The 5th SOMS Spring Congress & AOASO Joint Symposium

Incheon, 25 March 2023

# Management of Patients with DIABESITY:

*Sharing Experiences from Indonesia*

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# What is Diabesity?


## Diabesity

describes the **combined detrimental health effects** of

## obesity and diabetes mellitus.

*Nat Rev Cardiol* **18**, 291–304 (2021)

DT

# Dual Problem of Obesity and Type 2 Diabetes Mellitus

The worldwide **dual epidemic of obesity and type 2 diabetes** is an important public health issue.

*Nat Rev Cardiol* **18**, 291–304 (2021)

DT

# Problem of Obesity

The estimates for **global levels of overweight and obesity (BMI ≥25kg/m2),** also referred to as high BMI, suggest that **over 4 billion people may be affected by 2035**, compared with **over 2.6 billion in 2020.**

**Numbers of people (aged over 5 years) and percentage of the population with overweight or obesity***

| | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|
| Number with overweight or obesity (BMI≥25kg/m²) (millions) | 2,603 | 3,041 | 3,507 | 4,005 |
| Number with obesity (BMI ≥30kg/m²) (millions) | 988 | 1,249 | 1,556 | 1,914 |
| Proportion of the population with overweight or obesity (BMI ≥25kg/m²) | 38% | 42% | 46% | 51% |
| Proportion of the population with obesity (BMI ≥30kg/m²) | 14% | 17% | 20% | 24% |

** For children and adolescents, overweight and obesity are defined using the WHO classification of +1SD and +2SD above median growth reference.*

*World Obesity Atlas 2023*

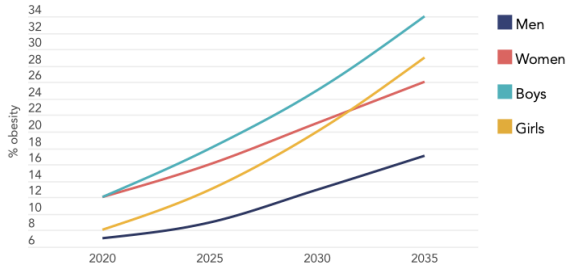
DT

# Problem of Obesity

## Indonesia

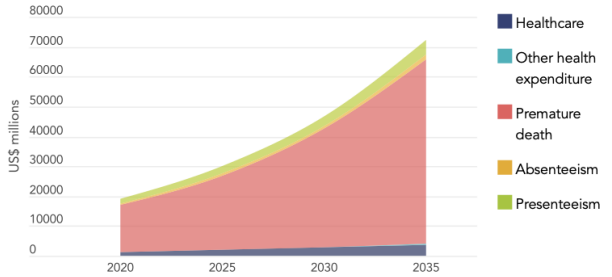
ADULTS WITH OBESITY 2035
22%
HIGH

### PROJECTED TRENDS IN THE PREVALENCE OF OBESITY (BMI ≥30kg/m²)




ANNUAL INCREASE IN ADULT OBESITY 2020–2035
5.8%
VERY HIGH

### PROJECTED ECONOMIC IMPACT OF OVERWEIGHT (BMI ≥25kg/m²)




ANNUAL INCREASE IN CHILD OBESITY 2020–2035
7.9%
VERY HIGH

OVERWEIGHT IMPACT ON NATIONAL GDP 2035
3.1%
VERY HIGH

### IMPACT OF OVERWEIGHT (BMI ≥25kg/m²) 2020–2035

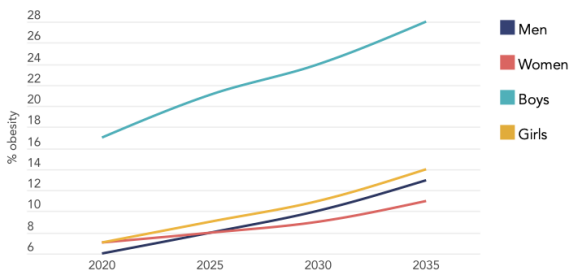
| | Healthcare impact of BMI ≥25kg/m², US$ million | Total economic impact of BMI ≥25kg/m², US$ million | Estimated GDP US$ billion | Impact of BMI ≥25kg/m² on GDP |
|---|---|---|---|---|
| 2020 | 1,265 | 18,950 | 1,096 | 1.7% |
| 2025 | 1,884 | 29,854 | 1,416 | 2.1% |
| 2030 | 2,724 | 46,761 | 1,826 | 2.6% |
| 2035 | 3,837 | 72,178 | 2,355 | 3.1% |

GLOBAL PREPAREDNESS RANKING
131/183
POOR

## South Korea

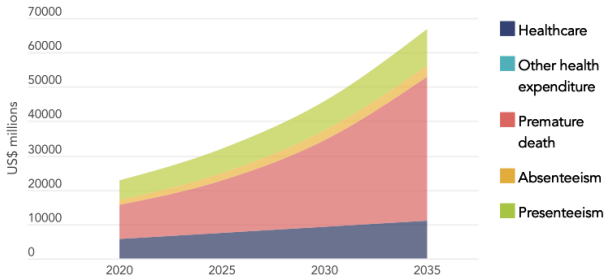
ADULTS WITH OBESITY 2035
12%
MEDIUM

### PROJECTED TRENDS IN THE PREVALENCE OF OBESITY (BMI ≥30kg/m²)




ANNUAL INCREASE IN ADULT OBESITY 2020–2035
4.2%
VERY HIGH

### PROJECTED ECONOMIC IMPACT OF OVERWEIGHT (BMI ≥25kg/m²)




ANNUAL INCREASE IN CHILD OBESITY 2020–2035
3.8%
VERY HIGH

OVERWEIGHT IMPACT ON NATIONAL GDP 2035
2.2%
VERY HIGH

### IMPACT OF OVERWEIGHT (BMI ≥25kg/m²) 2020–2035

| | Healthcare impact of BMI ≥25kg/m², US$ million | Total economic impact of BMI ≥25kg/m², US$ million | Estimated GDP US$ billion | Impact of BMI ≥25kg/m² on GDP |
|---|---|---|---|---|
| 2020 | 5,855 | 22,614 | 1,637 | 1.4% |
| 2025 | 7,406 | 31,902 | 1,890 | 1.7% |
| 2030 | 9,124 | 45,998 | 2,331 | 2.0% |
| 2035 | 11,005 | 66,857 | 3,065 | 2.2% |

