The 3rd Indonesian Symposium on Heart Failure and Cardiometabolic Disease 2023

UNPACKING DIABETES AND HEART FAILURE

Prediabetes Intervention:

Tackling the prevalent comorbidities in heart failure

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[2]Metabolic, Cardiovascular, and Aging Cluster; The Indonesian Medical Education and Research Institute

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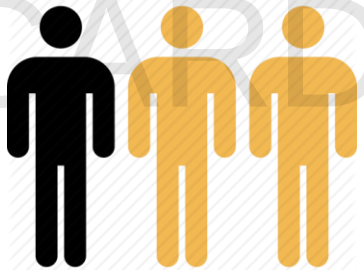
Prediabetes is associated with an **increased risk of HF**

Prediabetes is associated with **increased CV Death and HF hospitalizations**

Reversion from prediabetes is associated with a **reduction in CV Death**

Diab Obese Metabolism 2021, Eur J Heart Failure 2022, J Am Heart Assoc 2021

Cardiometabolic Risk Factors in Indonesia



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Obesity

Prediabetes

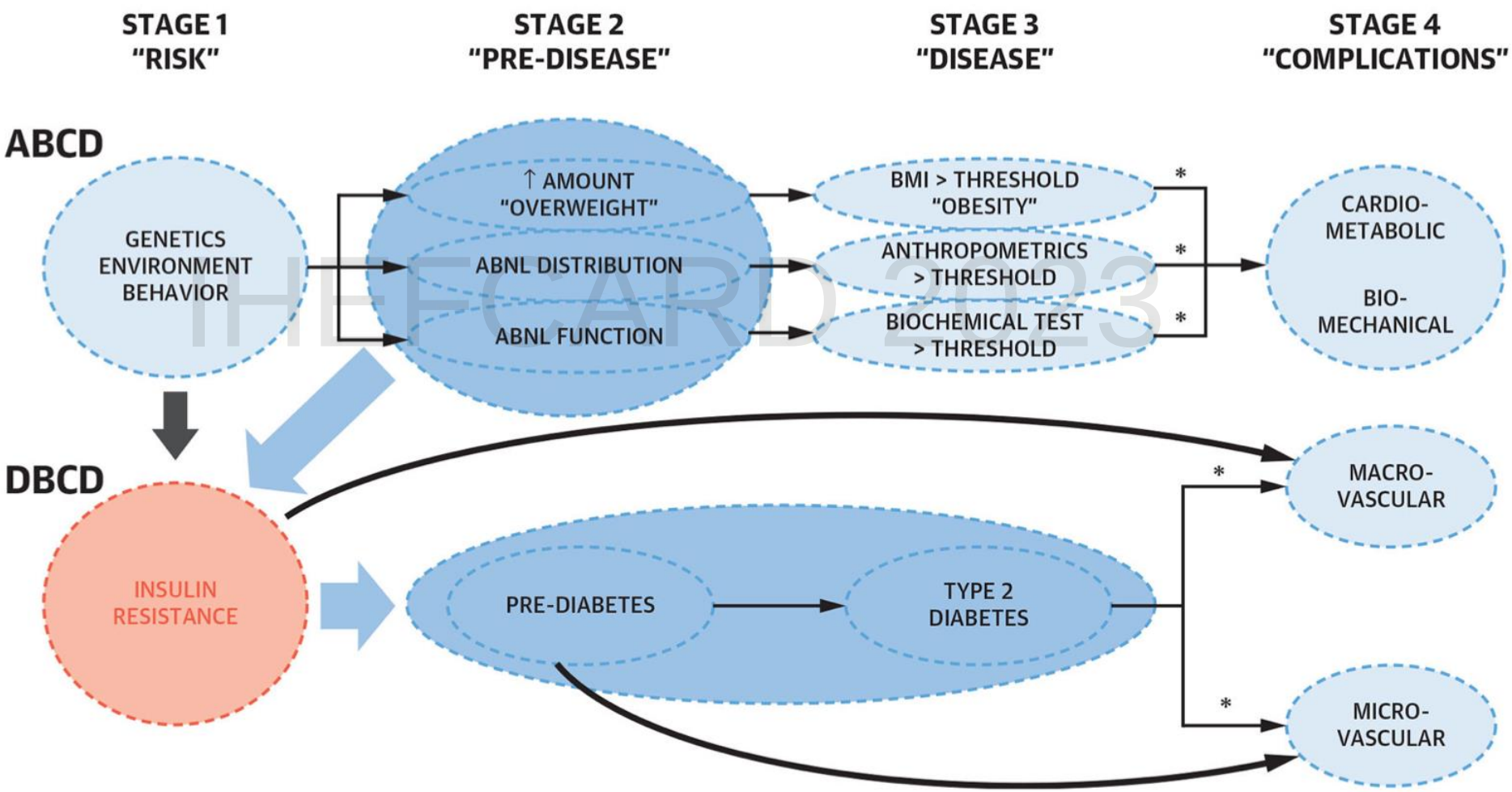
Dyslipidemia

Hypertension

Metabolic Syndrome

Indonesian Basic Health Research 2018

Cardiometabolic-Based Chronic Disease (CMBCD)



