Diabetes – en hjärtkärlsjukdom
Risker, komplikationer och prevention

Preventiv kardiologi 2024-11-05, Sigtuna

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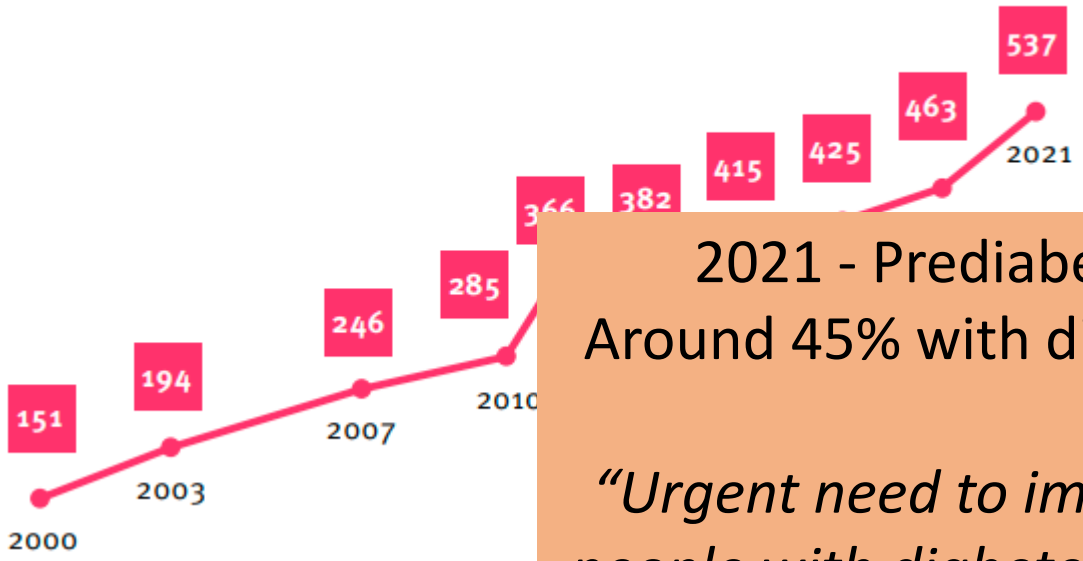
Karolinska Institutet

Diabetes och hjärtkärlsjukdom

1. Epidemiologi, prevalens och incidens
2. Kardiovaskulär risk – trender och dagsläget
3. Betydelsen av riskfaktorkontroll
4. Kvarstående kardiovaskulära problem
5. Nya möjligheter – kardiovaskulära utfallsstudier
   - SGLT-2i
   - GLP-1 RA

Global diabetes prevalence

Yr 2001 151 million - 4.6%
Yr 2021 537 million - 10.5%
Yr 2030 643 million - 11.3% ???
Yr 2045 783 million - 12.2% ??



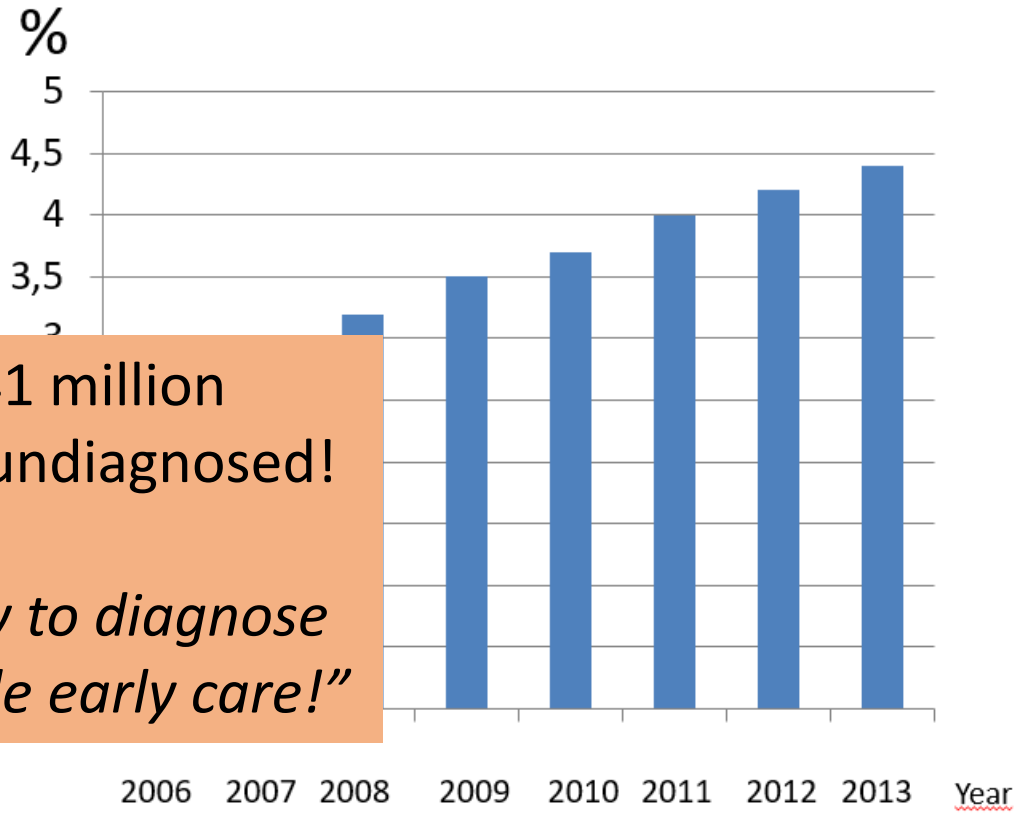
Numbers by year in millions

2021 - Prediabetes, IGT, 541 million
Around 45% with diabetes are undiagnosed!

"Urgent need to improve ability to diagnose people with diabetes and provide early care!"

Prevalence increases in Sweden

60% increase T2DM yr; 2006-2013



IDF Atlas, 10th edition, 14th November 2021
14 November – World diabetes day, birthday of Banting

Norhammar et al. Diabetologia 2016;59:1692–1701

Hyperglycaemia in pregnancy

This IDF Diabetes Atlas 10th edition

One of new highlights in IDF 10th Atlas

"This IDF Diabetes Atlas 10th edition also shows that hyperglycaemia in pregnancy affects approximately one in six pregnancies"

1/6  **HYPERGLYCAEMIA**

■ **Pregnant women with gestational diabetes can have babies that are large for gestational age, increasing the risk of pregnancy and birth complications for the mother and baby**

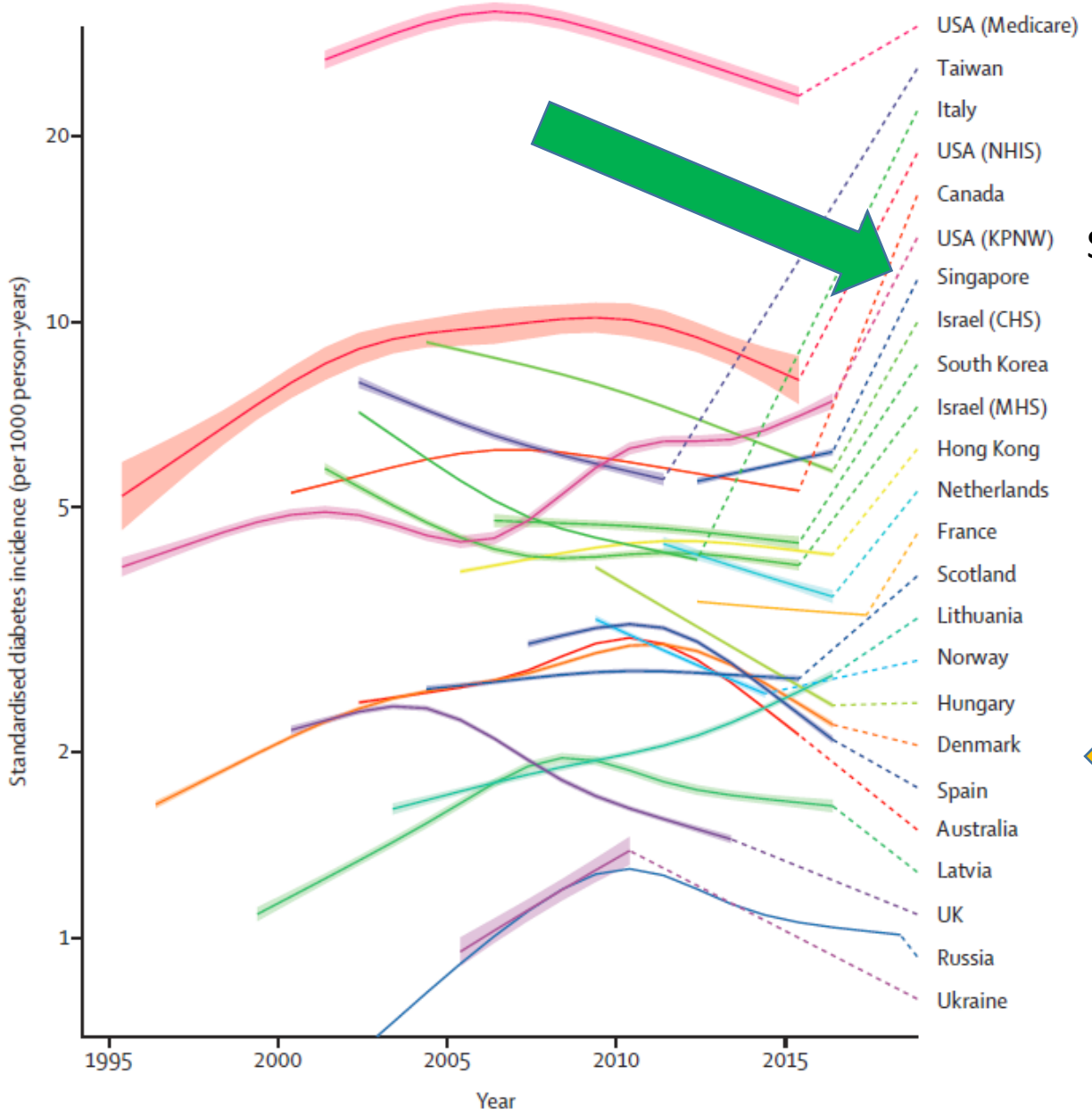
Child

1. Large babies, birth defects
2. Birth complications
3. First days hypoglycaemia risk
4. Future diabetes risk

Mother

1. Birth complications
2. Increased preeclampsia
3. *Future risk for mother at risk for diabetes and CVD*

Incidens av diabetes - globala trender är stabila eller sjunkande



Sjunkande incidens från 2010?

