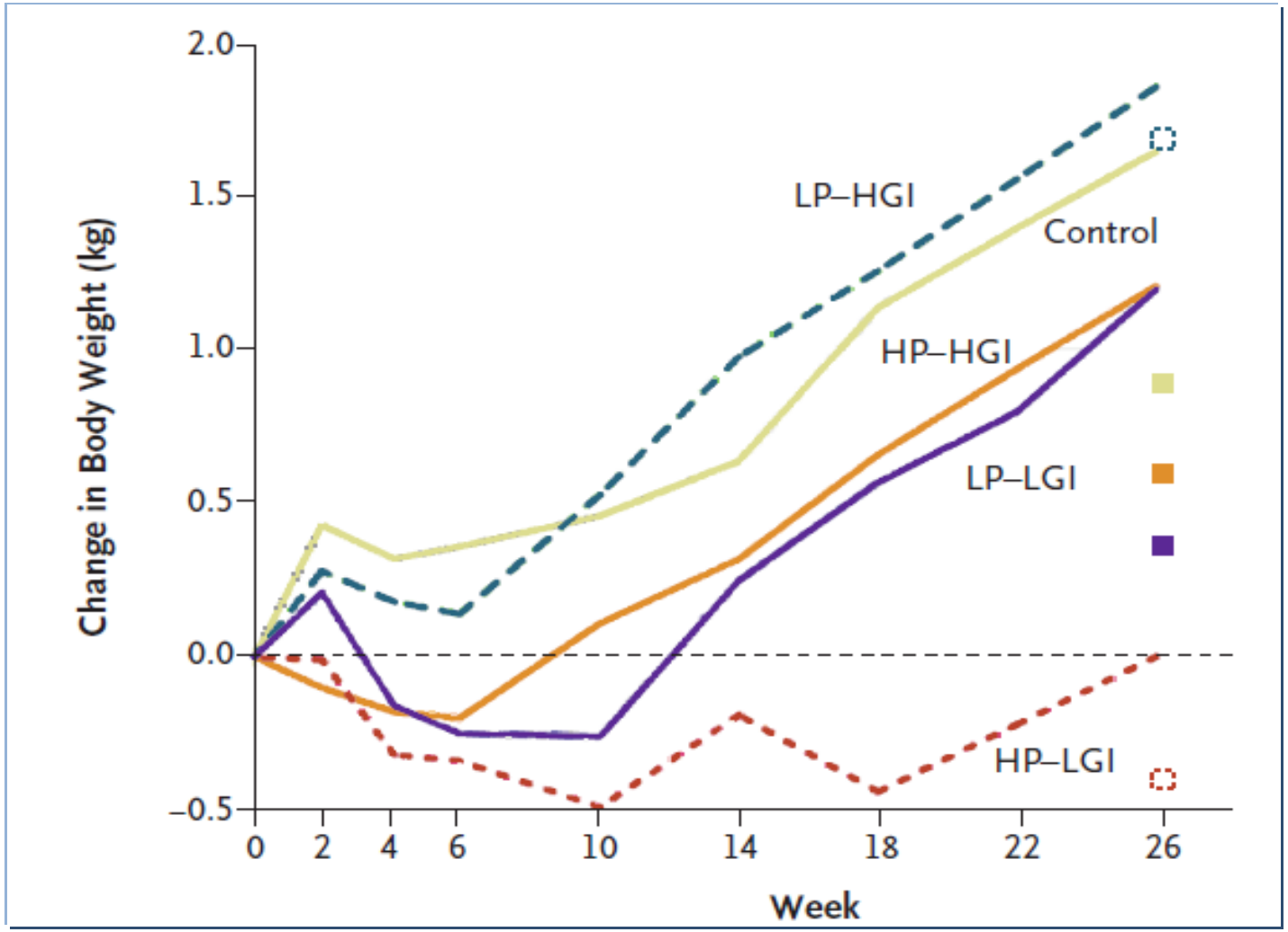
1. Lean MEJ, et al. Lancet Diabetes Endocrinol 2019; 7:344-355
2. Barthold D, et al. Diabetes Care 2022; 45:92-99.

Maintain Study: weight regain after 15 kg weight loss is strongly affected by nutritional counseling



Li et al. BMC Medicine 2022; 20:238

DiOGenes Study: weight regain prevented by high protein – low glycemic index, moderate carb, low fat diet



Larsen TM, et al. N Engl J Med 2010; 363:2102-2113

Diet and chronic disease

NHS (Nurses Health Study) + HPFS (Health Professionals Follow-up Study);
205.872 Participants – follow up up to 32 years
Calculation of dietary patterns from intakes according to food frequency questionnaires:

- **empirical dietary inflammatory pattern (EDIP):** Food groups associated with: Interleukin 6, C-reactive protein and tumor necrosis factor α receptor 2
- **empirical dietary index for hyperinsulinemia (rEDIH):** Food groups associated with low fasting C-peptide