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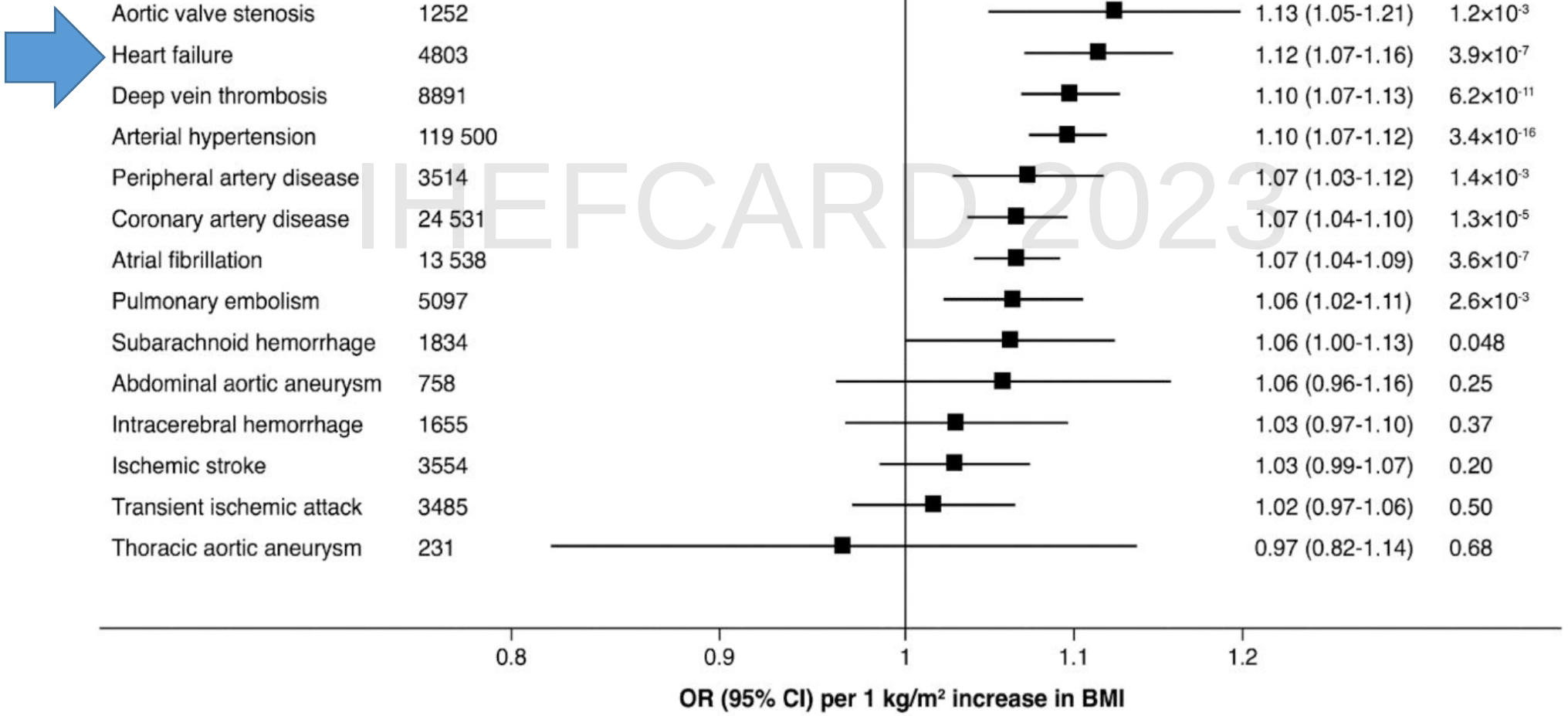
J Am Coll Cardiol. 2020 Feb 11;75(5):525-538.

DT

Increasing BMI and Cardiovascular Diseases



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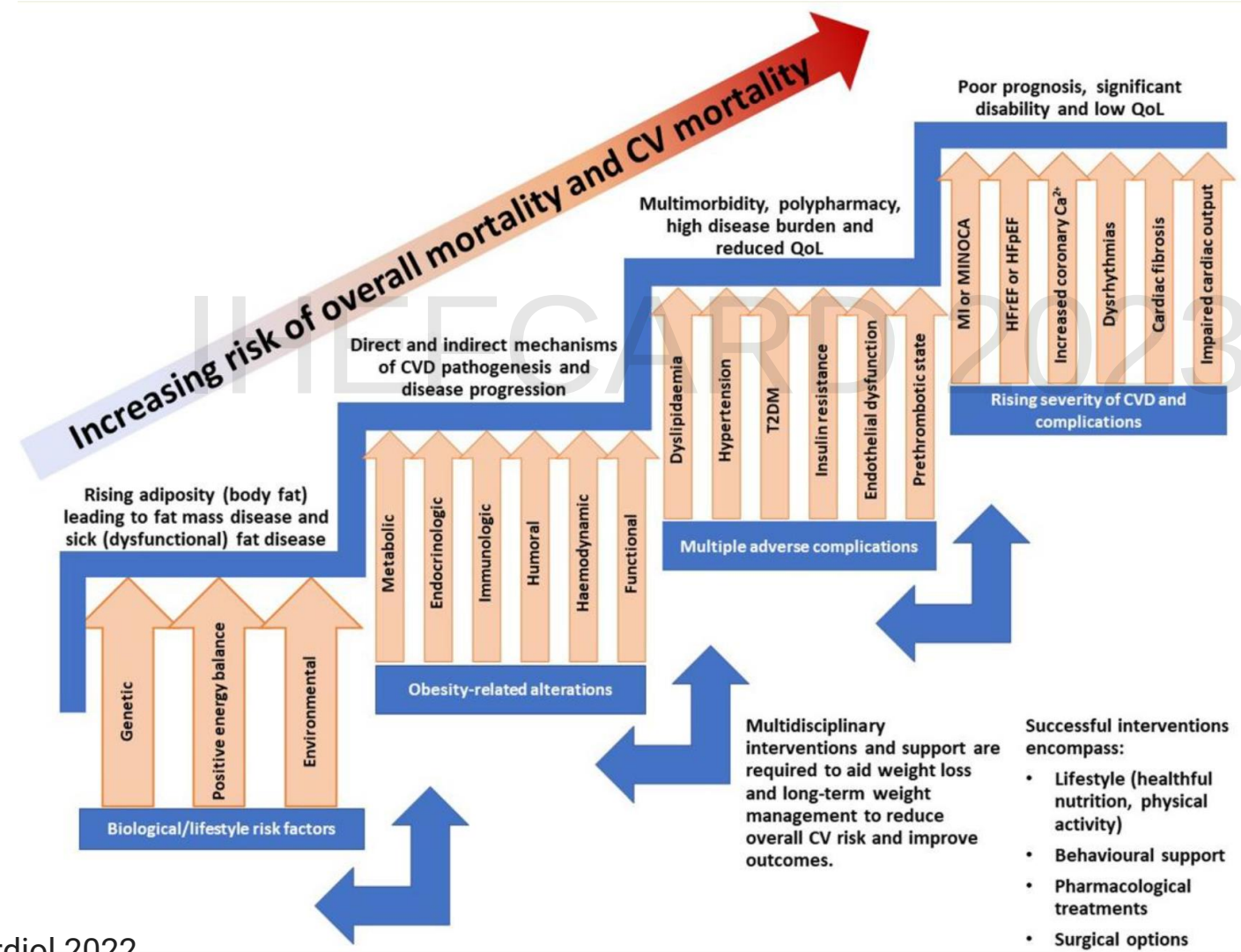
Lopez-Jimenez. J Prev Cardiol 2022

Obesity, (Pre)Diabetes, CVD: Mechanistic Insights and Strategies



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Lopez-Jimenez. J Prev Cardiol 2022