Ex Danmark

Ref *Dianna J Magliano et al, Lancet Diabetes Endocrinol* 2021; 9: 203–11

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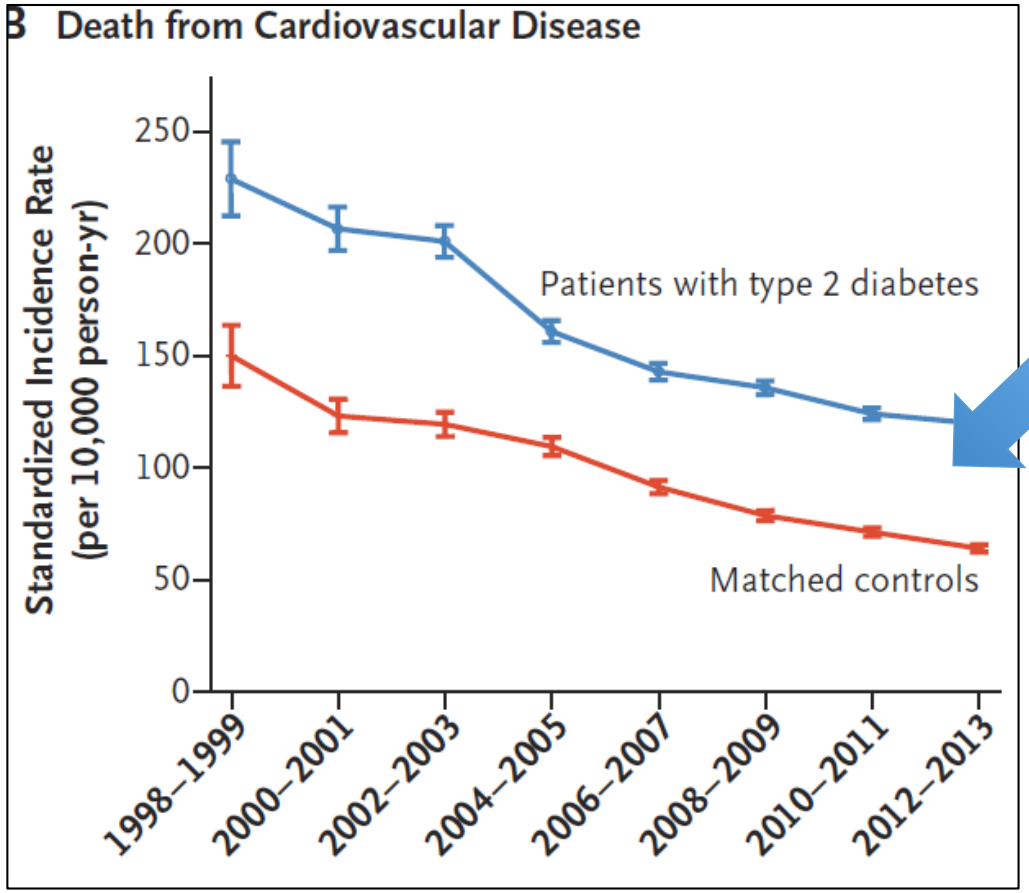
    GLP-1 RA

Favorable all-cause mortality trends globally latter decades

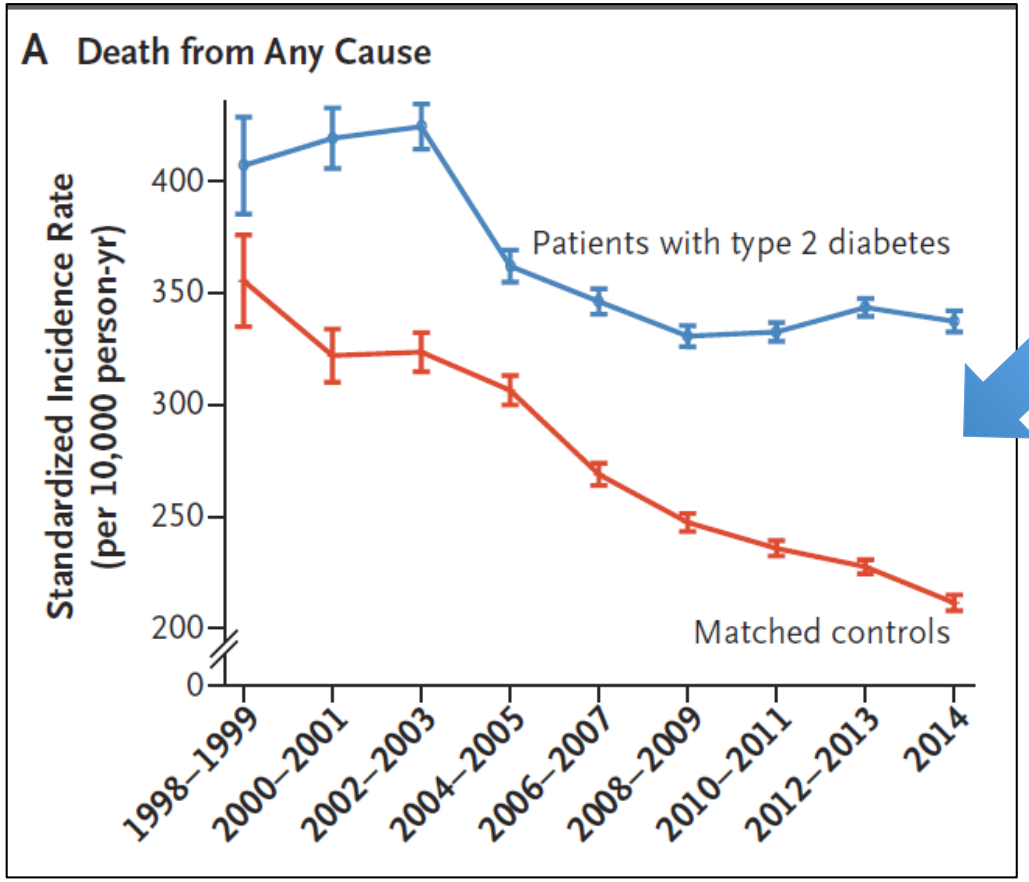
Sweden 1998-2013, CV-mortality decreases, all-cause level off?

CV-mortality



Decline

All-cause mortality



Level off?

NDR; Rawshani A, et al N Engl J Med 2017;376:1407-18.

National Diabetes Registry Sweden 1998-2012, T2DM n=457,473, and matched controls

Hjärtkärlkomplikationer vid typ 2 diabetes -2-faldigt ökad risk för hjärtsvikt och hjärtinfarkt

Risk jämfört med populationen i Sverige 2006-2013

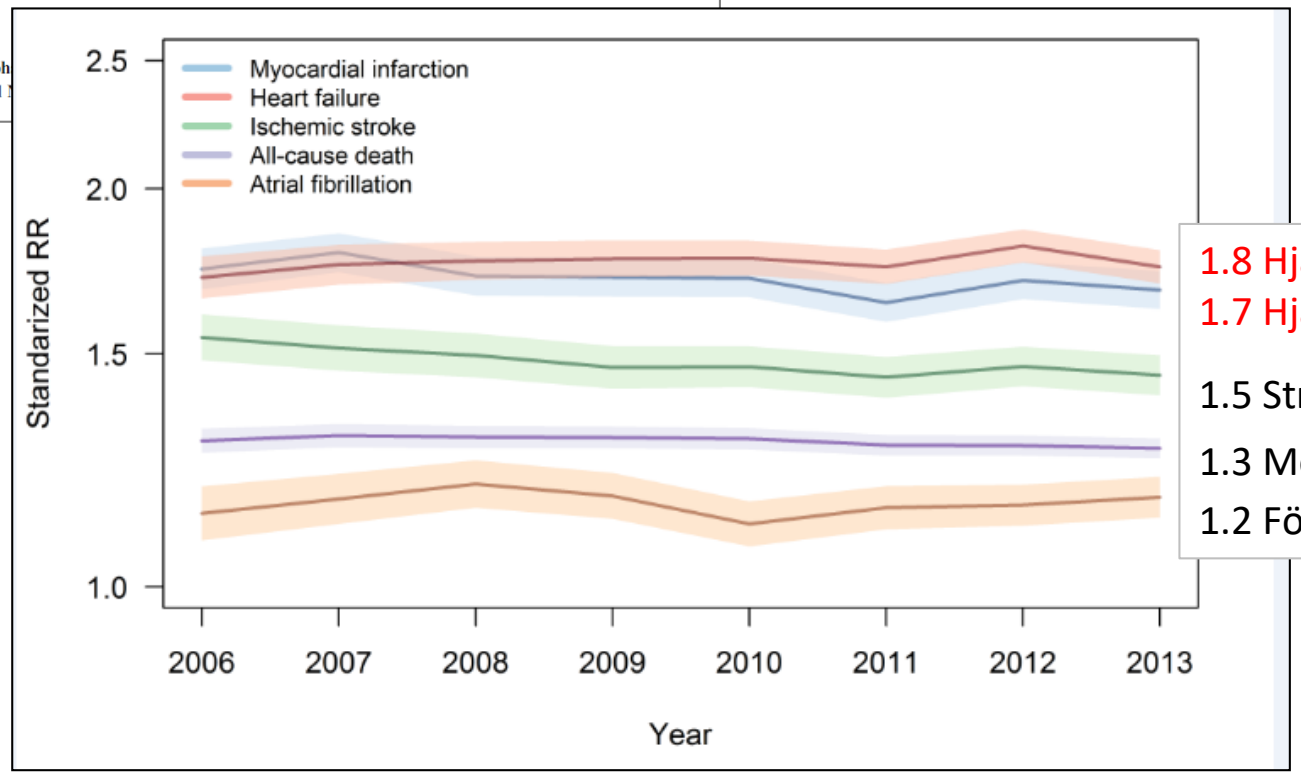
Läkemedelsbehandlad typ 2 diabetes år 2013, n=352,436