GLOBAL PREPAREDNESS RANKING
17/183
GOOD

*World Obesity Atlas 2023*

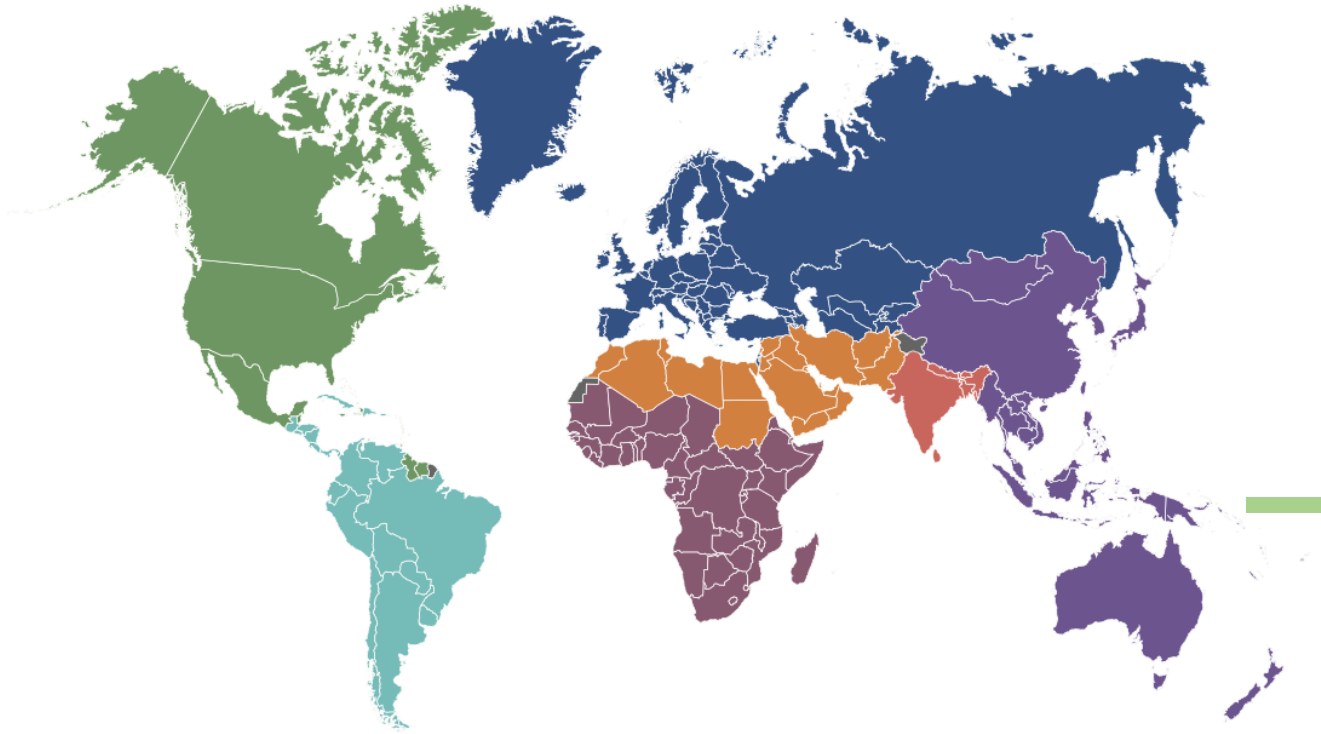
DT

# Diabetes around the world | 2021

International Diabetes Federation

**Number of adults (20–79 years) with diabetes worldwide**

| World | | North America & Caribbean (NAC) | | Europe (EUR) | | Western Pacific (WP) | |
|---|---|---|---|---|---|---|---|
| 2045 | 784 million | 2045 | 63 million | 2045 | 69 million | 2045 | 260 million |
| 2030 | 643 million | 2030 | 57 million | 2030 | 67 million | 2030 | 238 million |
| 2021 | 537 million | 2021 | 51 million | 2021 | 61 million | 2021 | 206 million |
| | ↑ 46% increase | | ↑ 24% increase | | ↑ 13% increase | | ↑ 27% increase |



| South & Central America (SACA) | | Africa (AFR) | | Middle East & North Africa (MENA) | | South-East Asia (SEA) | |
|---|---|---|---|---|---|---|---|
| 2045 | 49 million | 2045 | 55 million | 2045 | 136 million | 2045 | 152 million |
| 2030 | 40 million | 2030 | 33 million | 2030 | 95 million | 2030 | 113 million |
| 2021 | 32 million | 2021 | 24 million | 2021 | 73 million | 2021 | 90 million |
| | ↑ 50% increase | | ↑ 134% increase | | ↑ 87% increase | | ↑ 68% increase |

**Highlights**

- **537 million** adults (20-79 years) are living with diabetes worldwide – 1 in 10.
- The total number of people with diabetes is predicted to rise to **643 million** (1 in 9 adults) by 2030 and **784 million** (1 in 8 adults) by 2045.
- **4 in 5** people with diabetes (81%) live in low income and middle-income countries.
- Diabetes caused **6.7 million** deaths in 2021 – 1 every 5 seconds.
- An estimated **44%** of adults living with diabetes (**240 million** people) are undiagnosed. Almost **90%** of these people live in low income and middle-income countries.
- Diabetes was responsible for an estimated USD **966 billion** in global health expenditure in 2021. This represents a **316%** increase over the last 15 years.
- **541 million** adults worldwide, or **1 in 10**, have impaired glucose tolerance, placing them at high risk of developing type 2 diabetes.
- **68%** of adults with diabetes live in the 10 countries with the highest number of people with diabetes.

IDF Diabetes Atlas 10th Edition


**Corporate sponsors**

The IDF Diabetes Atlas 10th edition has been produced thanks to educational grants from Novo Nordisk, Pfizer-MSD Alliance and Sanofi:

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**Need more information?**

Visit www.diabetesatlas.org
Scan QR code
Contact atlas@idf.org

ISSO Indonesian Society for the Study of Obesity

The prevalence of **diabetes in Indonesia** has almost doubled **from 6.9% to 10.5%** -- in parallel with the increased prevalence of **obesity from ~20% to ~30%**

https://diabetesatlas.org/idfawp/resource-files/2021/11/IDFDA10-global-fact-sheet.pdf

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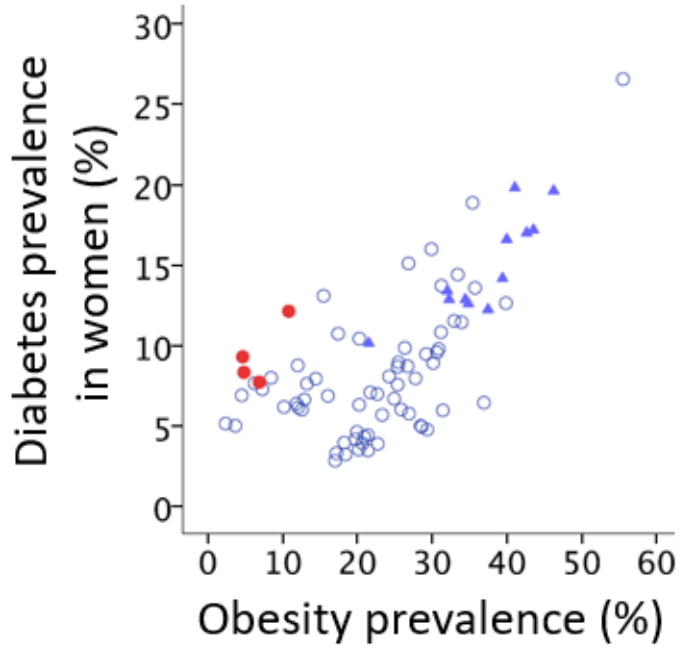
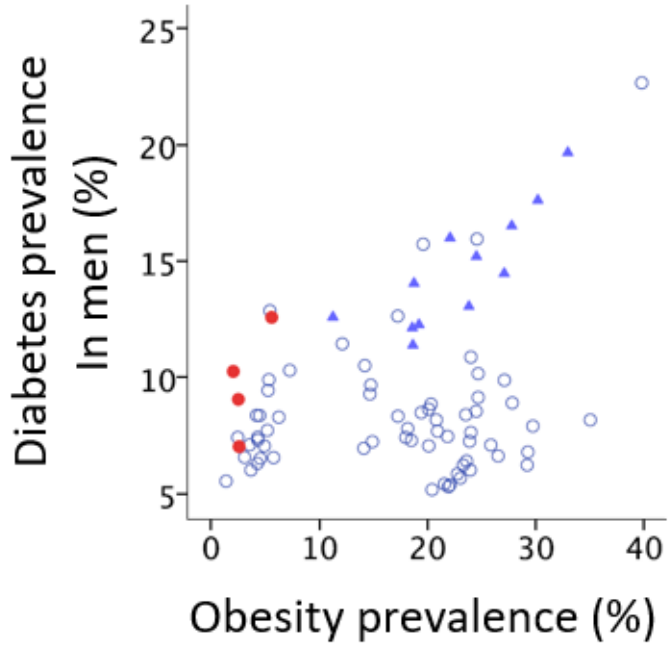
# Obesity and Type 2 Diabetes Mellitus

Increased adiposity
is the strongest risk factor for developing diabetes.