Alternative Healthy Eating Index

Alternative Mediterranean Diet

healthful Plant-based Diet Index

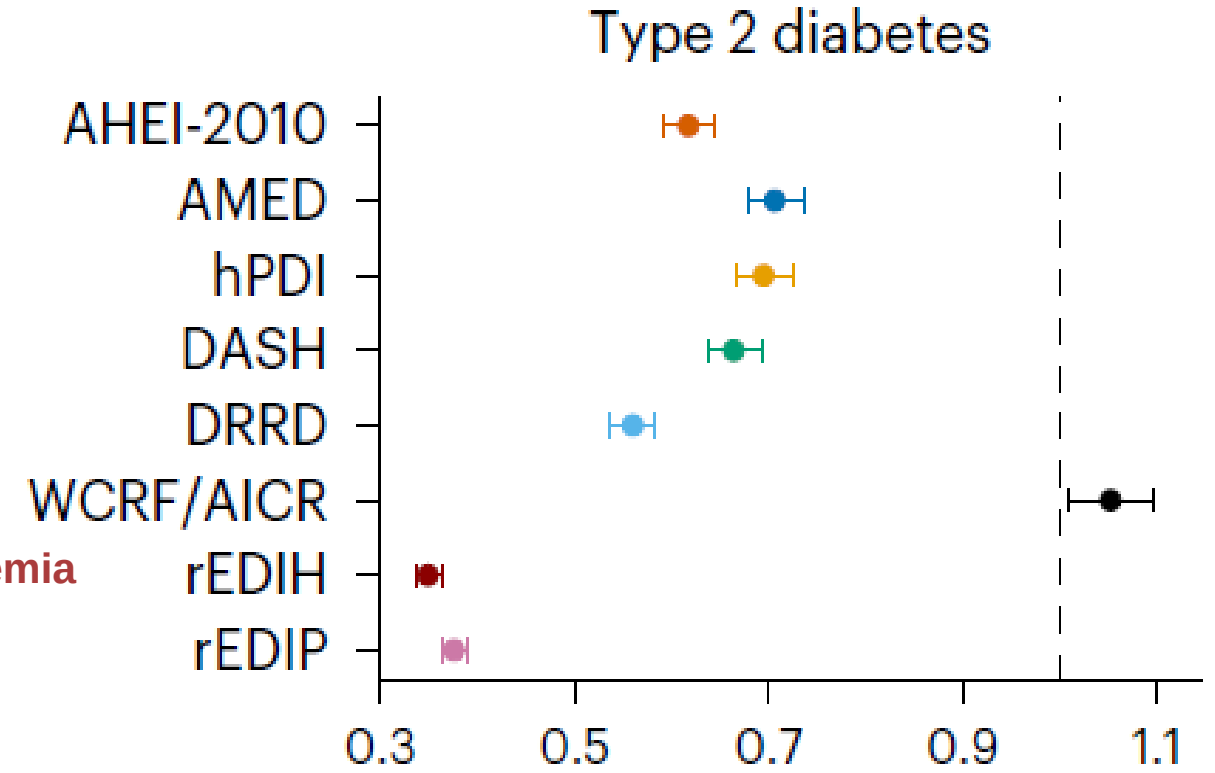
Dietary Approach to Stop Hypertension

Diabetes Risk Reduction Diet

World Cancer Research Fund

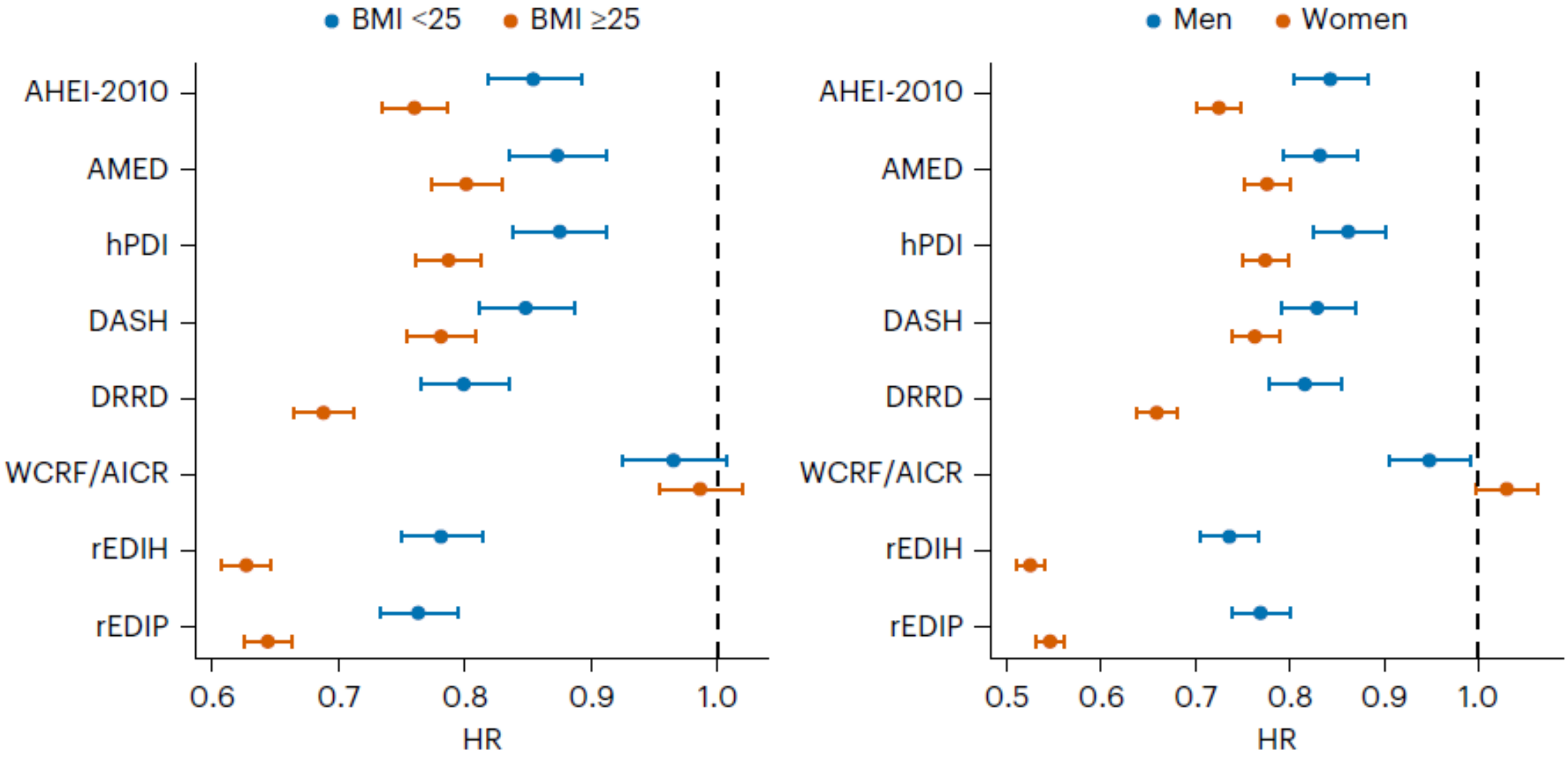
reversed Empirical Dietary Index for Hyperinsulinemia