Diabetologia
DOI 10.1007/s00125-016-3971-y

ARTICLE

Incidence, prevalence and mortality of type 2 diabetes requiring glucose-lowering treatment, and associated risks of cardiovascular complications: a nationwide study in Sweden, 2006–2013

Anna Norhammar[1,2] · Joh
Jan W. Eriksson[6] · David



1.8 Hjärtsvikt
1.7 Hjärtinfarkt

1.5 Stroke

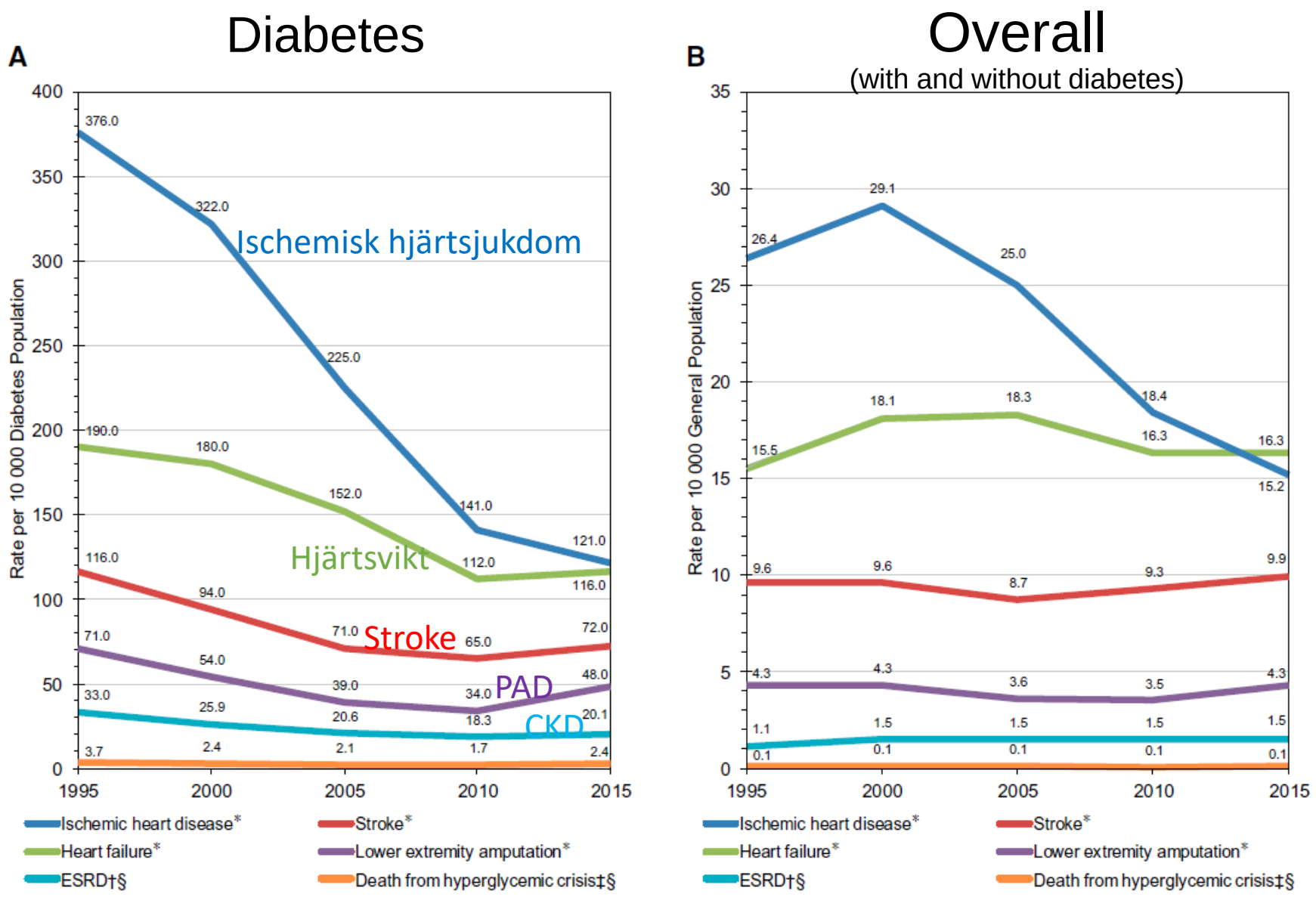
1.3 Mortalitet

1.2 Förmaksflimmer

Risken varierar med ålder och riskfaktorer

Norhammar et al. Diabetologia 2016;59:1692–1701

Trender i hjärtkärlkomplikationer i USA 1995 till 2015



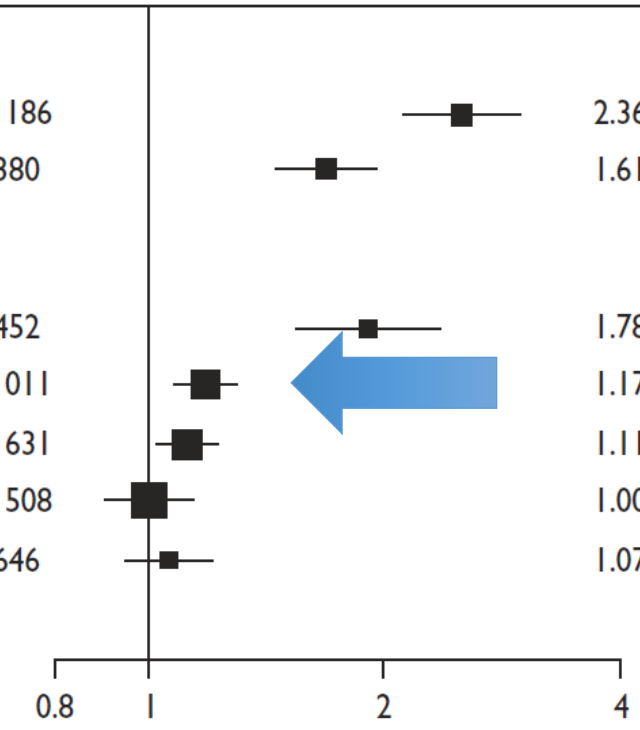
Ref: Virani SS et al. Heart Disease and Stroke Statistics 2020 Update, Circulation, 2020.

Risk för hjärtsjukdom även nedom diabetesgräns

N=279 290, (14 814 fall).

Justerade hazard ratios

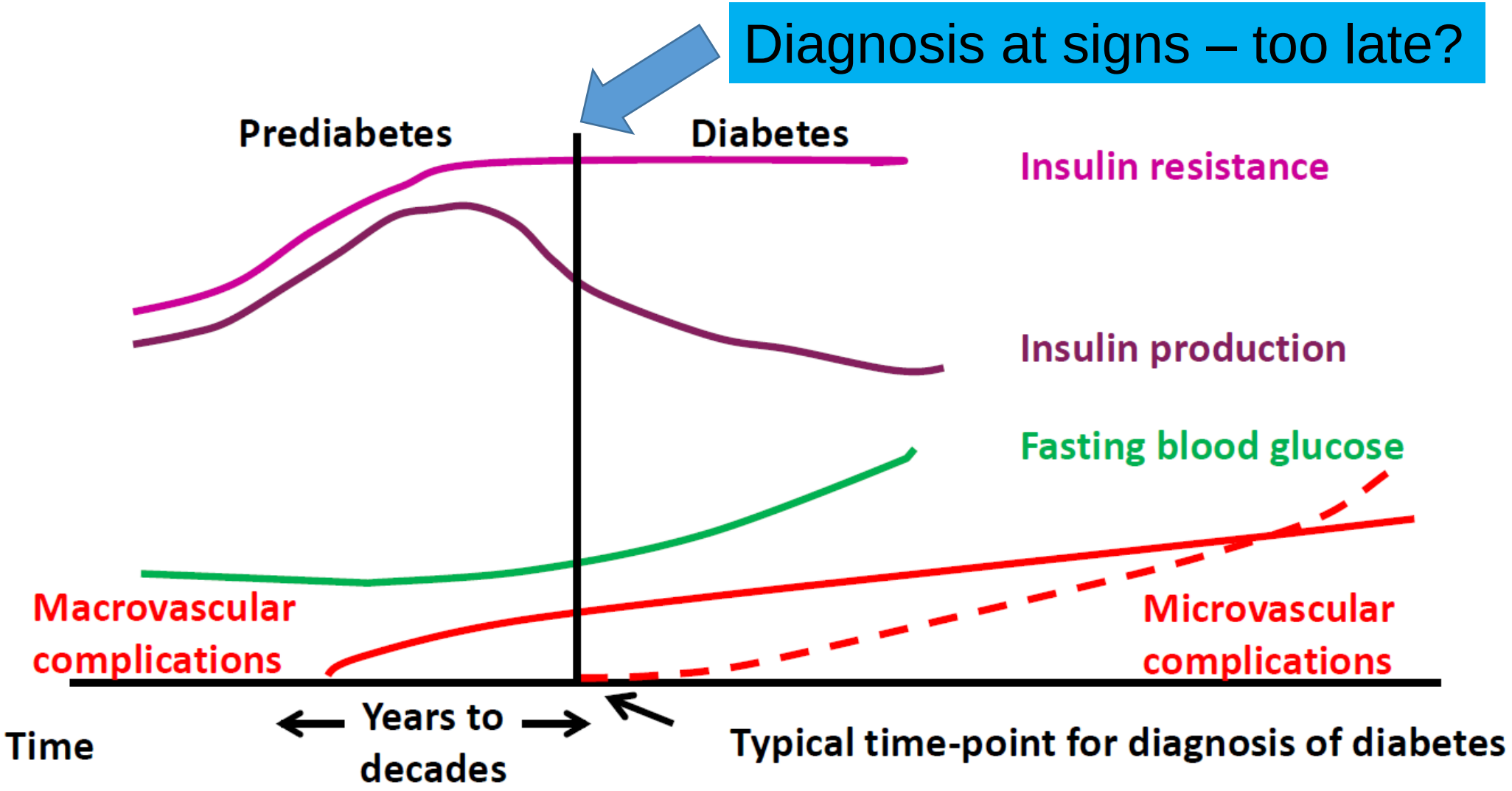
Fasting blood glucose concentration	Number of participants (%)	Number of cases	HR (95% CI)
Known diabetes at baseline			
≥7 mmol/L	13 122 (4.7%)	1 186	2.36 (2.02–2.76)
<7 mmol/L	5 807 (2.1%)	380	1.61 (1.42–1.82)
No known diabetes at baseline			
≥7 mmol/L	7 240 (2.6%)	452	1.78 (1.56–2.03)
6.1 to <7 mmol/L	19 607 (7.0%)	1 011	1.17 (1.08–1.26)
5.6 to <6.1 mmol/L	32 008 (11.5%)	1 631	1.11 (1.04–1.18)
3.9 to <5.6 mmol/L[a]	185 590 (66.5%)	9 508	1.00 (0.95–1.06)
<3.9 mmol/L	15 916 (5.7%)	646	1.07 (0.97–1.18)