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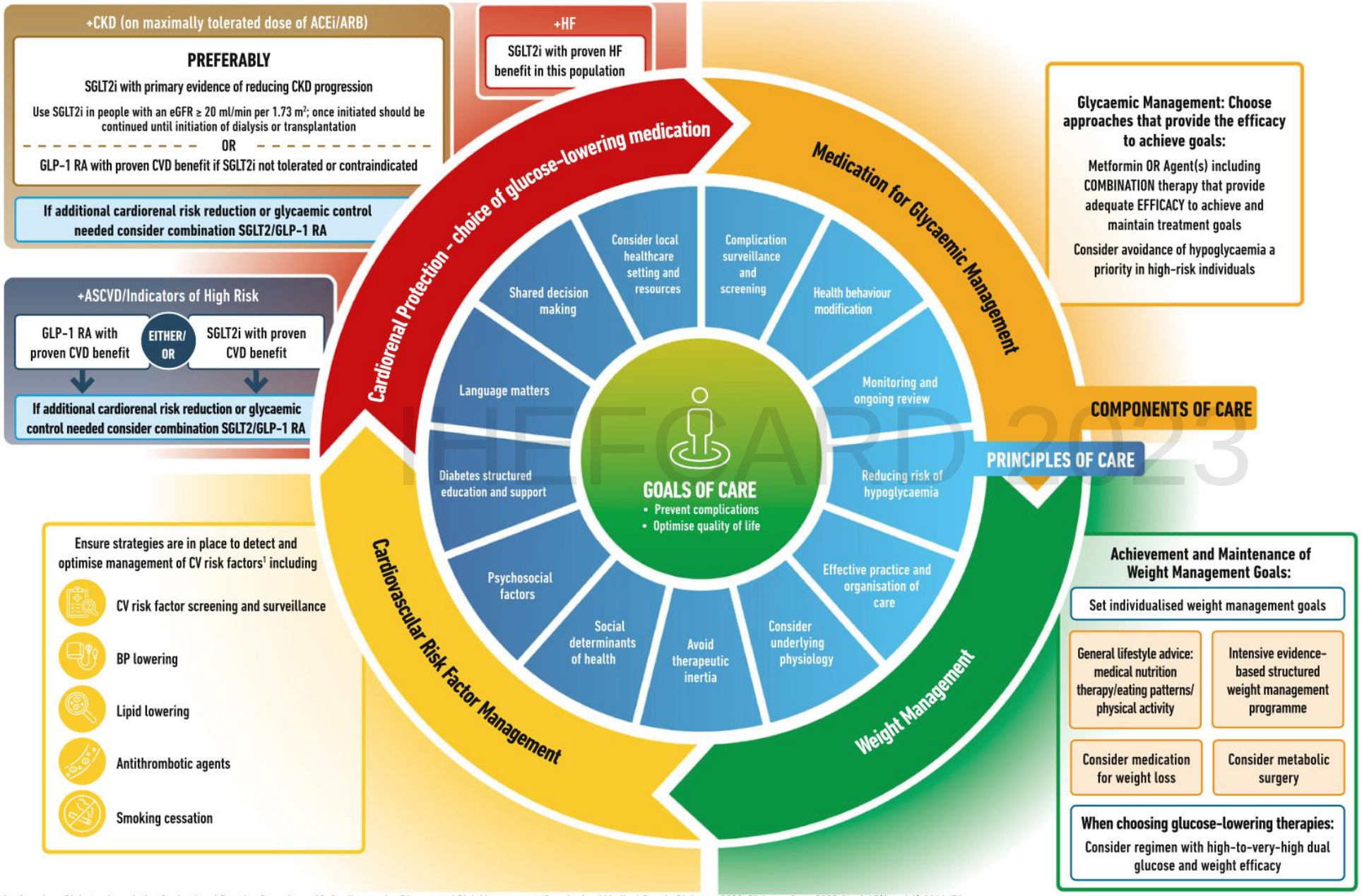
HOLISTIC PERSON-CENTRED APPROACH TO T2DM MANAGEMENT



HEFCARD 2023

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 2022

American Diabetes Association®

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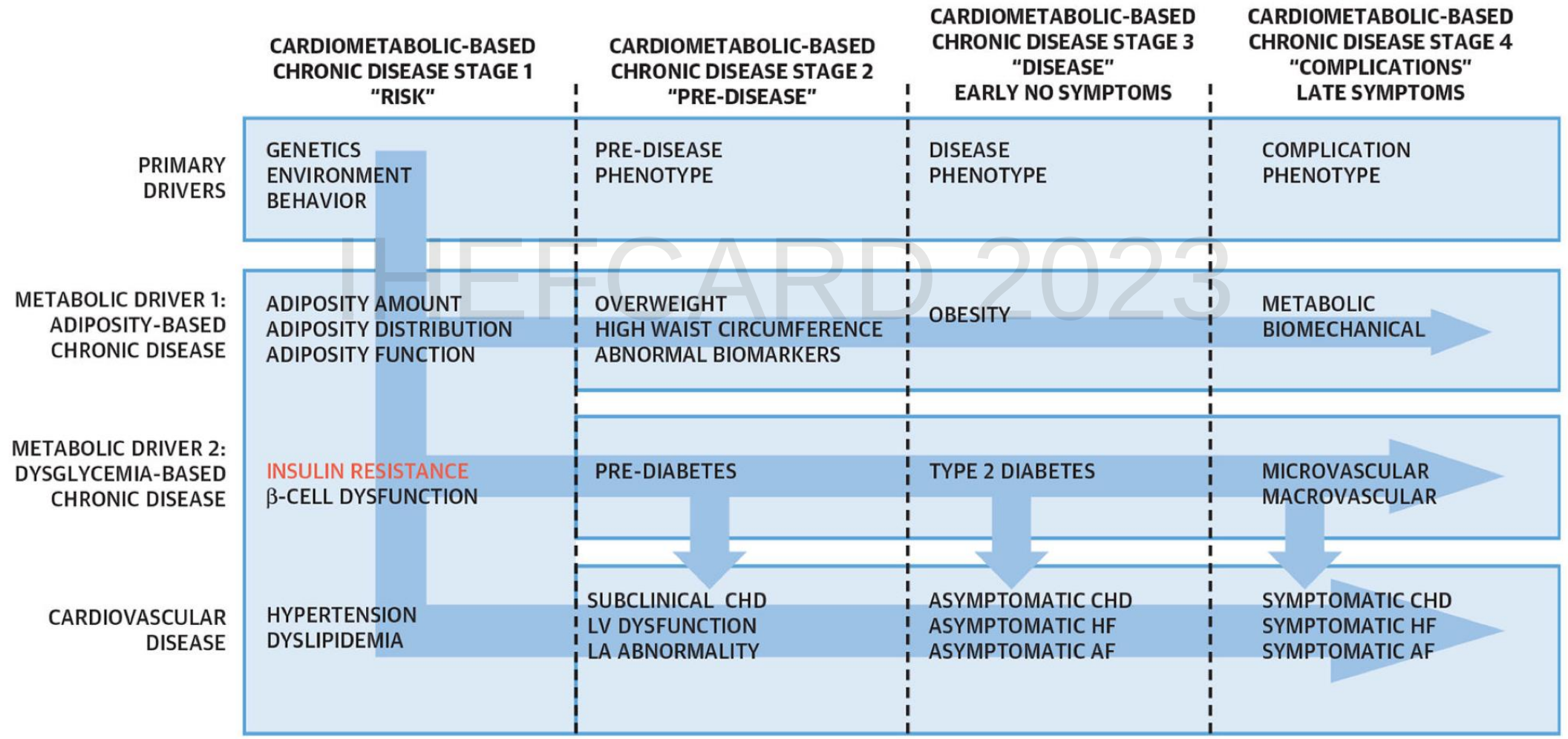
Cardiometabolic-Based Chronic Disease (CMBCD)