reversed Empirical Dietary Inflammatory Pattern



Wang P, et al. Nat Med 2023; 29:719-728

Diet and chronic disease: BMI and gender



Wang P, et al. Nat Med 2023; 29:719-728

Diabetologia (2023) 66:965–985
https://doi.org/10.1007/s00125-023-05894-8

GUIDELINES

Evidence-based European recommendations for the dietary management of diabetes

The Diabetes and Nutrition Study Group (DNSG) of the European Association for the Study of Diabetes (EASD)

Recommendation

Remission of type 2 diabetes (HbA1c <48 mmol/mol [<6.5%] without glucose-lowering medication) in people who are overweight or obese can be achieved through sustained weight loss.

⨁⨁⨁⨁ **High**

Recommendation

A low-energy total diet replacement programme (e.g. 3500 kJ/day [840 kcal/day] for 12-20 weeks), provided by trained health professionals, with carefully adjusted glucose-lowering and anti-hypertensive medications, is recommended to provide sufficient weight loss (10-15% body weight or greater) to induce remission of type 2 diabetes. Following weight loss, long-term low intensity support for weight-loss maintenance is recommended.

⨁⨁⨁⨁ **High**

Recommendation

Nutritionally completed low-energy formula products can be used, either temporarily for weight-loss induction as “total diet replacement” (replacing all meals), or by replacing 1-2 meals/day. Replacing 1 meal/day or 3-6 meals/week can also be used for longer-term weight-loss maintenance.