*Jonathan C. K. Wells (2019) Diabetologia*

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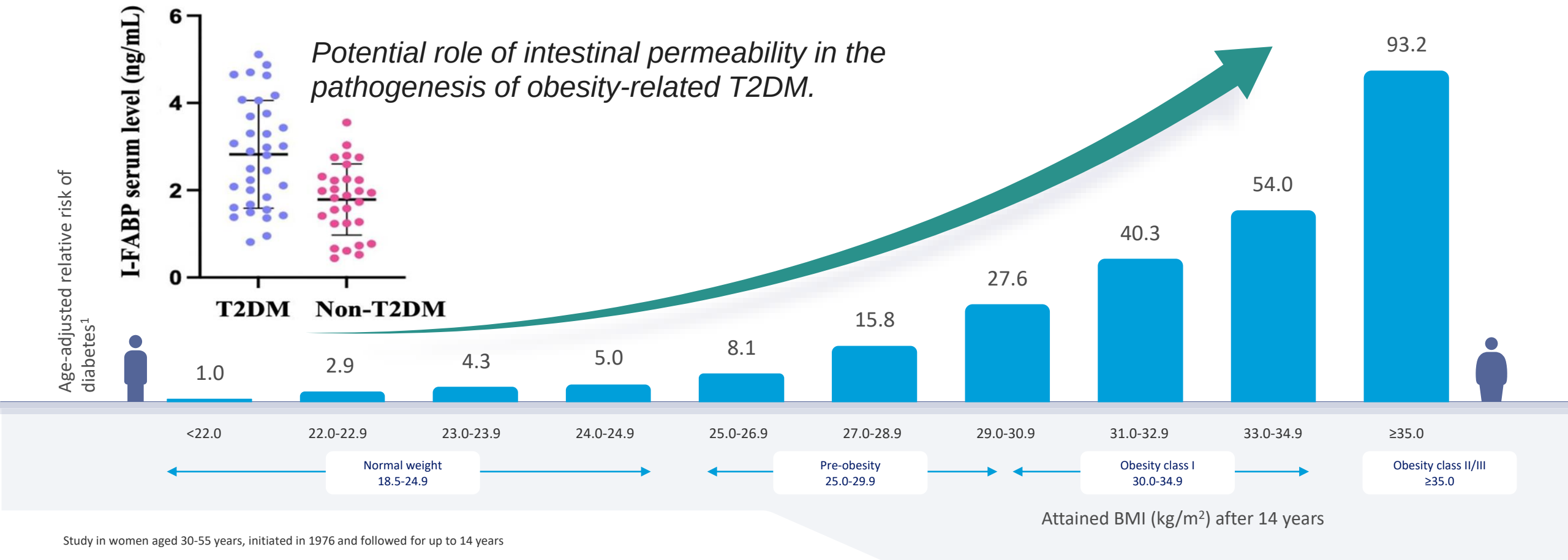
# The relative risk for developing T2D increases with increasing body mass index




Study in women aged 30-55 years, initiated in 1976 and followed for up to 14 years


Colditz et al. Ann Intern Med. 1995 Apr 1;122(7):481-6.

PLoS ONE 2023 18(1): e0279915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# DIABESITY “Diabetes and Obesity” in Indonesia

**~70%**

people with diabetes have overweight or obesity in Indonesia

Mihardja L. 2014. J Diabetes Investig. 2014 Sep; 5(5): 507–512

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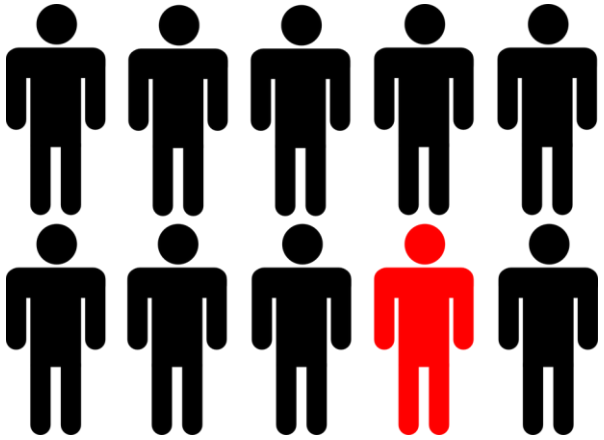
# Diabetes Mellitus in Indonesia

**1 out of 10**
Indonesian Adults



**Diabetes Mellitus**

**~ 20 Million People With Diabetes in Indonesia**

~86% undiagnosed
~70% uncontrolled
~ 25% less than 45 years old

High proportion of diabetes complications

~20% cardiovascular
~40% diabetic kidney disease
~ 30% eye complications

Indonesian Basic Health Research 2018, DiabCare 2012

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# Obesity & Other Cardiometabolic Risk Factors in Indonesia