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

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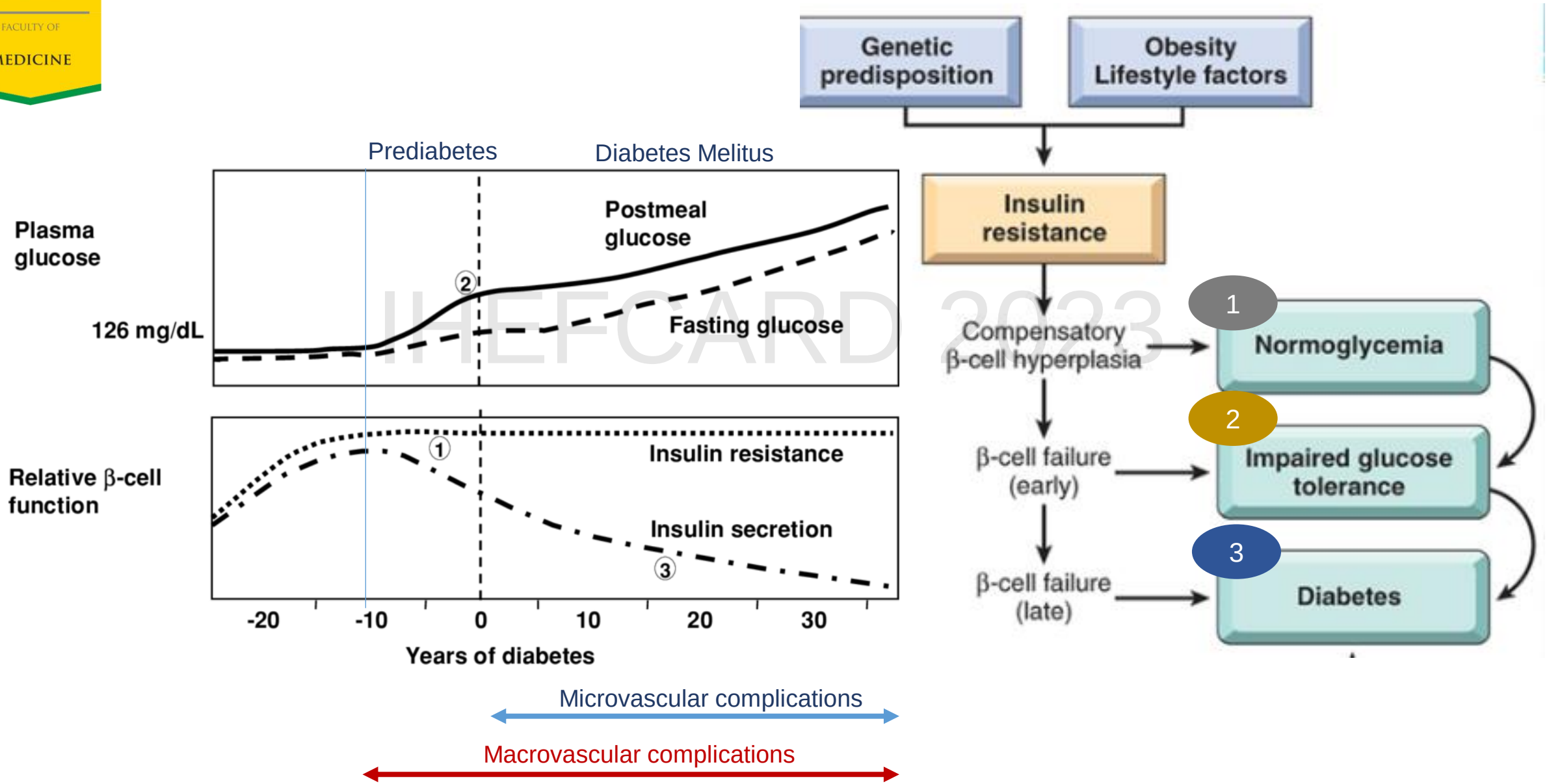
Progressive Nature of Type 2 Diabetes Mellitus



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Prediabetes among Those with CVD

Prediabetes and Macrovascular Disease

Coronary Artery Disease

- 24% with prediabetes

Stroke

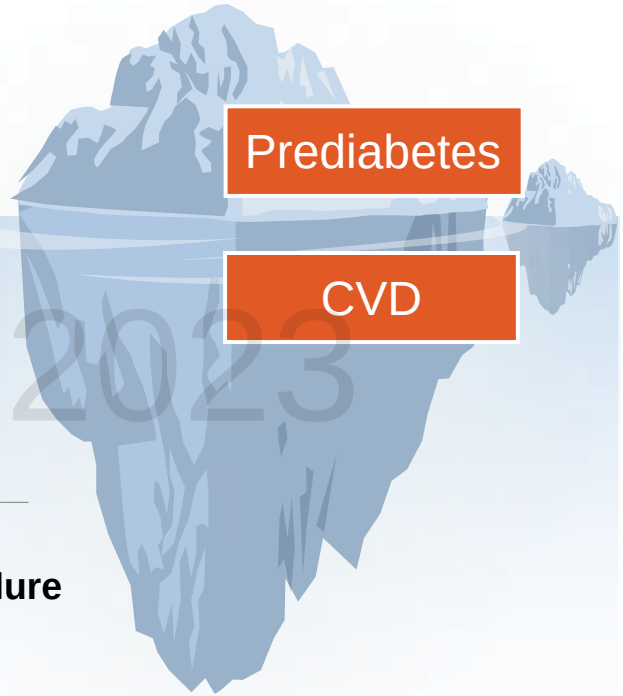
- 32-34% with prediabetes

Peripheral Artery Disease

- 26-28% with prediabetes

Chronic Heart Failure

- 40% with prediabetes



IHEFCARD 2023

Kleinherenbrink W, et al. Eur J Intern Med. 2018 Sep;55:6-11.