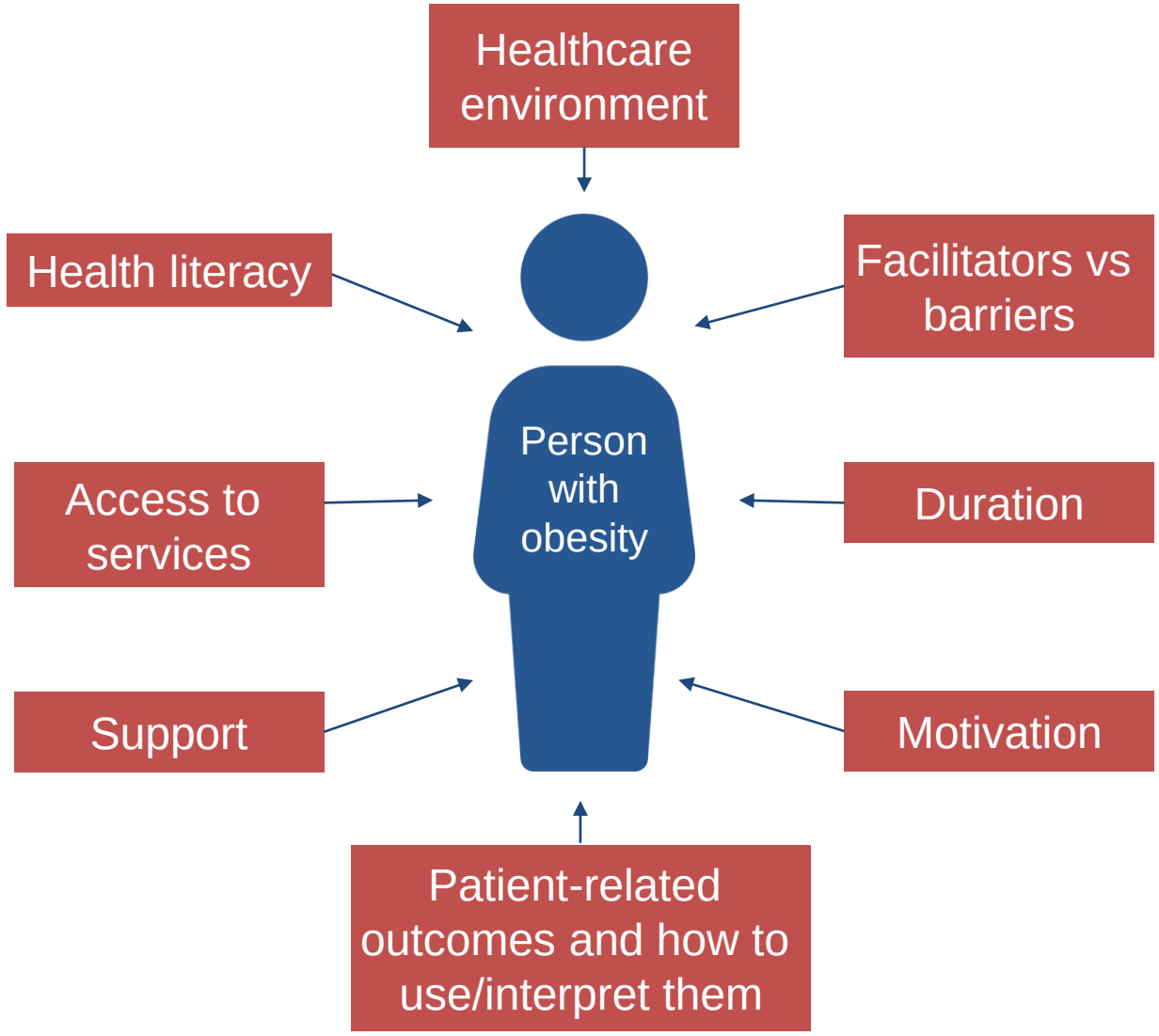
⨁⨁⨁⊖ **Moderate**

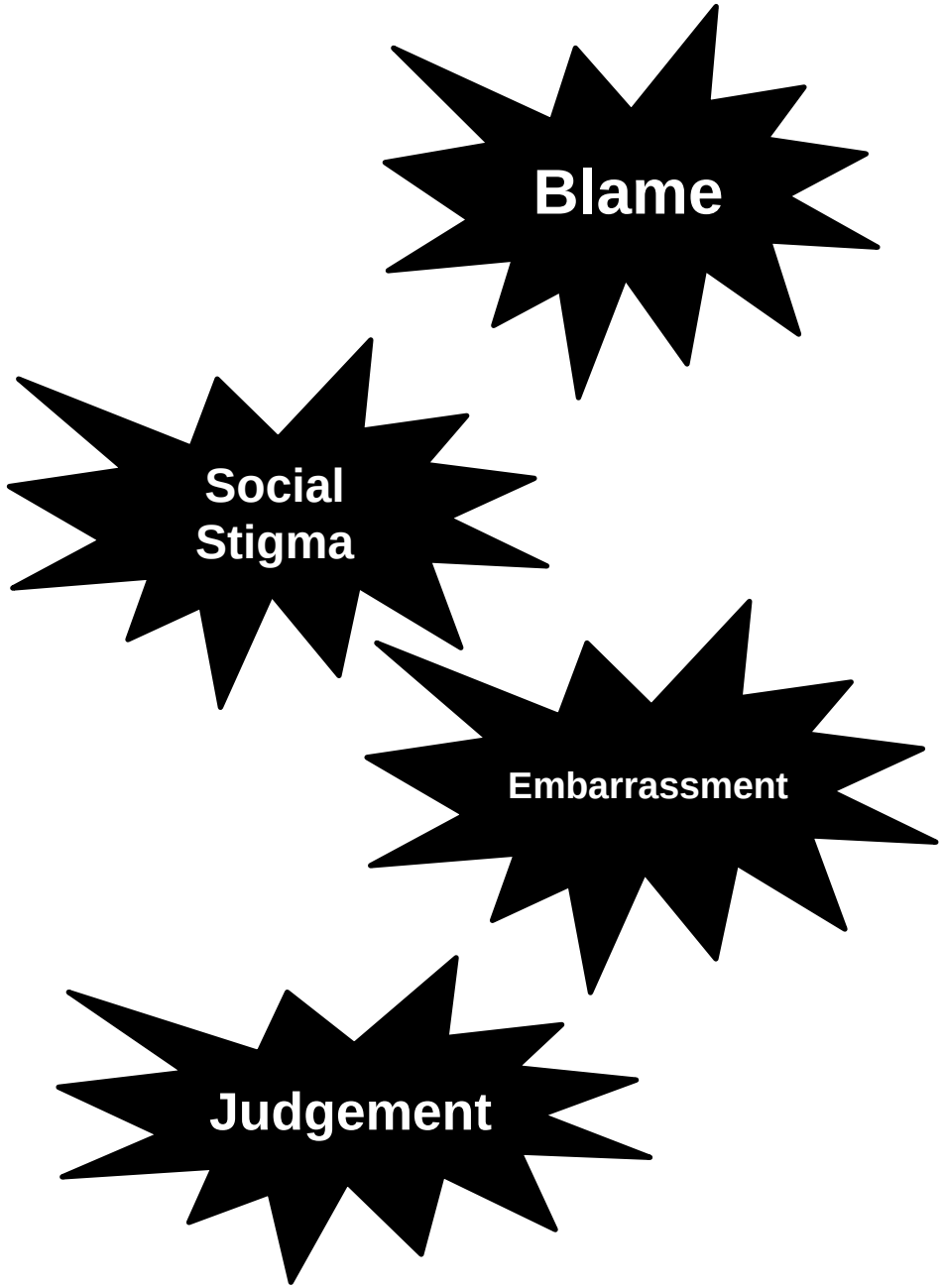
The Diabetes and Nutrition Study Group (DNSG) of the EASD. Diabetologia 2023; 66:965-985.