Risken för hjärtsjukdom startar under diabetesgränsen

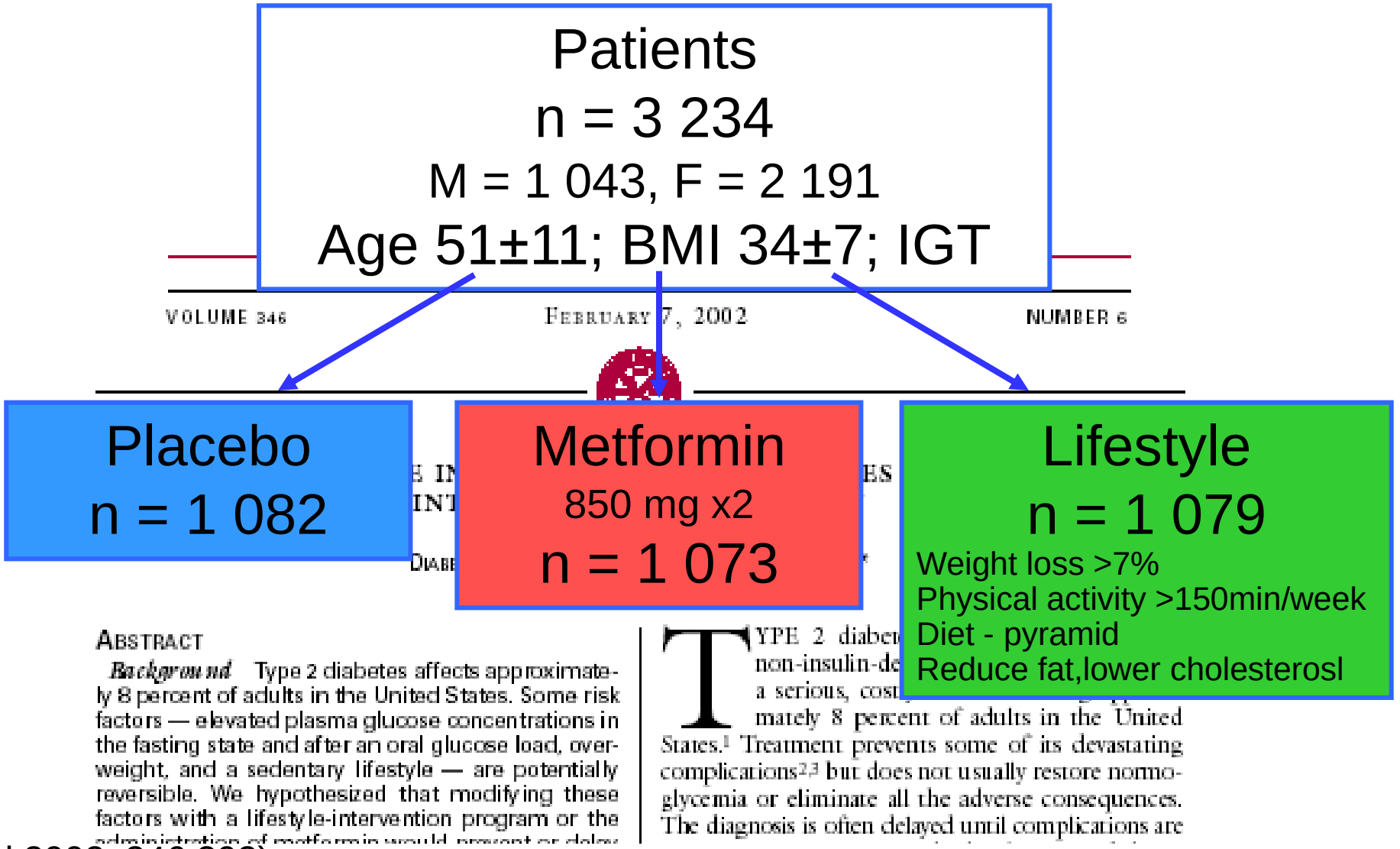
Ref; a collaborative meta-analysis of 102 prospective studies. Lancet 2010;375:22152222.

Development of type 2 diabetes



Laakso M, Kuusisto J. Eur Heart J Supplements 2003;5:B5-B13

Lifestyle and metformin prevents diabetes



VOLUME 346 FEBRUARY 7, 2002 NUMBER 6

ABSTRACT

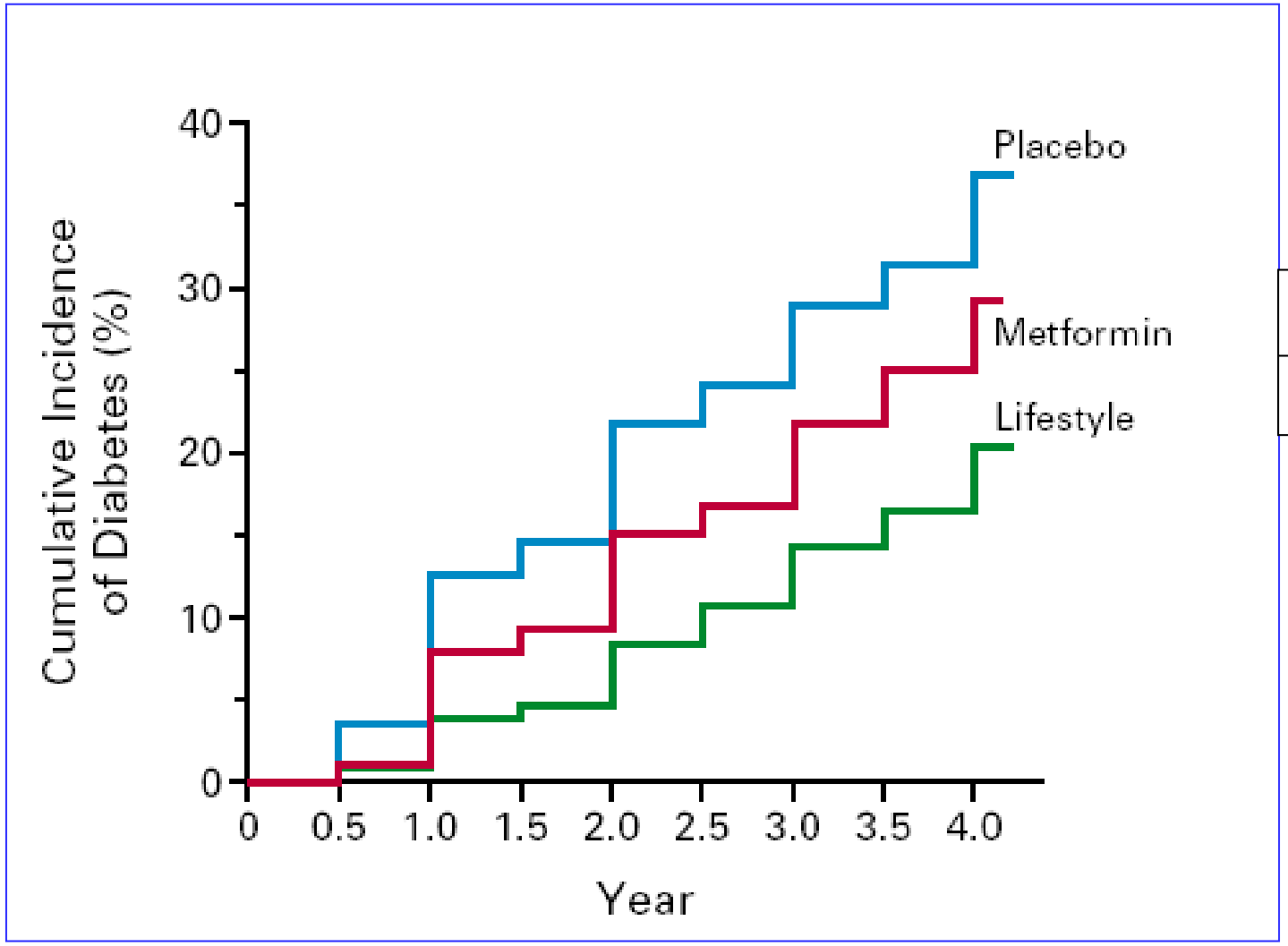
Background Type 2 diabetes affects approximately 8 percent of adults in the United States. Some risk factors — elevated plasma glucose concentrations in the fasting state and after an oral glucose load, overweight, and a sedentary lifestyle — are potentially reversible. We hypothesized that modifying these factors with a lifestyle-intervention program or the