6-Year Cardiovascular Incidences Among Prediabetes and Diabetes in Indonesia

ELSEVIER

Diabetes & Metabolic Syndrome: Clinical Research & Reviews

Volume 16, Issue 1, January 2022, 102330

Original Article

Cardiovascular disease prediction model for Indonesian adult population with prediabetes and diabetes mellitus: The Bogor Cohort study of Noncommunicable Diseases Risk Factors

Marcel H.R. Sibarani [a], Ika P. Wijaya [b], Aulia Rizka [c, d], Pradana Soewondo [e, f, 1], Woro Riyadina [g, 1], Ekowati Rahajeng [g, 1], Sudikno [g, 1], Dante S. Harbuwono [e, f, 1], Dicky L. Tahapary [e, f, 1]

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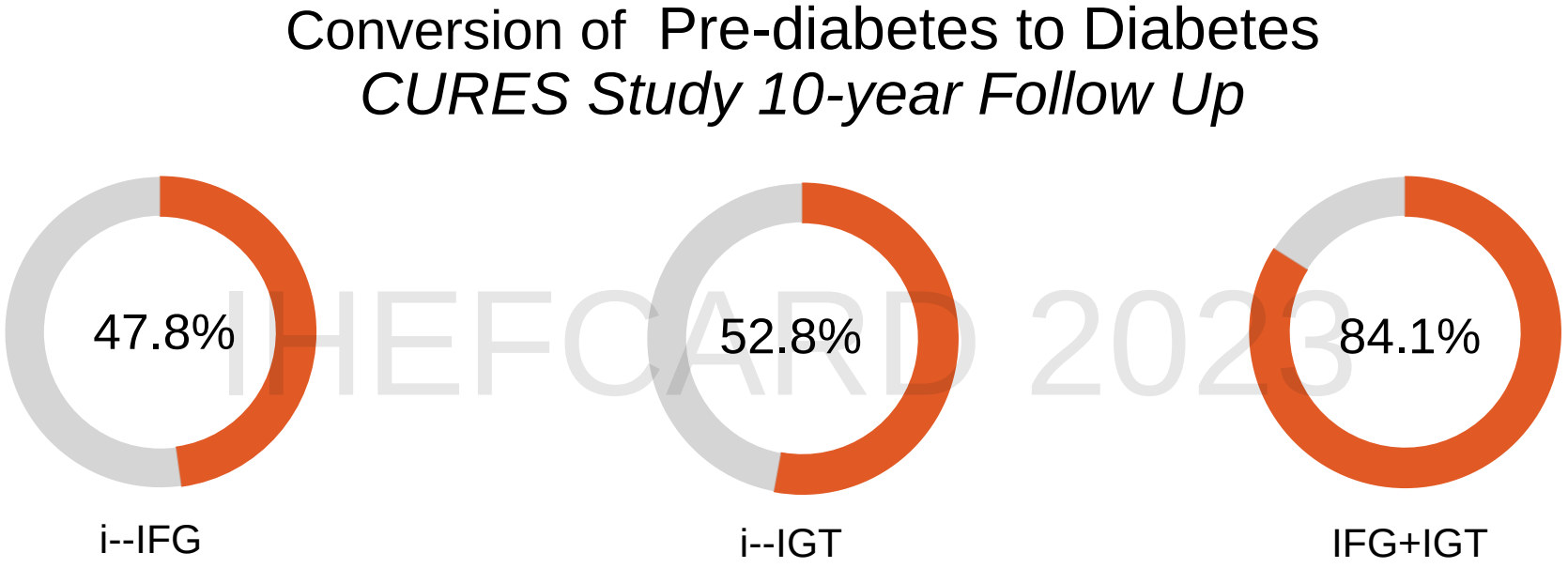
The cumulative incidence of **cardiovascular events in six years** was **9.7%.**

Predictors of cardiovascular events were **age ≥45 years (HR = 2.737; 95% CI 1.565–4.787)** **hypertension (HR = 2.580; 95% CI 1.619–4.112).**

Prediabetes Signaled an Increased Risk of Progression to Diabetes



IHEFCARD 2023

- Incidence of Diabetes and Prediabetes and Predictors of Progression Among Asian Indians:10-Year Follow-up of the Chennai Urban Rural Epidemiology Study (CURES): Data on progression to diabetes and prediabetes from 1,376 individuals, a subset of 2,207 of the Chennai Urban Rural Epidemiology Study (CURES) cohort (phase 3) with normal glucose tolerance (NGT) or prediabetes at baseline, who were followed for a median of 9.1 years (11,629 person-years), are presented

Ranjit Mohan Anjana,et al.Diabetes Care 2015;38:1441–1448

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FACULTY OF MEDICINE

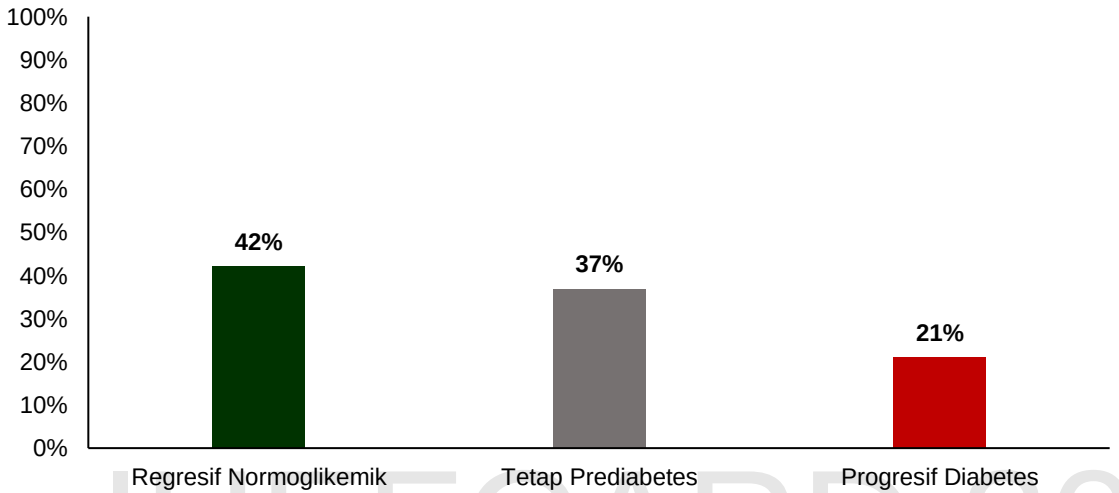
Diabetes & Metabolic Syndrome: Clinical Research & Reviews
Volume 15, Issue 6, November–December 2021, 102280

Original article

Triglyceride/Glucose Index (TyG Index) as a marker of glucose status conversion among reproductive-aged women in Jakarta, Indonesia: The Bogor cohort study (2011–2016)