Nutritional strategies for weight loss and weight loss maintenance

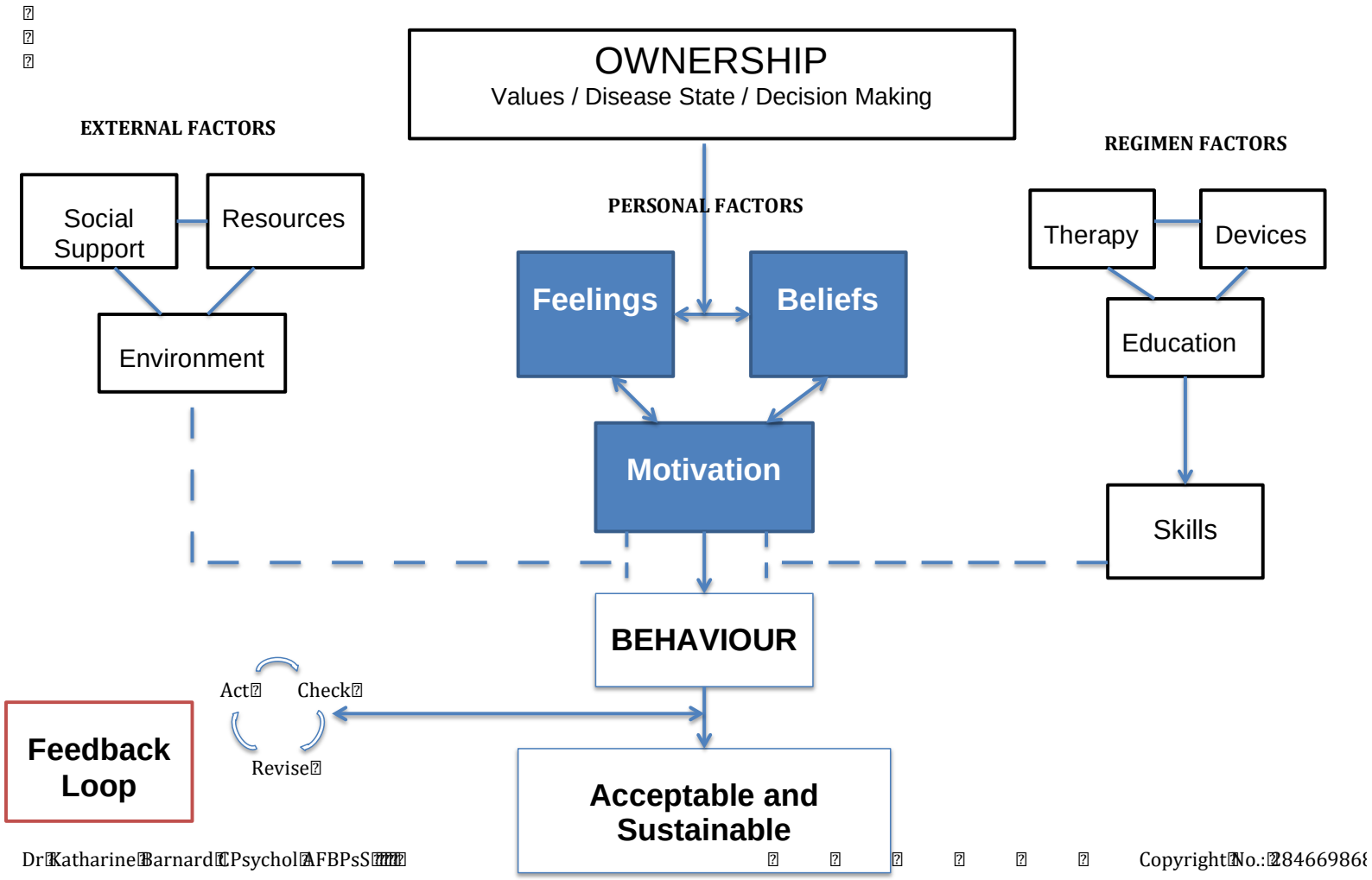
- Low calorie formula diets are most effective to achieve weight loss >10 kg to substantially improve metabolic control and cardiometabolic risk factors
- Sustained weight loss maintenance is the greatest challenge and requires regular and long-term nutritional support to motivate balanced energy intake and physical activity
- Healthy diets support the maintenance of weight loss and include moderately low carbohydrate intake, high fiber, healthy non-saturated fats, high vegetable and fruit intake with a moderate enrichment of protein according to current evidence