TYPE 2 diabe
non-insulin-de
a serious, cost
mately 8 percent of adults in the United States.[1] Treatment prevents some of its devastating complications[2,3] but does not usually restore normoglycemia or eliminate all the adverse consequences. The diagnosis is often delayed until complications are

(DPP N Engl J Med 2002; 346:393)

Lifestyle and metformin prevents diabetes

Incidence of diabetes by OGTT



-31%

-58%

(DPP N Engl J Med 2002; 346:393)

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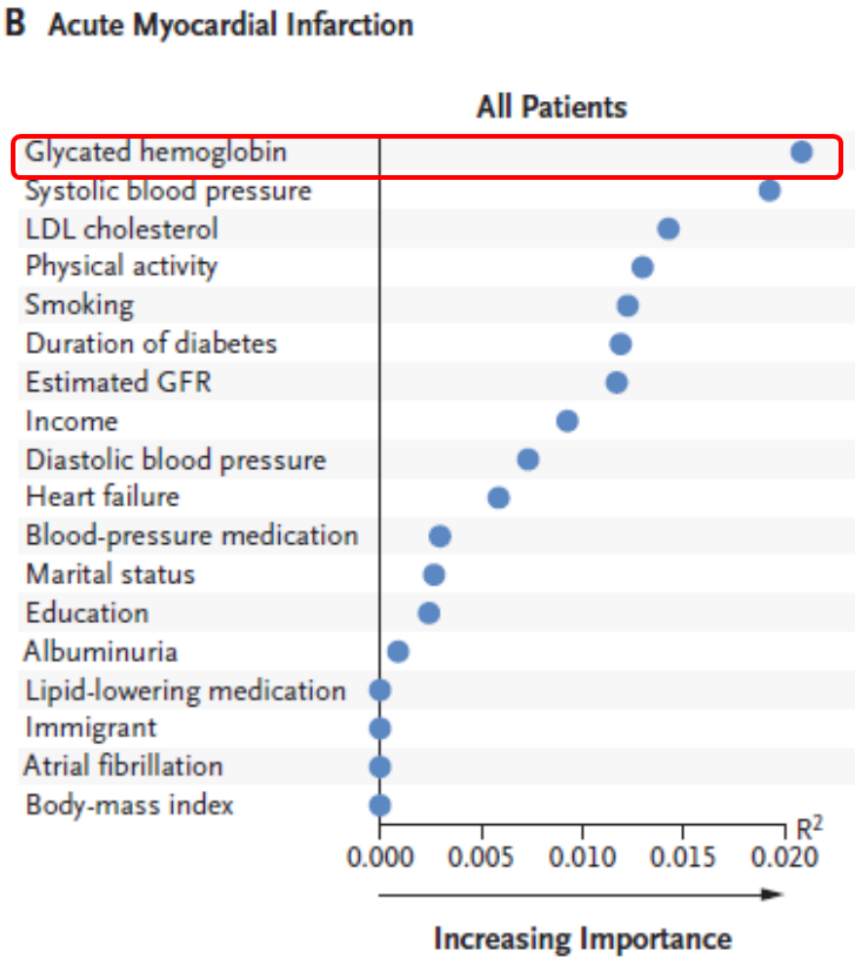
    SGLT-2i

    GLP-1 RA

NDR – riskfaktorer för hjärtinfarkt



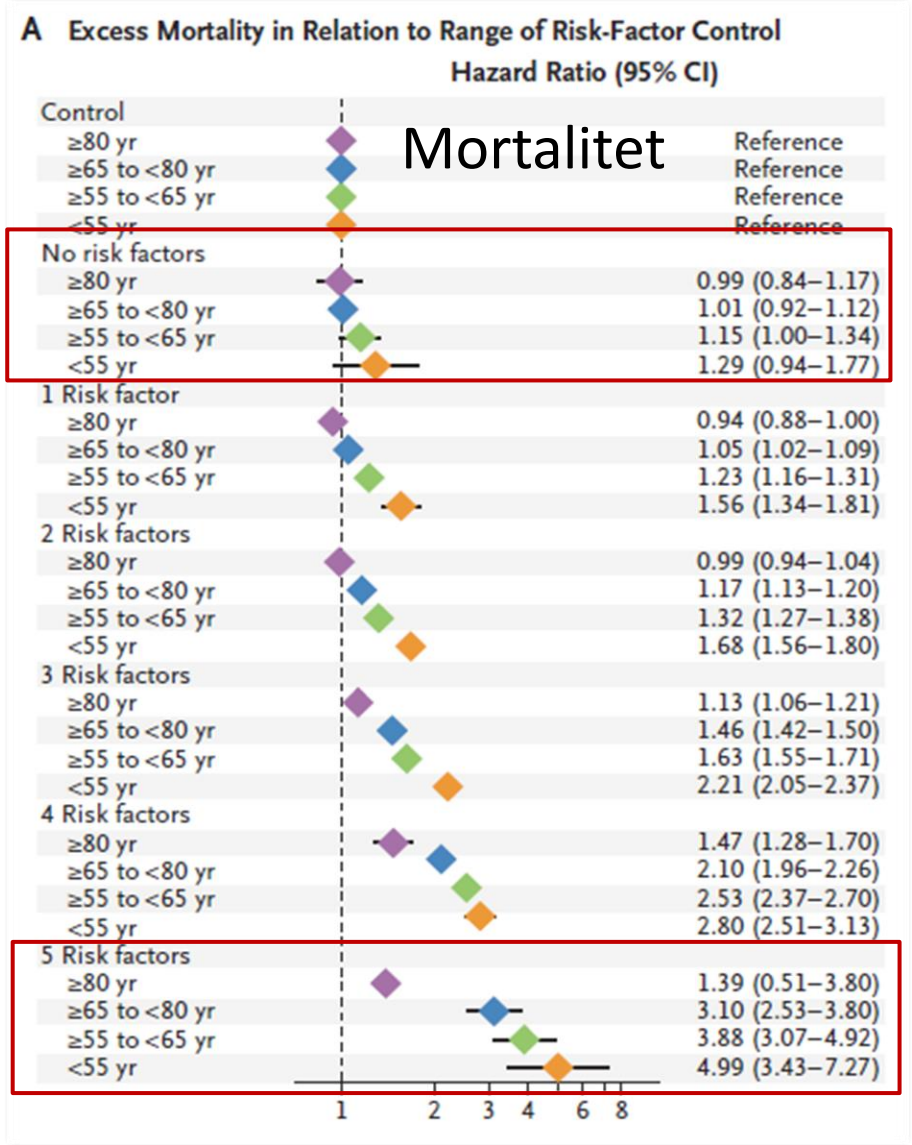
Glukoskontroll viktigt
men ej tillräckligt att kontrollera[1-8]

Rawshani A et al. Risk Factors, Mortality, and CardiovascularOutcomes in Patients with Type 2 Diabetes N Engl J Med 2018;379:633-44.DOI: 10.1056/NEJMoa1800256

1. UKPDS Group. Lancet. 1998;352(9131):854-65. 2. Holman RR et al. N Engl J Med. 2008;359(15):1577-89. 3. DCCT. N Engl J Med 1993;329(14):977-86. 4. Nathan DM, et al. N Engl J Med. 2005;353(25):2643-53. 5ACCORD Study Group. N Engl J Med. 2008;358(24):2545-59. 6. ACCORD Study Group. N Engl J Med. 2010;363(3):233-44. 7. ADVANCE Collaborative Group. N Engl J Med. 2008;358(24):2560-72. 8. Duckworth W et al N Engl J Med. 2009;360(2):129-39

Prevention lönar sig - betydelse av god riskfaktorkontroll

T2DM Swedish diabetes registry 1998-2012, uppföljning 5,7 år, risk för död
n=271,174, Kontroller n=1,355,870



Fem riskfaktorer

HbA1c, LDL, albuminuria, rökning, BP

Om alla fem välkontrollerade - låg risk!

Preventiv behandling viktigt !!!
Tidigt!

Rawshani A, et al N Engl J Med 2018;379.