**Obesity**

Prediabetes

Dyslipidemia

Hypertension

Metabolic Syndrome

Indonesian Basic Health Research 2018

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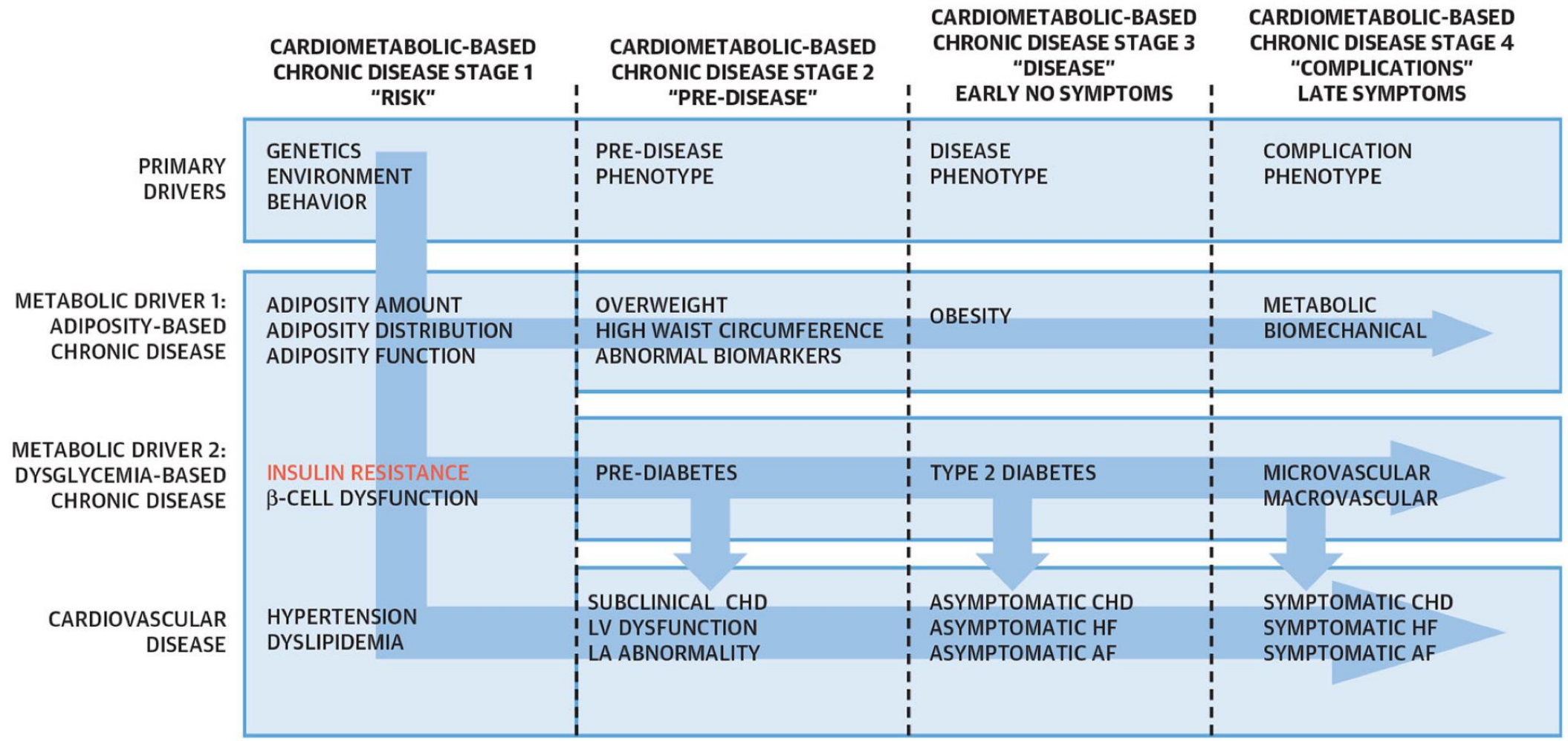
# Cardiometabolic-Based Chronic Disease (CMBCD)




**J Am Coll Cardiol. 2020 Feb 11;75(5):525-538.**

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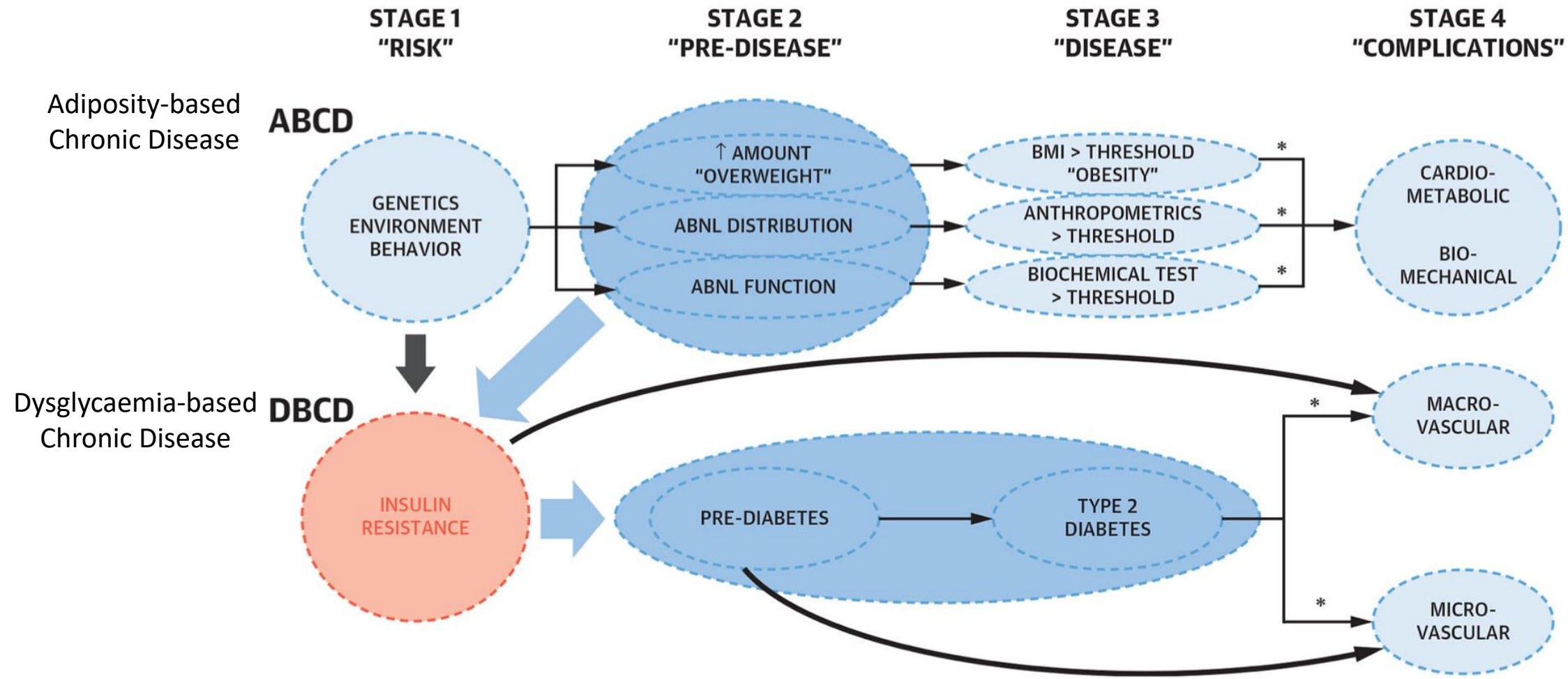
# Cardiometabolic-Based Chronic Disease (CMBCD)




**J Am Coll Cardiol. 2020 Feb 11;75(5):525-538.**

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# EOSS: EDMONTON OBESITY STAGING SYSTEM - *Staging Tool*

## STAGE 0

- **NO** sign of obesity-related risk factors
- **NO** physical symptoms
- **NO** psychological symptoms
- **NO** functional limitations

Case Example:
Physically active female with a BMI of 32 kg/m², no risk factors, no physical symptoms, no self-esteem issues, and no functional limitations.

*Class I, Stage 0 Obesity*
EOSS Score
WHO Obesity Classfication

## STAGE 1

- Patient has obesity-related **SUBCLINICAL** risk factors (borderline hypertension, impaired fasting glucose, elevated liver enzymes, etc.)
*- OR -*
- **MILD** physical symptoms - patient currently not requiring medical treatment for comorbidities (dyspnea on moderate exertion, occasional aches/pains, fatigue, etc.) *- OR -*
- **MILD** obesity-related psychological symptoms and/or mild impairment of well-being (quality of life not impacted)

Case Example:
38 year old female with a BMI of 59.2 kg/m², borderline hypertension, mild lower back pain, and knee pain. Patient does not require any medical intervention.

*Class III, Stage 1 Obesity*

**Table 2.2. Proposed classification of weight by BMI in adult Asians**

| *Classification* | *BMI (kg/m²)* | *Risk of co-morbidities* |
|---|---|---|
| *Underweight* | *< 18.5* | *Low (but increased risk of other clinical problems)* |
| *Normal range* | *18.5-22.9* | *Average* |
| *Overweight:* | *≥ 23* | |
| *At risk* | *23-24.9* | *Increased* |
| *Obese I* | *25-29.9* | *Moderate* |
| *Obese II* | *≥ 30* | *Severe* |

Patient ***does not meet clinical criteria for admission*** at this time.
Please refer to primary care for further preventative treatment options.