Factors Affecting Outcomes



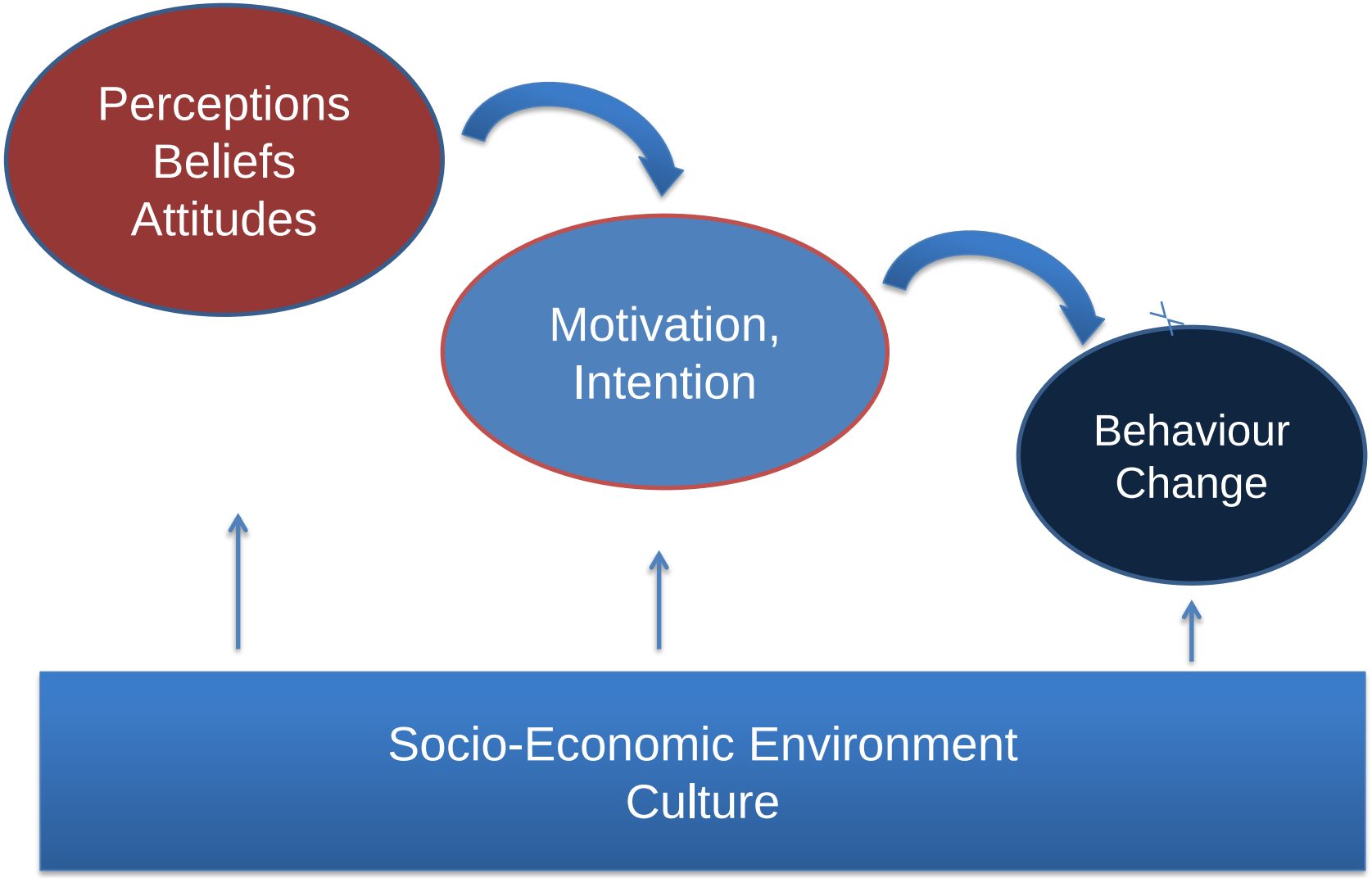


Kaleidoscope Model of Care: Biopsychosocial Interactions Impacting Outcomes



Barnard KD, et al. Diabet Med. 2014;31(5):522-30.

Social Cognitive Theory



Applying Communication Skills

- **Empathy**
- **Active Listening**
  - Being attentive (not looking at computer screen)
- **Asking about outcomes other than weight**
  - e.g., mental wellbeing
- **Involve family**
  - where appropriate
- **Simple and concise language**
  - Avoid ‘talking down’, lecturing or threats of unpleasant outcomes if unsuccessful
- **Be mindful of what’s going on in a patient’s life**
  - these factors affect outcomes

Collaborative Care Planning

Keep shared decision-making in mind

Avoid reverting to ‘I know best and you need this’