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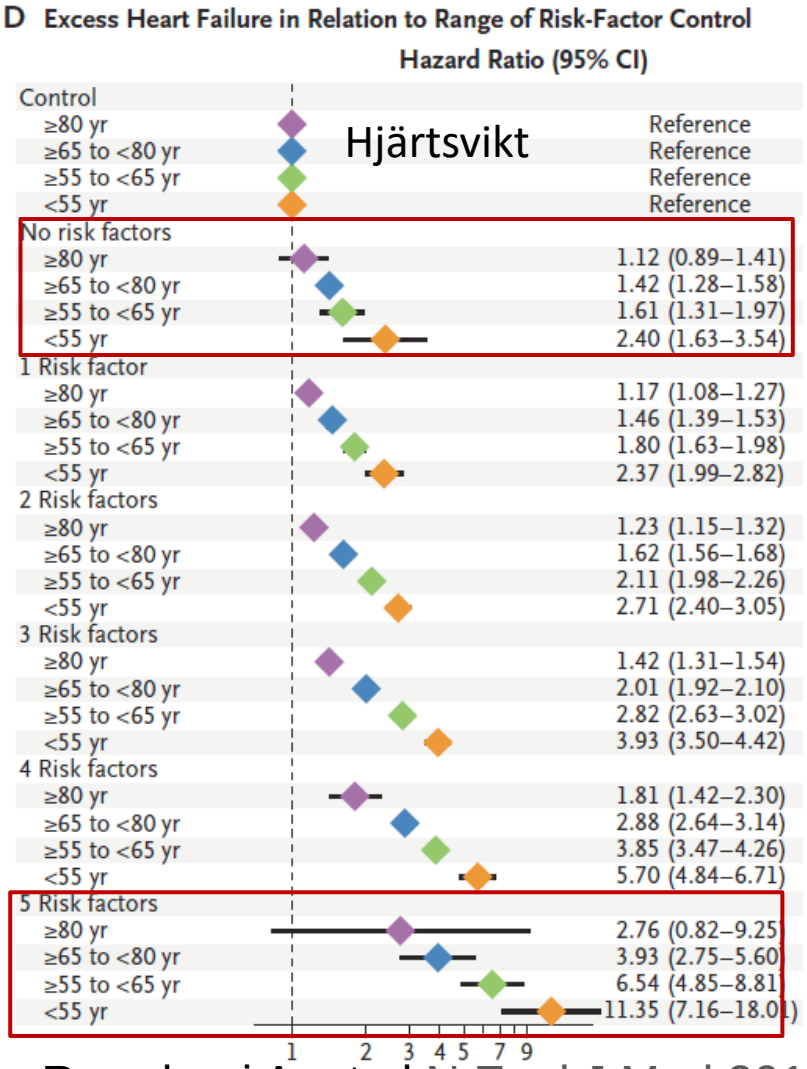
Prevention lönar sig – men finns kvarstående ökad risk för hjärtsvikt

T2DM Swedish diabetes registry, 1998-2012, follow-up 5.7 years
n=271,174 controls 1,355,870



Rawshani A, et al N Engl J Med 2018;379.

Fem riskfaktorer

HbA1c, LDL, albuminuria, rökning, BP

Risk för hjärtsvikt

Ingen riskfaktor **HR 1.12 up to 2.40**

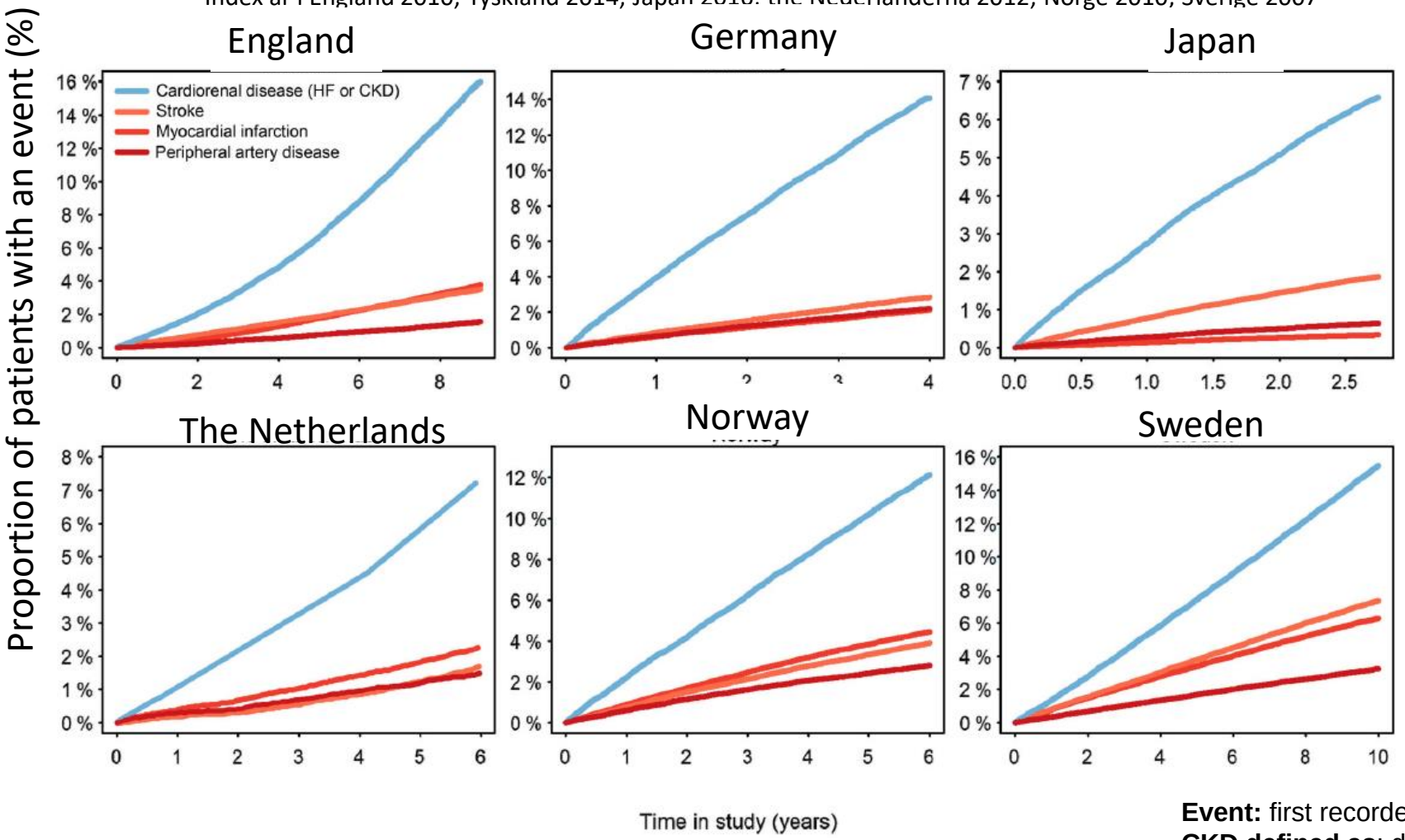
5 riskfaktorer **HR 2.76 up to 11.35**

Prevention viktigt!
Men ännu ej tillräckligt för att hindra hjärtsvikt!

Hjärtsvikt och njursvikt är idag första kardiovaskulära presentationen vid typ 2 diabetes

N=705 000 Hjärtkärlfriska med typ 2 diabetes

Index år i England 2010; Tyskland 2014; Japan 2016: the Nederländerna 2012; Norge 2010; Sverige 2007

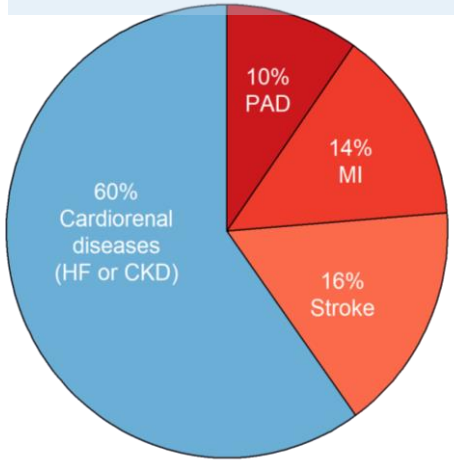


Birkeland K et al. Diabetes Obes Metab. 2020;22:1607–1618.

Event 18% (n=137 081)

CKD	36%	60%
HF	24%	
Stroke	16%	
MI	14%	
PAD	10%	

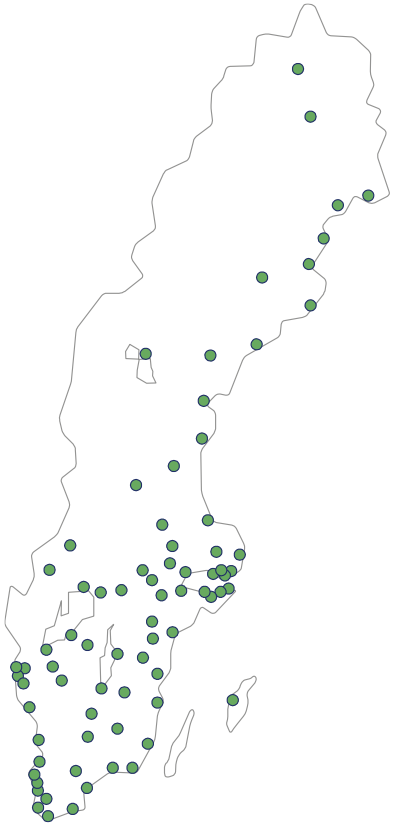
Most frequent CKD+HF
Across all countries