## STAGE 2

- Patient has **ESTABLISHED** obesity-related comorbidities requiring medical intervention (HTN, Type 2 Diabetes, sleep apnea, PCOS, osteoarthritis, reflux disease) *- OR -*
- **MODERATE** obesity-related psychological symptoms (depression, eating disorders, anxiety disorder) *- OR -*
- **MODERATE** functional limitations in daily activities (quality of life is beginning to be impacted)

Case Example:
32 year old male with a BMI of 36 kg/m² who has primary hypertension and obstructive sleep apnea.

*Class II, Stage 2 Obesity*

## STAGE 3

- Patient has **significant** obesity-related end-organ damage (myocardial infarction, heart failure, diabetic complications, incapacitating osteoarthritis) *- OR -*
- **SIGNIFICANT** obesity-related psychological symptoms (major depression, suicide ideation) *- OR -*
- **SIGNIFICANT** functional limitations (eg: unable to work or complete routine activities, reduced mobility)
- **SIGNIFICANT** impairment of well-being (quality of life is significantly impacted)

Case Example:
49 year old female with a BMI of 67 kg/m² diagnosed with sleep apnea, CV disease, GERD, and suffered from stroke. Patient's mobility is significantly limited due to osteoarthritis and gout.

*Class III, Stage 3 Obesity*

## STAGE 4

- **SEVERE** (potential end stage) from obesity-related comorbidities *- OR -*
- **SEVERELY** disabling psychological symptoms *- OR -*
- **SEVERE** functional limitations

Case Example:
45 year old female with a BMI of 54 kg/m² who is in a wheel chair because of disabling arthritis, severe hyperpnea, and anxiety disorder.

*Class III, Stage 4 Obesity*

**Cut Off + Clinical Diagnosis**

↓

**Grade + Stage**

Sharma AM & Kushner RF, *Int J Obes* 2009

Canada Guidelines 2020

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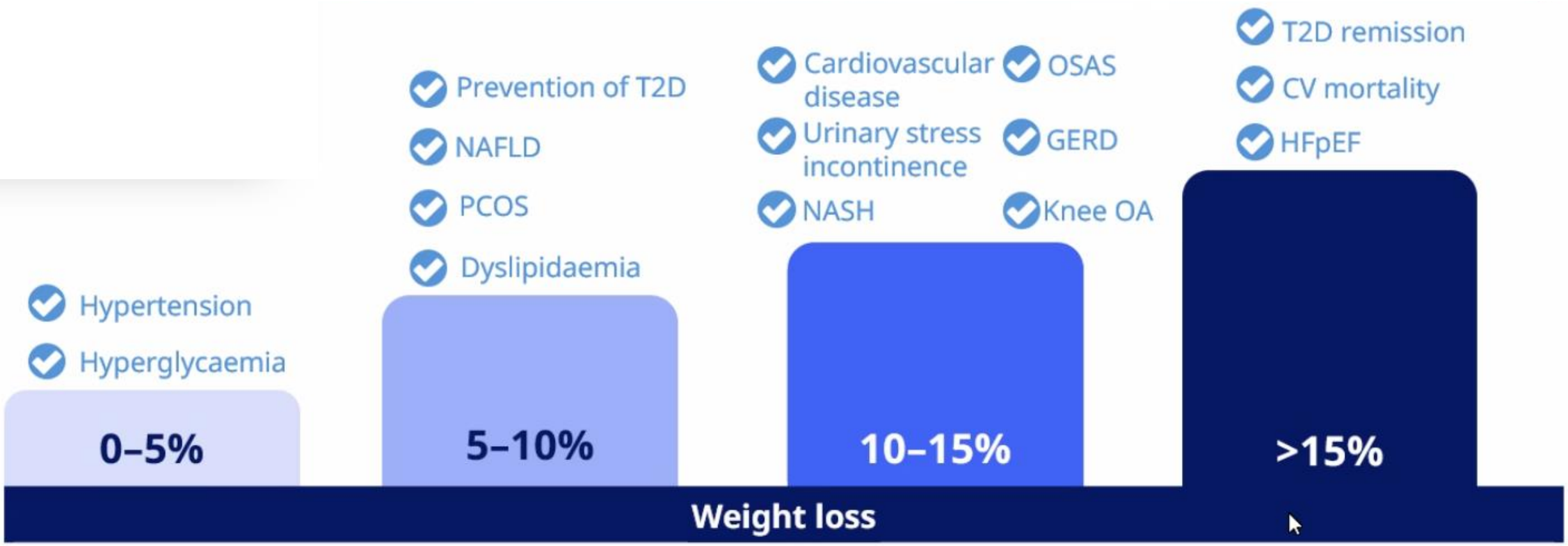
# Weight Loss and Health Improvement




*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.*

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

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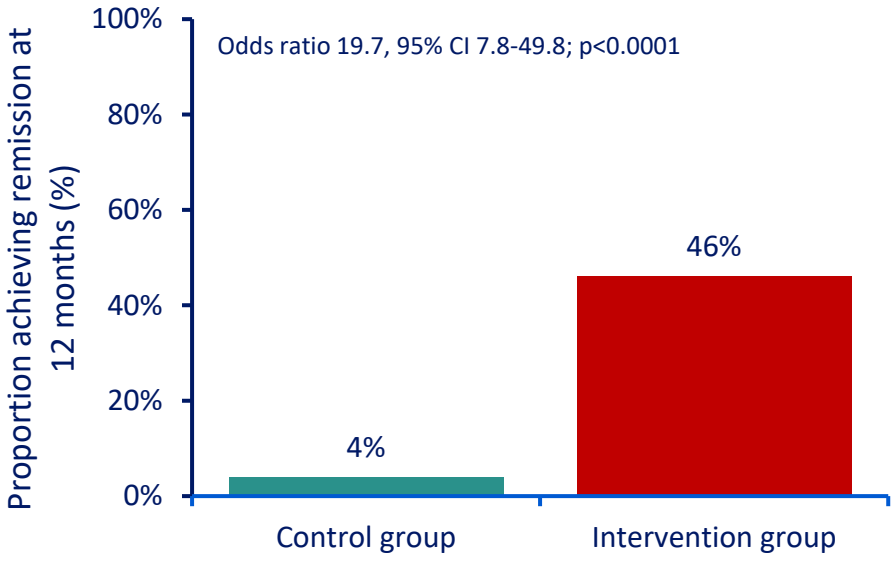
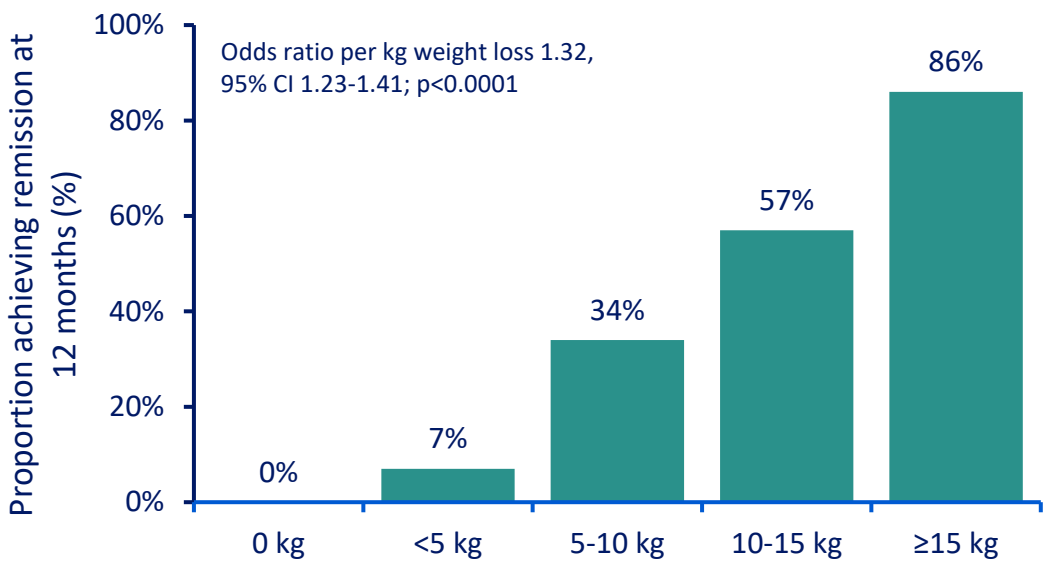
# Weight loss and T2D remission: DiRECT Trial