Iche A. Liberty [a, b], Nasrin Kodim [b], Ratu A.D. Sartika [c], Indang Trihandini [d], R.M. Suryadi Tjekyan [a], Zulkarnain [a], Masdalina Pane [e], Livy B. Pratisthita [f, g], Dicky L. Tahapary [f, h], Pradana Soewondo [f, h]

Prediabetes Conversion in Reproductive-Age Women in Indonesia



N=371, 5 years of follow up

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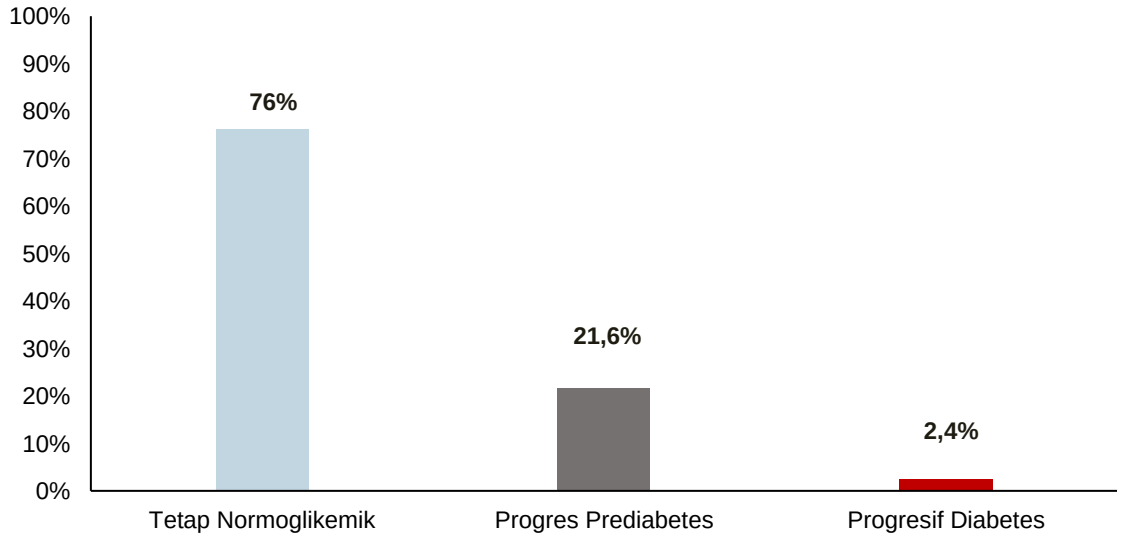
Conversion among Normoglycemia Subjects



N=1300, 5 years of follow up

What can we do to manage prediabetes?

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1.Early Detection

2.Prompt Management

Criteria for Screening

1. Testing should be considered in adults with overweight or obesity (BMI ≥25 kg/m^2 or ≥23 kg/m^2 in Asian American individuals) who have one or more of the following risk factors:
   - First-degree relative with diabetes
   - High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
   - History of CVD
   - Hypertension (≥130/80 mmHg or on therapy for hypertension)
   - HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82 mmol/L)
   - Individuals with polycystic ovary syndrome
   - Physical inactivity
   - Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
2. People with prediabetes (A1C ≥5.7% [39 mmol/mol], IGT, or IFG) should be tested yearly.
3. People who were diagnosed with GDM should have lifelong testing at least every 3 years.
4. For all other people, testing should begin at age 35 years.
5. If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.
6. People with HIV.

IFG, impaired fasting glucose; IGT, impaired glucose tolerance.

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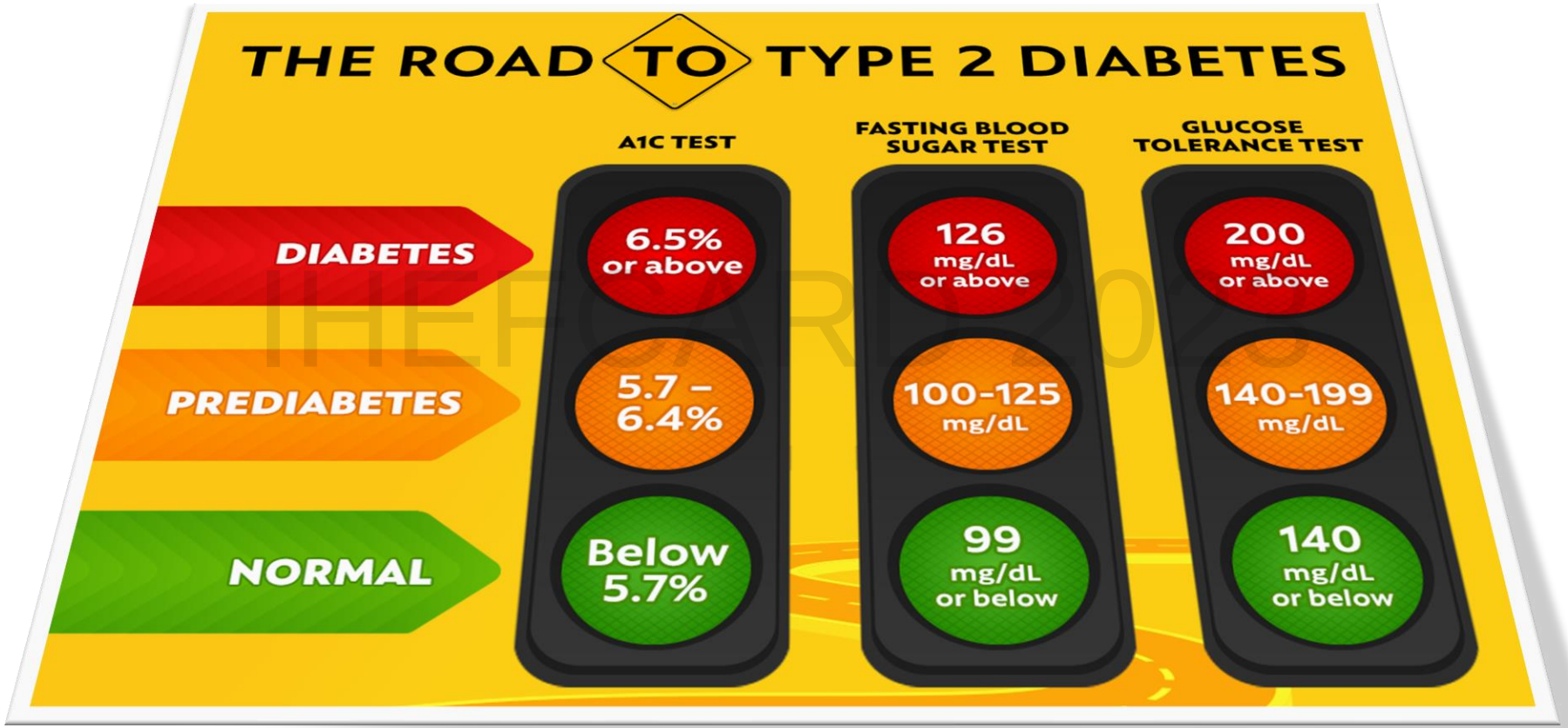
ADA 2023

DIAGNOSTIC TEST



OGTT is the most sensitive screening method ..