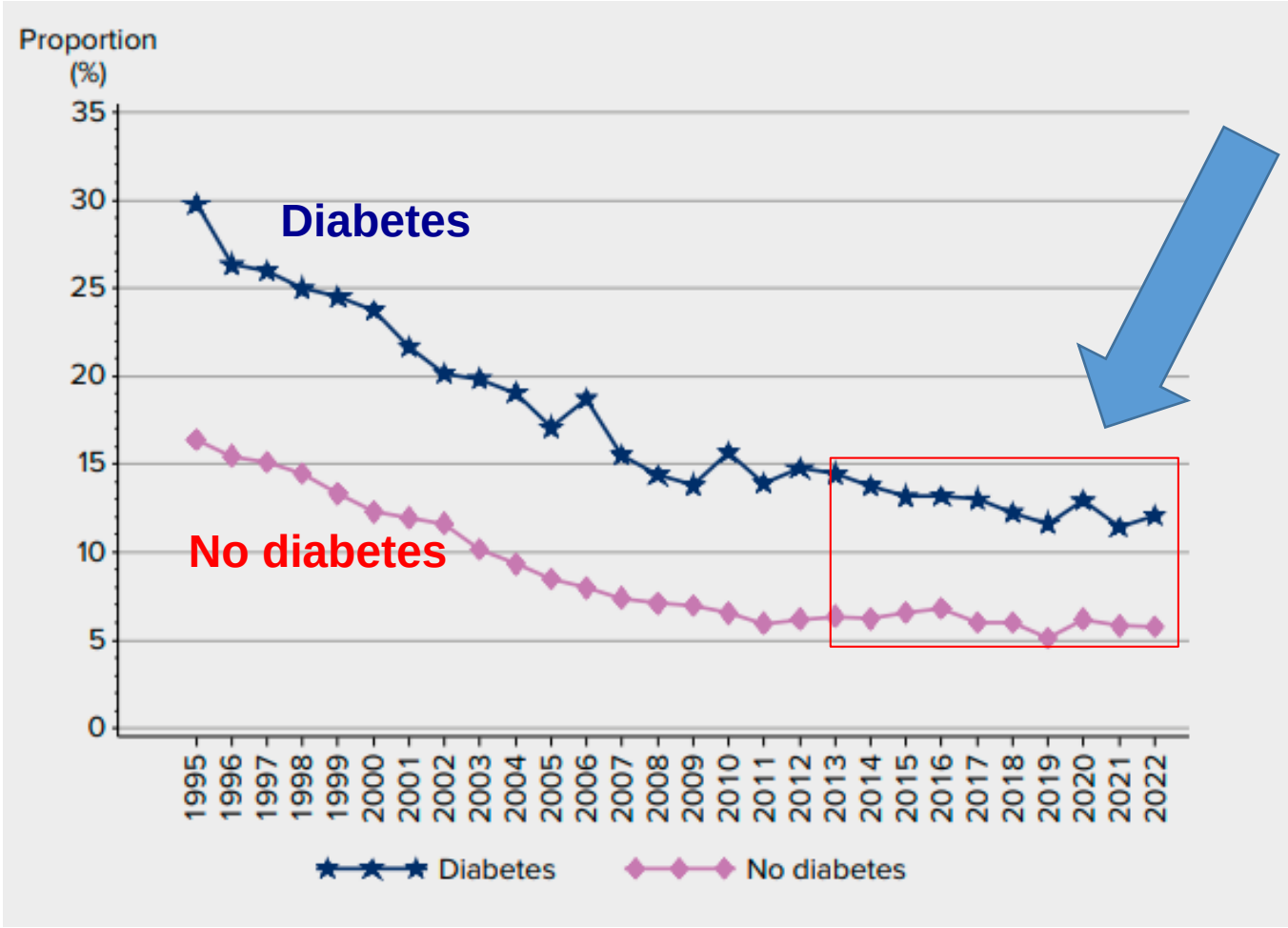


Event: first recorded hospitalised (in or out visit)
CKD defined as; diabetic nephropathy, acute kidney failure, CKD, unspecified kidney disease, hypertensive kidney failure and dialysis

Prognos
1-årsdödlighet efter hjärtinfarkt

The SWEDEHEART registret, 1-årsdödligeht efter AMI 1995-2022





Mer än 50% minskad dödlighet efter hjärtinfarkt, efter justering

Finns en kvarstående överrisk vid diabetes!

Annual report Swedeheart 2023

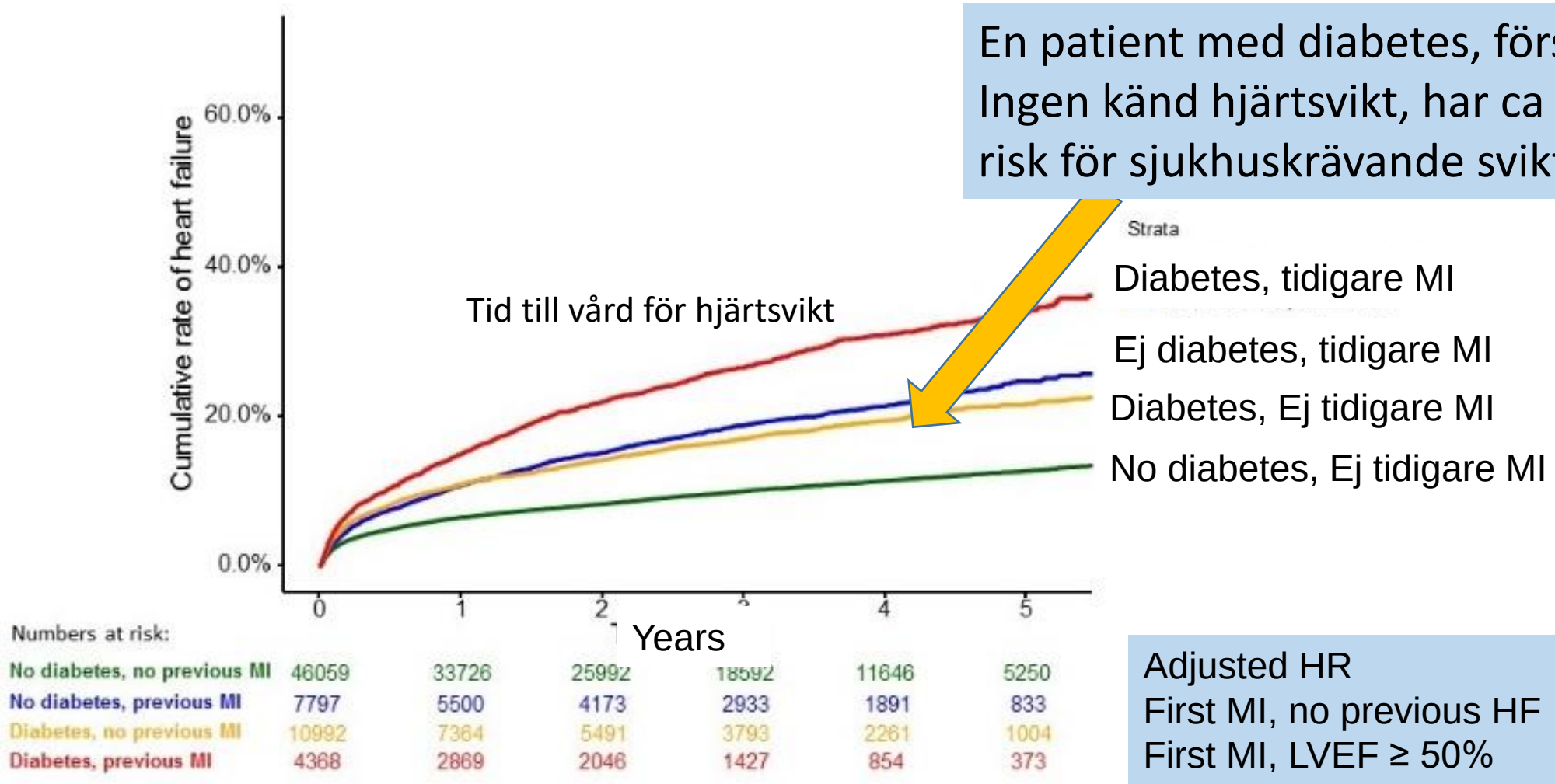
Annual report Swedeheart 2023
Ritsinger V et al EHJ prevention 2020

Hur är långtidsrisken efter hjärtinfarkt?

Hög risk för hjärtsvikt efter AMI om diabetes

73 959 patienter med och utan diabetes åren 2012-2017 med AMI I SWEDEHEART-registret

En patient med diabetes, första hjärtinfarkt
Ingen känd hjärtsvikt, har ca 50% ökad risk för sjukhuskrävande svikt



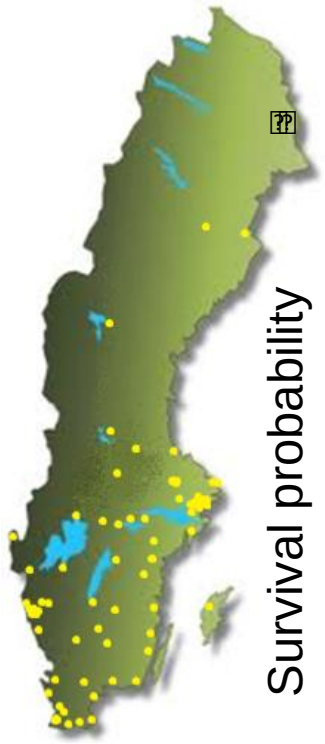
Adjusted HR
First MI, no previous HF 1.48 [1.40-1.57]
First MI, LVEF ≥ 50% 1.56 [1.39-1.76]

Ritsinger et al, EHJ prevention 2020.