## Open-label cluster-randomised trial

### Weight management programme (intervention) vs best-practice care (control) in patients with T2D (no insulin; BMI of 27–45 kg/m²)




**Remission ($HbA_{1c}$ < 6.5%) was observed in about 50% of patients on weight management**

**Remission rates increased with greater weight loss**

BMI, body mass index; CI, confidence interval.

1. Lean M-E-J et al. Lancet. 2018;391:541–551.

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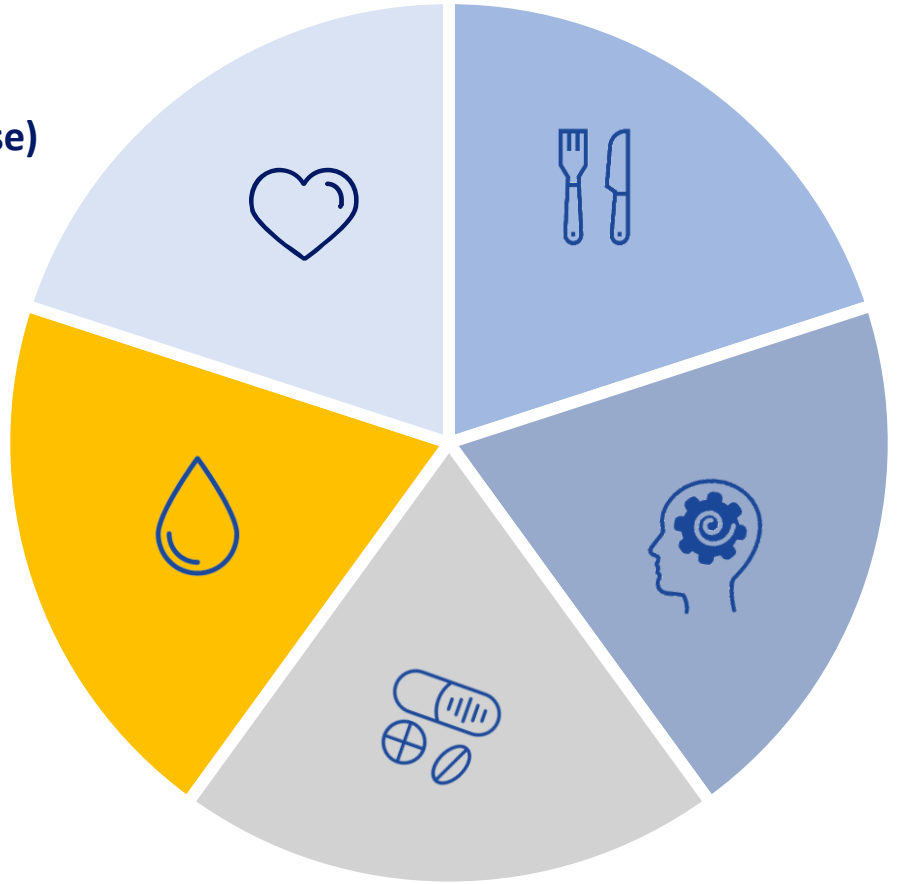
# In people with diabetes, weight loss can be more difficult to achieve

Sedentary
(foot ulcers, neuropathy, heart disease)

Fear of hypoglycemia and compensatory over-eating; Hypoglycemia increases appetite



Reduction in glycosuria

Stress burden of diabetes

Medications (insulin, sulfonylureas, TZDs)

TZD, thiazolidinedione

Russell-Jones et al. Diabetes Obes Metab 2007;9:799–812; Van Gaal et al. Diabetes Care 2015;38:1161–72; Pi-Sunyer Diabetes Care 2005;28:1526–7;Krenke et al. Expert Rev Clin Pharmacol 2014;6:171–8.

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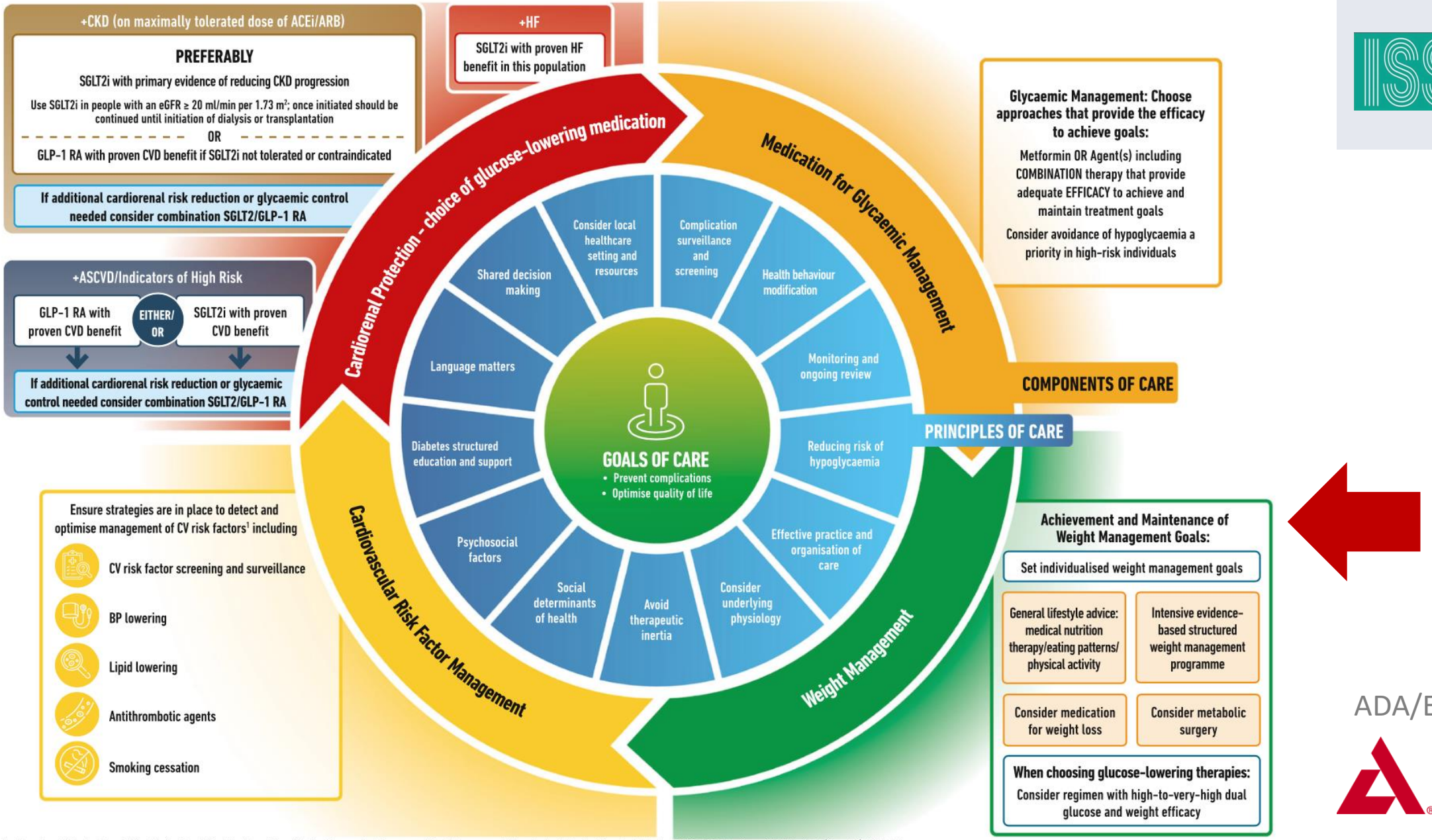
# Weight Management Issues in Diabetes Mellitus