… however, HbA1c is relatively simple as it does not require fasting

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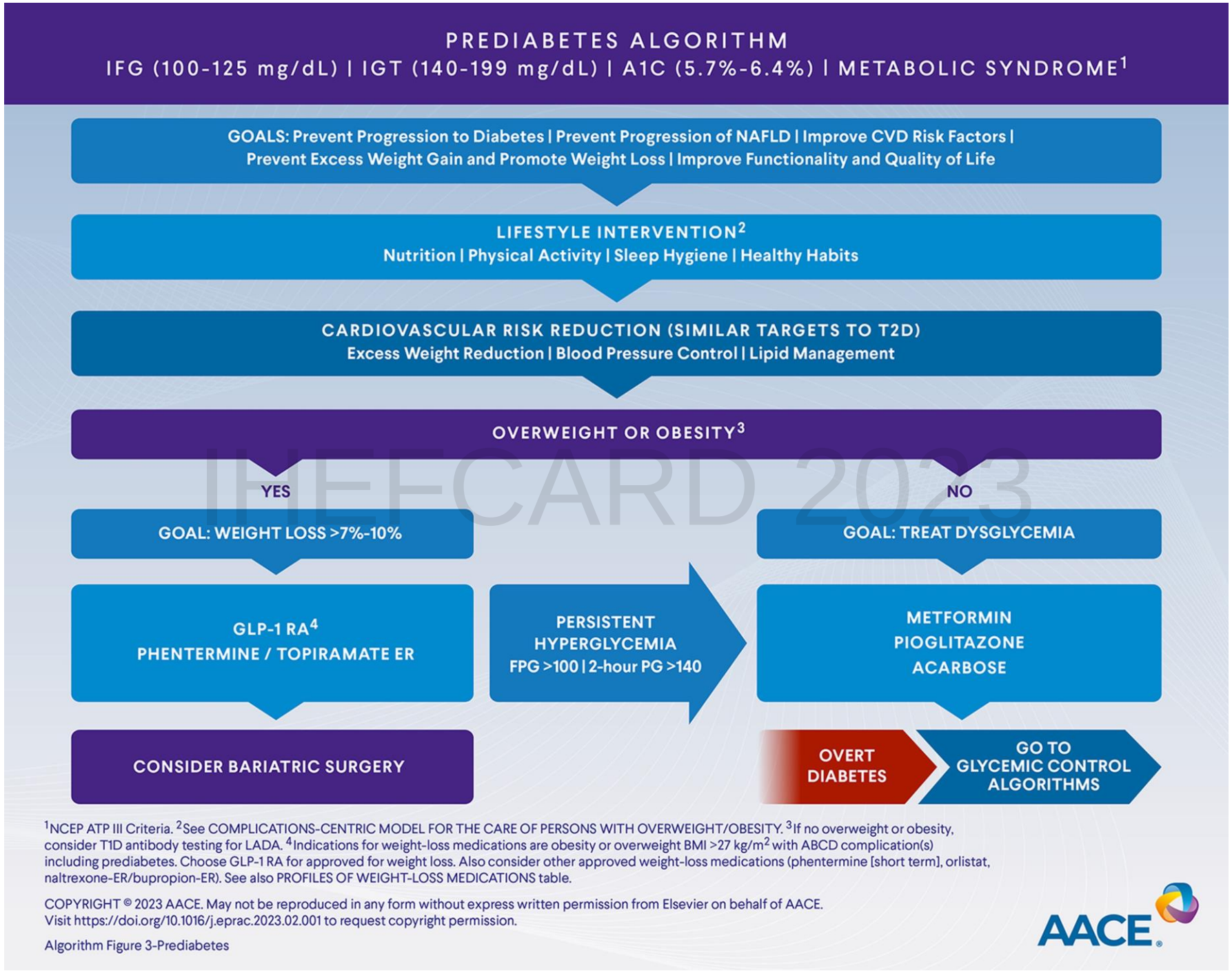

[1]NCEP ATP III Criteria. [2]See COMPLICATIONS-CENTRIC MODEL FOR THE CARE OF PERSONS WITH OVERWEIGHT/OBESITY. [3]If no overweight or obesity, consider T1D antibody testing for LADA. [4]Indications for weight-loss medications are obesity or overweight BMI >27 kg/m^2 with ABCD complication(s) including prediabetes. Choose GLP-1 RA for approved for weight loss. Also consider other approved weight-loss medications (phentermine [short term], orlistat, naltrexone-ER/bupropion-ER). See also PROFILES OF WEIGHT-LOSS MEDICATIONS table.

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Algorithm Figure 3-Prediabetes