Check for understanding

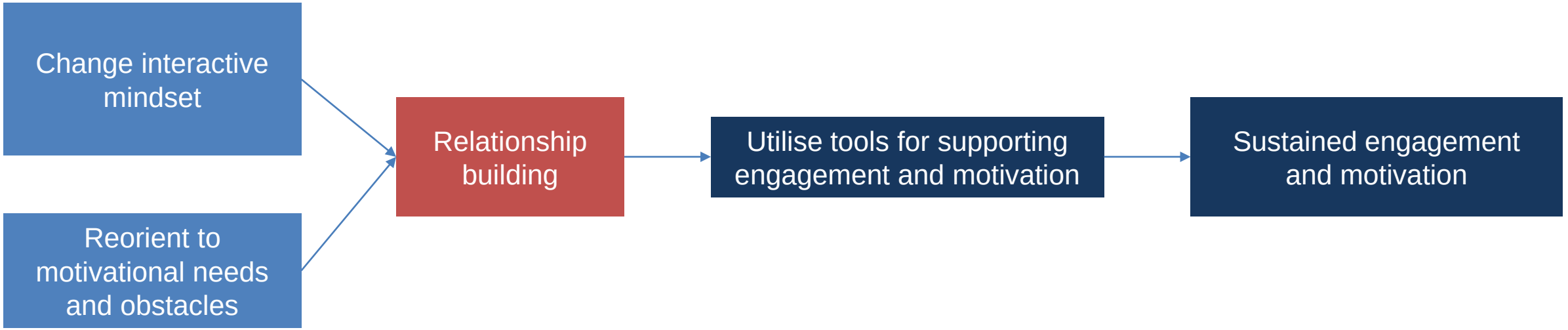
Summarise what the patient is saying throughout the visit

Use goal-setting techniques

Specific; measurable; achievable; realistic; time-limited

Accurately record the discussion / plan & share with the patient

Good Communication is Key to Any Person-Centred Approach to Collaborative Decision-making



Step 1: Clinician prepares for different kind of interaction

Step 2: Clinician applies relationship building strategies

Step 3: Clinician plans collaboratively

Fisher L, et al. Diabet Med 2017;34:1658–66.

In Summary

- Motivation is not lacking – goals are mismatched with lived experience
- Weight loss is tough and relentless
- Social stigma is widespread
- How **WE** engage can affect their behaviour and outcomes
- It’s a marathon not a sprint