*Among **clinicians**, weight management has been seen as **the least priority** in comparison to glycaemic control.*

*Most **patients** are also more **willing to discuss** their glycaemic target but not their body weight.*

# HOLISTIC PERSON-CENTRED APPROACH TO T2DM MANAGEMENT




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.

ISSO Indonesian Society for the Study of Obesity

ADA/EASD 2022

American Diabetes Association®

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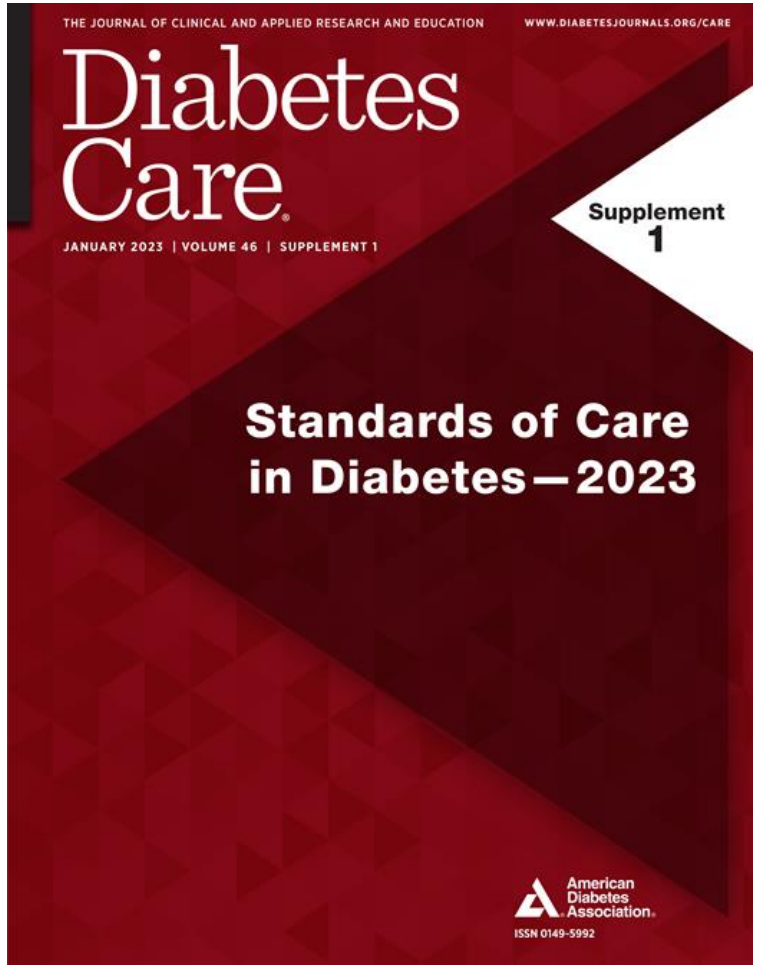


# 8. Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes

Measure height and weight and calculate BMI & **assess weight trajectory** to inform treatment considerations.

Individuals with diabetes and overweight or obesity **may benefit from modest or larger magnitudes of weight loss.**

*Diabetes Care* 2023;46(Supplement_1)

# Treatment Options for Weight Management in T2DM

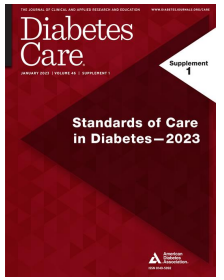


**Table 8.1—Treatment options for overweight and obesity in type 2 diabetes**

| | BMI category (kg/m$^2$) | | |
|---|---|---|---|
| Treatment | 25.0–26.9 (or 23.0–24.9*) | 27.0–29.9 (or 25.0–27.4*) | ≥30.0 (or ≥27.5*) |
| Nutrition, physical activity, and behavioral counseling | † | † | † |
| Pharmacotherapy | | † | † |
| Metabolic surgery | | | † |

*Recommended cut points for Asian American individuals (expert opinion). †Treatment may be indicated for select motivated individuals.

*Diabetes Care* 2023;46(Supplement_1)

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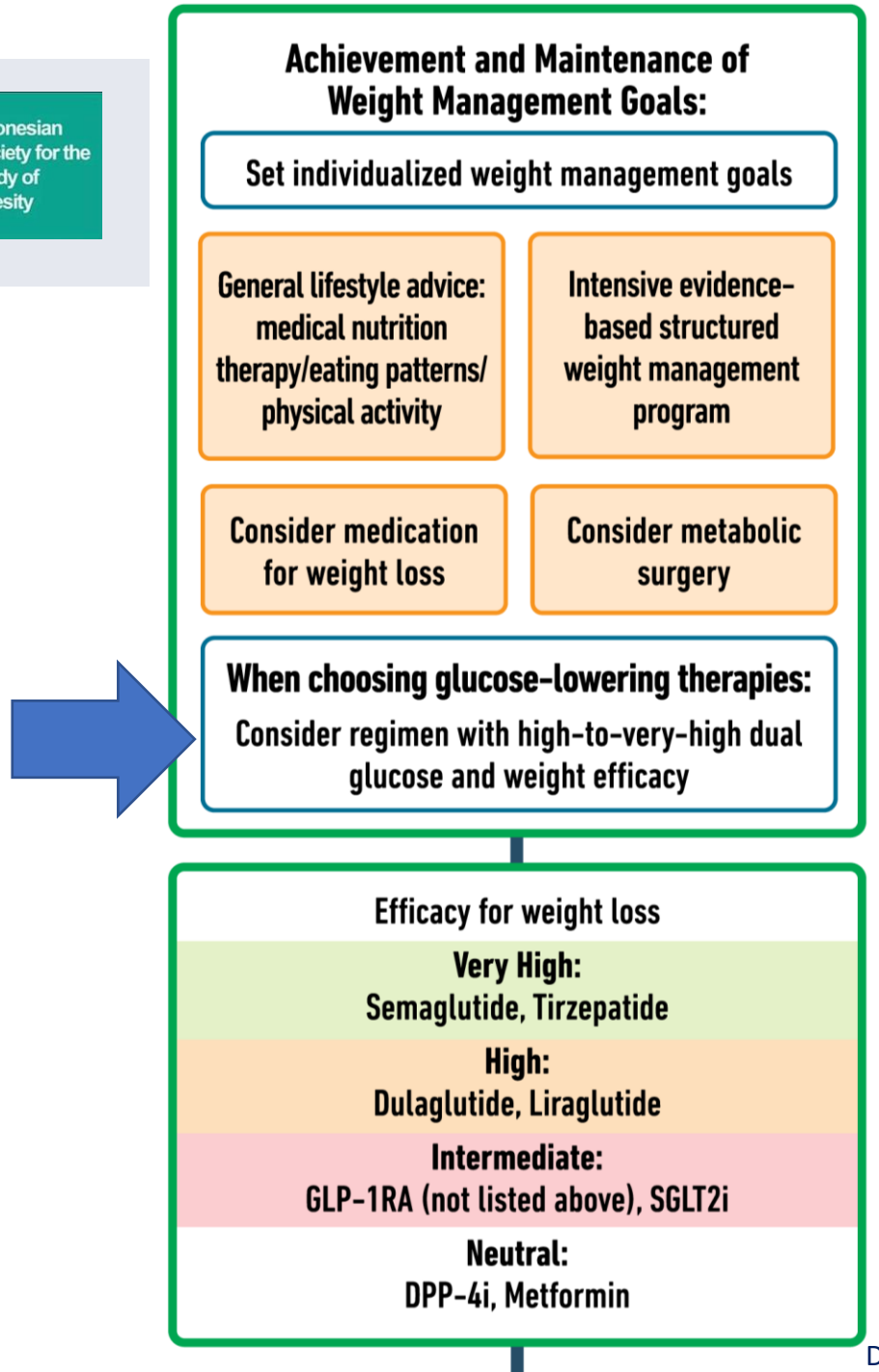
# Medications Selection