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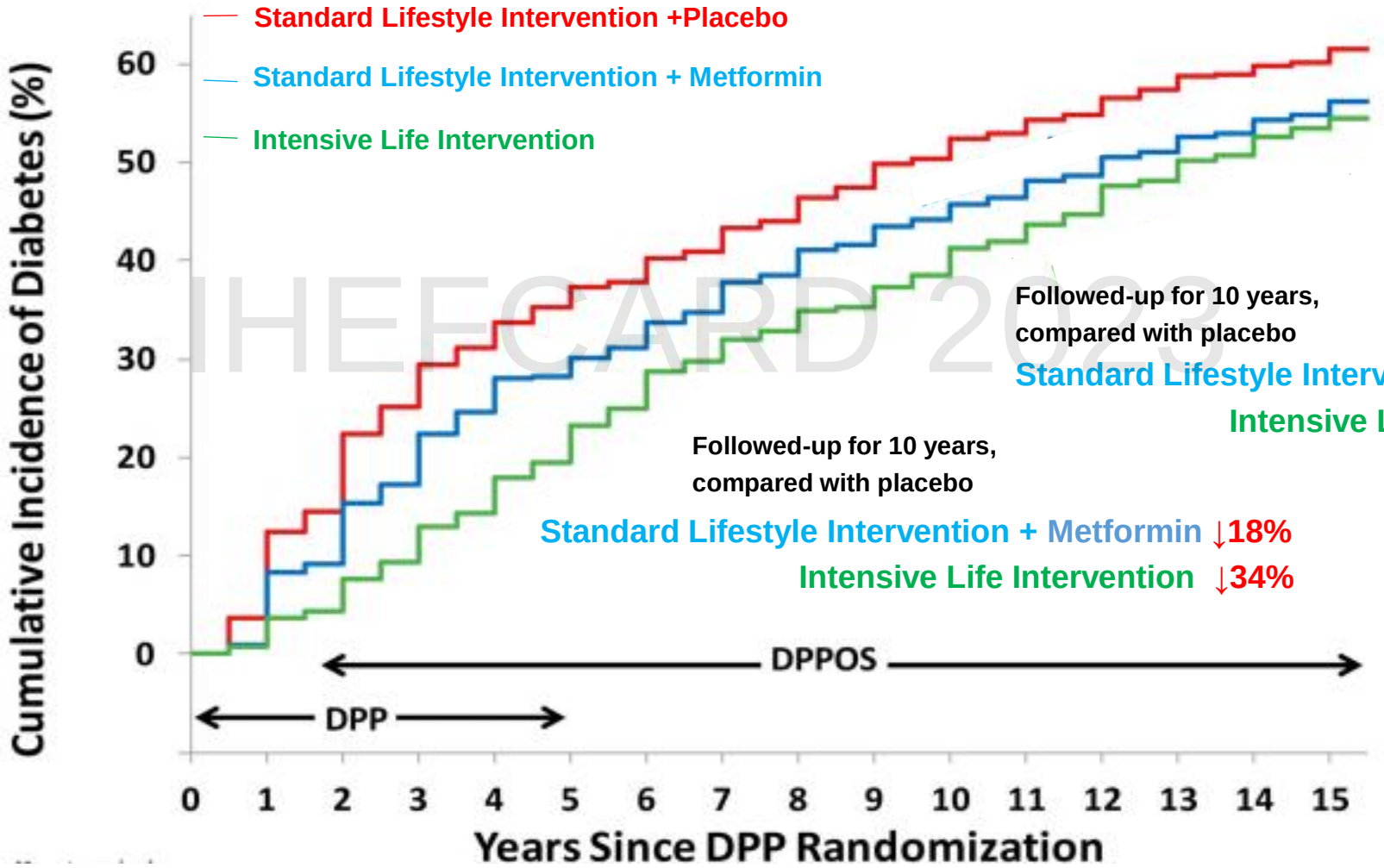
DPPOS 15 years follow-up:

Metformin and intensive lifestyle interventions reduced the incidence of diabetes



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DPP.Lancet Diabetes Endocrinol. 2015 Nov; 3(11): 866–875.

Pharmacologic Approaches to Glucose Management in Prediabetes

should be considered for **higher-risk patients:**
some **combination** of IFG + IGT
and/or the **metabolic syndrome** (ie, ≥2 of these risk factors).

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Other **key considerations:**
worsening glycemia,
the presence of **CVD** and/or **nonalcoholic fatty liver disease (NAFLD)**,
or a history of **gestational diabetes mellitus** (GDM)
or **polycystic ovary syndrome** (PCOS)

Metformin has widely experienced and could prevent diabetes

Trial	Subjects	N; duration (years)	Control group	Active treatments	% change in diabetes risk
DPP[1]	IGT	3234; 2.8	Placebo plus standard lifestyle advice	**Metformin plus standard lifestyle advice**	**-31**
				Intensive lifestyle intervention	-58
DPPOS[2]	IGT	2766; 5.7	Placebo plus group-implemented lifestyle intervention	**Metformin 1700 mg/day+group-implemented lifestyle intervention**	**-18**
				Intensive lifestyle intervention+additional lifestyle support	-34
IDPP[3]	IGT	531; 2.5	Standard lifestyle advice	**Metformin plus standard lifestyle advice**	**-26.4**
				Metformin plus intensive lifestyle intervention	**-28.2**
				Intensive lifestyle intervention	-28.5
Yang[4]	IGT	321; 3	Standard lifestyle advice	**Metformin**	**-76.8**
				acarbose	-87.8
				Intensive lifestyle intervention	-43
Li[5]	IGT	70; 1	Placebo	**Metformin**	**-66**
Iqbal[6]	IGT	317; 1.5	Standard lifestyle advice	**Metformin**	**-76.5**
				Intensive lifestyle intervention	-71
CANOE (Canada)[7]	IGT	207;3.9	placebo	Metformin 500mg plus rosiglitazone 2 mg twice	**-66**

IHEFCARD 2023

1.Knowler WC, et al. N Engl J Med. 2002 Feb 7;346(6): 393-403.; 2. Diabetes Prevention Program Research Group, et al. Lancet. 2009 Nov 14;374(9702): 1677-86.; 3. Ramachandran A, et al. Diabetologia. 2006 Feb;49(2): 289-97.;4. Yang wenying,et al. Chinese Journal of Endocrinology and Metabolism..2001,3;(17): 131-134.; 5. Li CL, et al. Diabet Med. 1999 Jun;16(6): 477-81.;6. Iqbal Hydrie MZ, et al. J Nutr Metab. 2012;2012: 867604. 7.Zinman B,et al.Lancet. 2010 Jul 10;376(9735):103-11.

ONLINE FIRST | May 5, 2017 | https://doi.org/10.15605/jafes.032.01.02

Journal of the ASEAN Federation of Endocrine Societies

FEATURE ARTICLE

A Consensus of Key Opinion Leaders on the Management of Pre-diabetes in the Asia-Pacific Region

Roberto Mirasol,[1] Ah Chuan Thai,[2] Aftab Ahmad Salahuddin,[3] Kathryn Tan,[4] Chaicharn Deerochanawong,[5] Mafauzy Mohamed,[6] Made Ratna Saraswati,[7] Bipin Kumar Sethi,[8] Sanjiv Shah,[9] Nanny Natalia Soetedjo,[10] Swangjit Suraamornkul,[11] Rima Tan,[12] Farid Uddin[13]

- Pharmacologic intervention is recommended if there is **inadequate response to lifestyle intervention after 3 to 6 months.**
- Metformin should be initiated at a **starting dose of 500 mg/day titrated up to a maximum of 2,000 mg/day as required.**
- Alternative treatment should be considered if the patient is **nonresponsive or intolerant to metformin** (e.g., acarbose), or when it is contraindicated.
- **Follow up is recommended at 3 to 6 months**.

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Summary

1 out of 3
have Prediabetes

1. **Early Detection**
   - Screening: OGTT, HbA1c, FPG
2. **Prompt Treatment**
   - Risk Stratification
   - Intensive Lifestyle Modifications +/- Medication(s)

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Prediabetes ***comprehensive intervention***
will lead to ***prevention of cardiometabolic complications***

“Alone we can do so little; together we can do so much.”

Helen Keller

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