Shared Decision Making

Treatment decisions should be individualized based on risks and benefits

Consider emotional and social determinants of health

Early diagnosis and intervention

- Intensive and patient-centered care
- Education and support

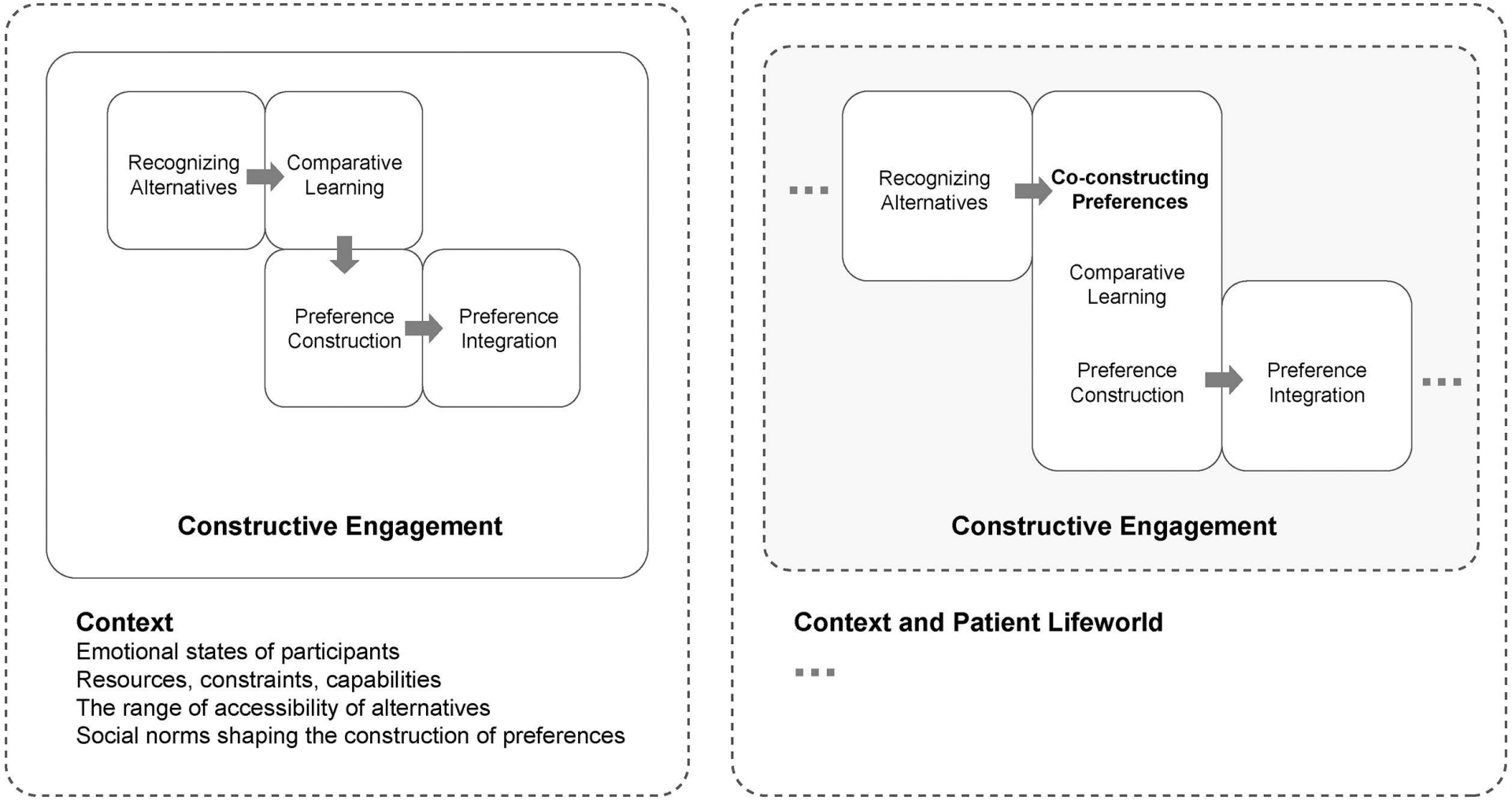
New pharmacologic therapies

- Achieve similar weight loss as bariatric surgery

Shared Decision Making

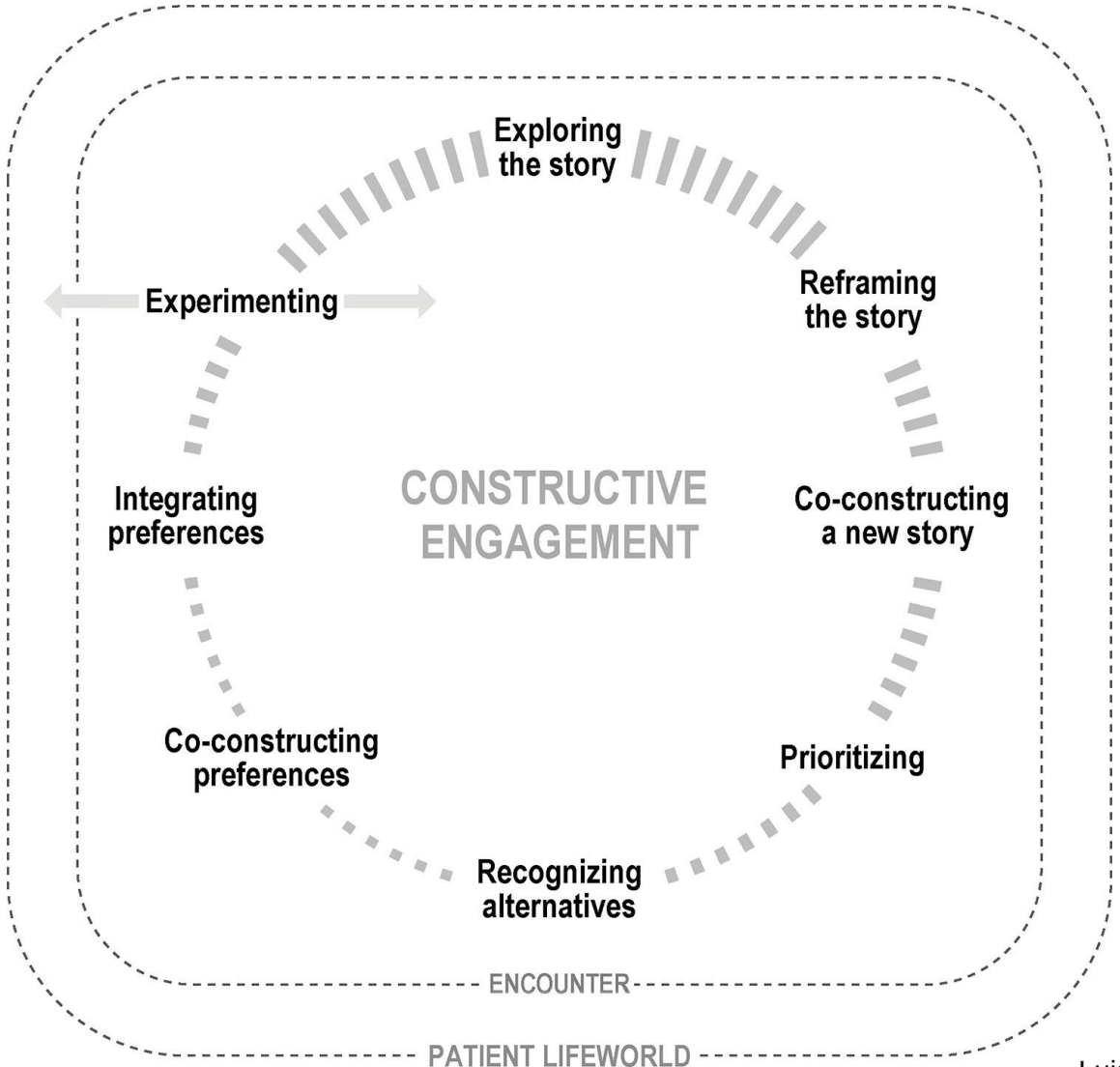
- Constructive engagement
  - Medical, emotional, and practical
  - Nonjudgmental
  - Exploring root causes
- Recognizing alternative courses of action
- Integrating preferences
- Experimenting with alternatives

Collaborative Deliberation Model



Luig T, et al. Patient Educ Couns. 2019;102(2):291-300.

Collaborative Deliberation Model



Luig T, et al. Patient Educ Couns. 2019;102(2):291-300.

Conclusion

- Major epidemic of obesity and diabetes
- Guidelines from ADA/EASD
- Multiple forms of therapy available
- Shared Decision Making is essential
  - Scientific data, misconceptions, emotional, individual factors
  - Discussion and implementation