Consider **medication's effect on weight**

- When choosing **glucose-lowering agents**
- When choosing **medications for comorbidities**




*Diabetes Care* 2023;46(Supplement_1), ADA/EASD 2022

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# Obesity Pharmacotherapy

Consider **obesity pharmacotherapy**

- Consider **potential benefits and risks**
- **Assess responses**
  - Effective (>5% weight loss after 3 months use) --- continue
  - Insufficient early response or safety or tolerability issues – consider discontinuation and evaluate alternative

*Diabetes Care* 2023;46(Supplement_1)

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# Weight Loss by Anti Obesity Medications

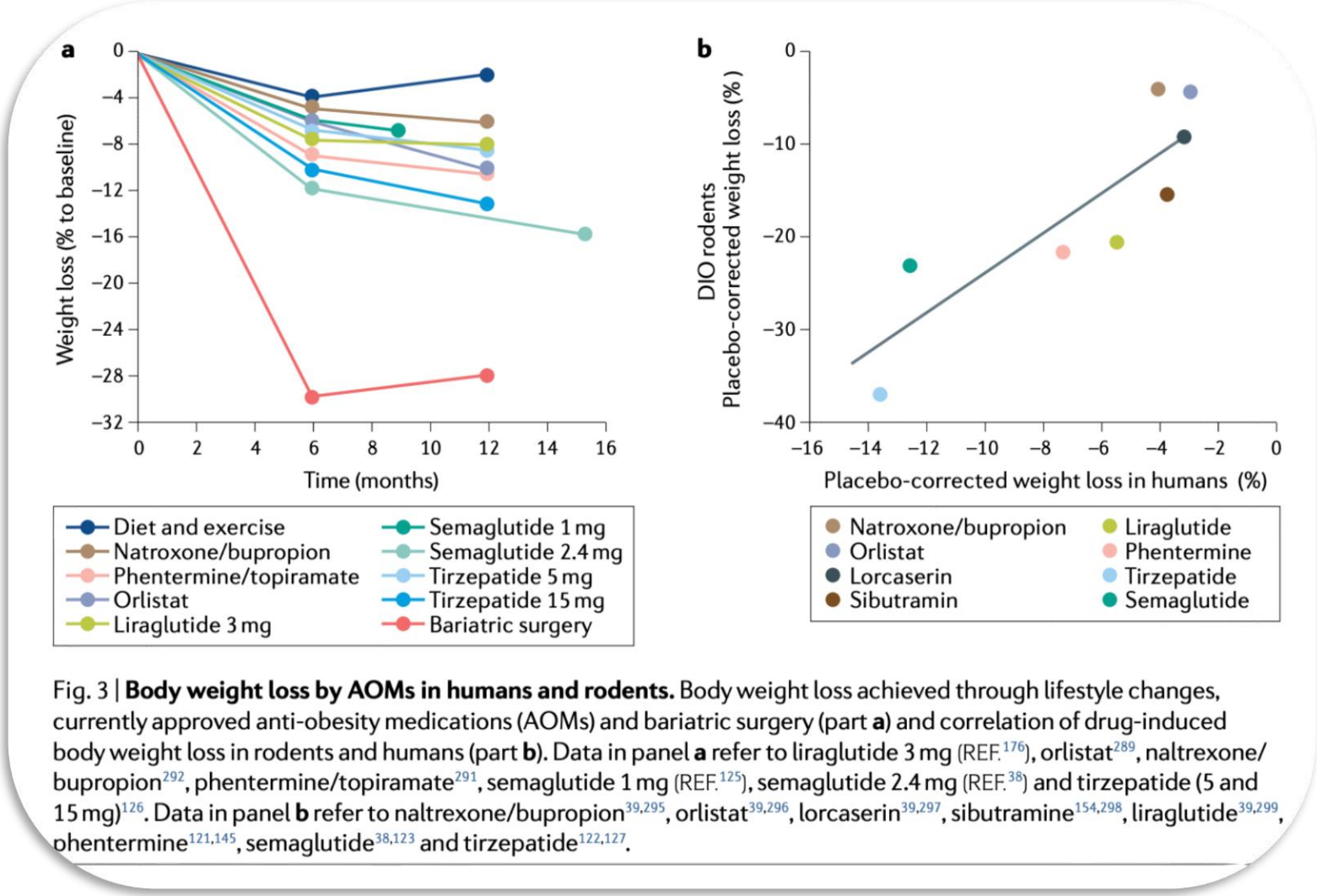


Fig. 3 | **Body weight loss by AOMs in humans and rodents.** Body weight loss achieved through lifestyle changes, currently approved anti-obesity medications (AOMs) and bariatric surgery (part **a**) and correlation of drug-induced body weight loss in rodents and humans (part **b**). Data in panel **a** refer to liraglutide 3 mg (REF.[176]), orlistat[289], naltrexone/bupropion[292], phentermine/topiramate[291], semaglutide 1 mg (REF.[125]), semaglutide 2.4 mg (REF.[38]) and tirzepatide (5 and 15 mg)[126]. Data in panel **b** refer to naltrexone/bupropion[39,295], orlistat[39,296], lorcaserin[39,297], sibutramine[154,298], liraglutide[39,299], phentermine[121,145], semaglutide[38,123] and tirzepatide[122,127].

Nature. March 2022

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# Take Home Messages

- **Obesity** is one of the important determinants of diabetes mellitus and cardiovascular diseases

- **Weight reduction** in diabetes may **halt diabetes progression**, or even **promote diabetes remission**. It may also lead to a **reduction in CVDs**.

- **Weight Management in diabetes** is important. **A collaborative approach** is needed to achieve optimal weight loss

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# THANK YOU


*"By treating obesity, everything gets better"*

Louis J. Aronne 2022

dicky.tahapary@ui.ac.id - @dr.d.tahapary