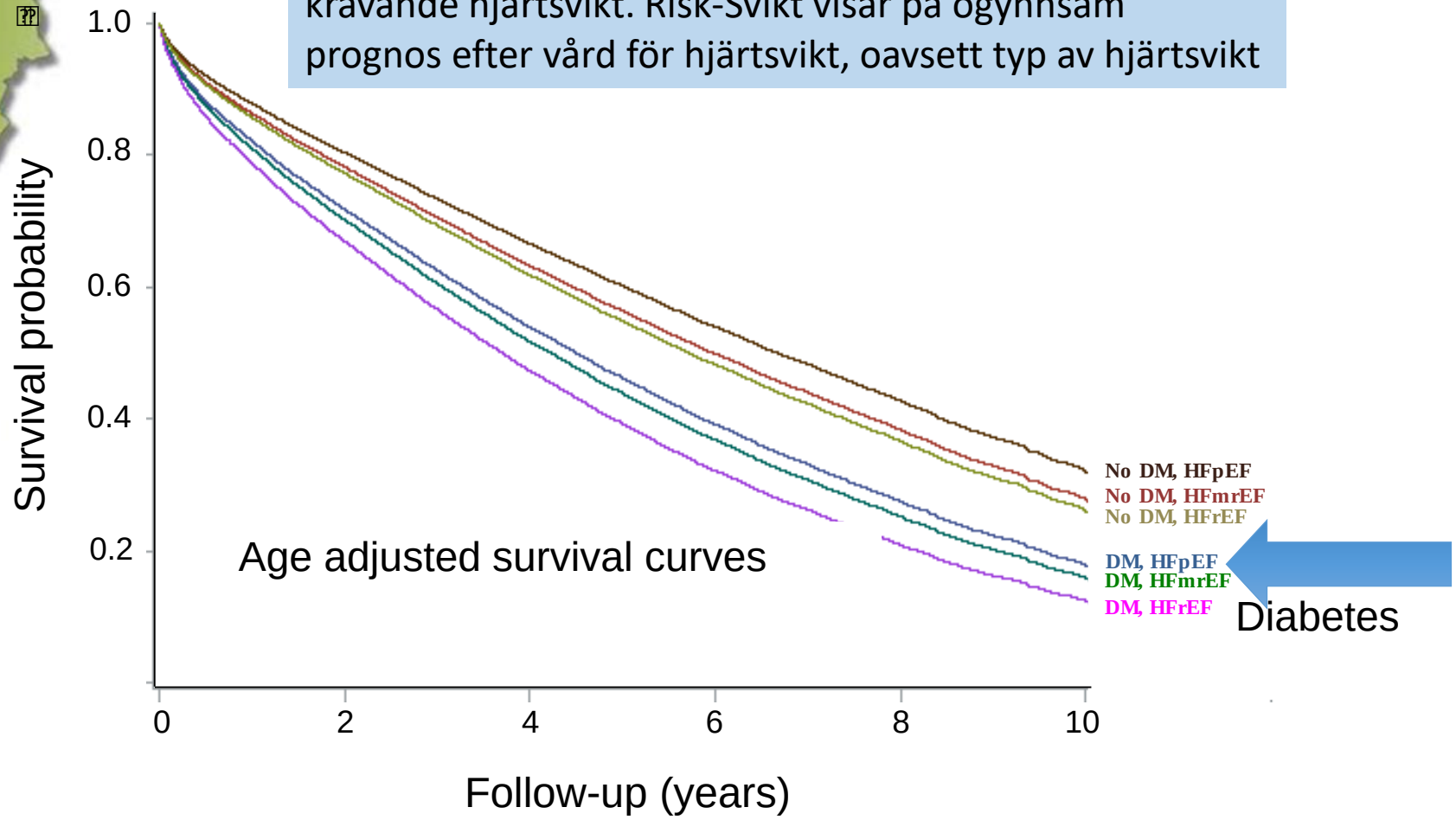
Still dismal survival after HHF in Sweden 2003-2011

N=30 606, Diabetes in 25% (n=7487), Swedish Heart Failure registry

HFmrE; EF=40-50%, HFrEF;EF<40%, HFpEF; EF≥50%



Viktigt att skydda vår patient från sjukhus-krävande hjärtsvikt. Risk-Svikt visar på ogynnsam prognos efter vård för hjärtsvikt, oavsett typ av hjärtsvikt

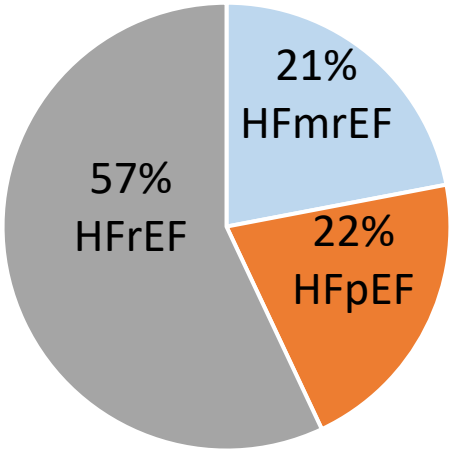


HFpEF
DM vs. No DM
Adj HR 1.32 (1.22-1.43)

HFmrEF
DM vs. No DM
Adj HR 1.51 (1.39-1.65)

HFrEF
DM vs. No DM
Adj HR 1.46 (1.39-1.54)

Proportion HF type in DM



Johansson Isabelle et al; Diab Vas Dis Res 2018

Ritsinger et al. Cardiovascular Diabetology (2024) 23:290
https://doi.org/10.1186/s12933-024-02365-1

Cardiovascular Diabetology

RESEARCH Open Access

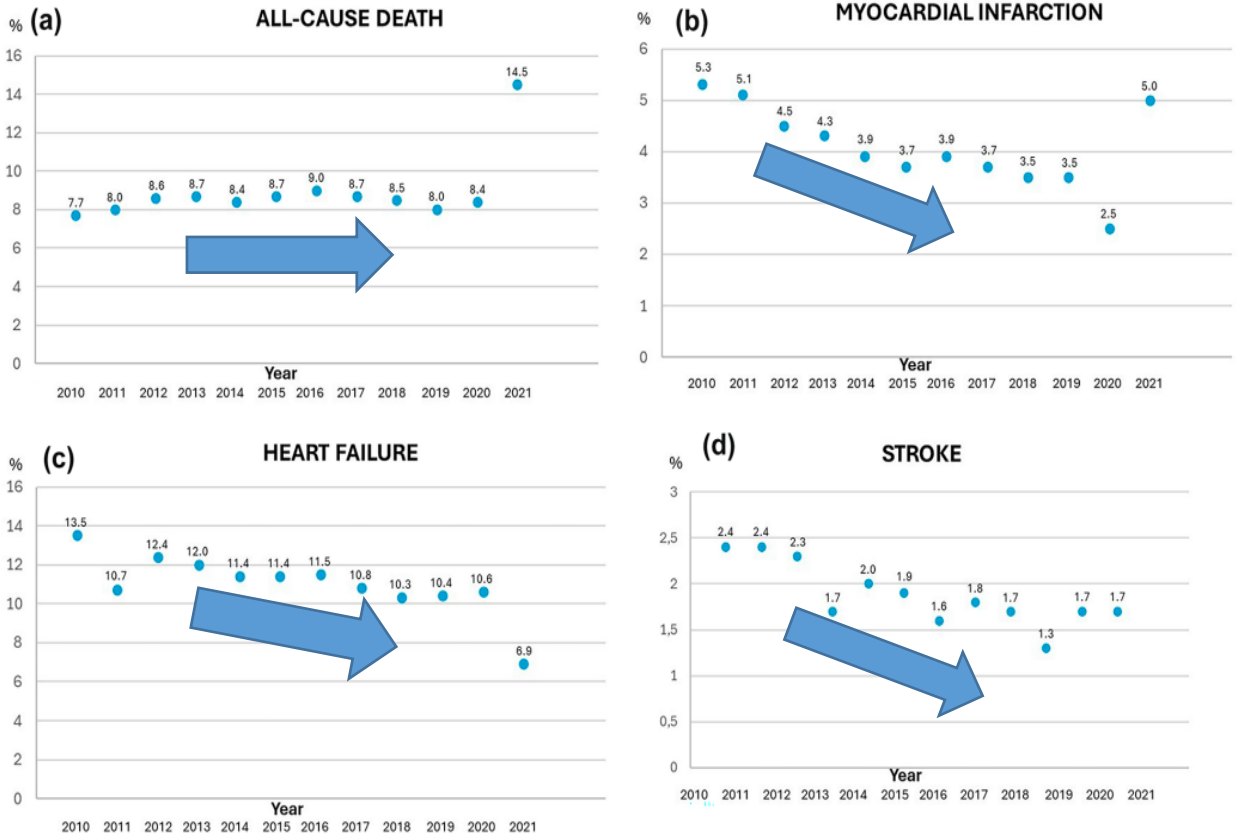
Trends in prognosis and use of SGLT2i and GLP-1 RA in patients with diabetes and coronary artery disease

Viveca Ritsinger[1,2*], Kamila Avander[3], Bo Lagerqvist[4], Pia Lundman[3] and Anna Norhammar[1,5]

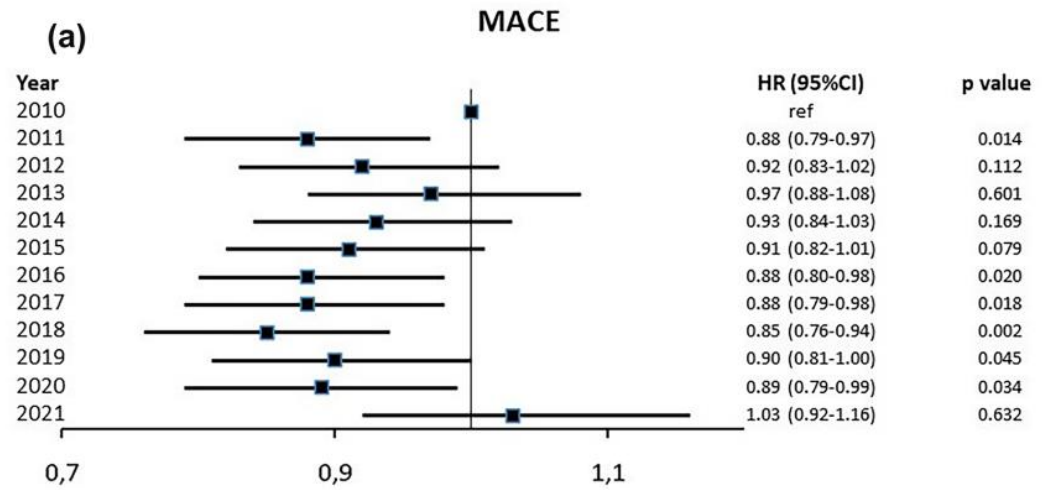
Yearly event rate after CVD –improves

SWEDEHEART , 2010 to 2021, n=38,671 with DM
31% stable CAD, 69% STEMI/nonSTEMI infarction

Reduction in MI, Stroke, somewhat in HF, death stable



Yearly MACE reduced vs. yr 2010



Ritsinger et al. Cardiovascular Diabetology (2024) 23:290

2021 - Covid-19 interfere

Ritsinger et al. Cardiovascular Diabetology (2024) 23:290
https://doi.org/10.1186/s12933-024-02365-1

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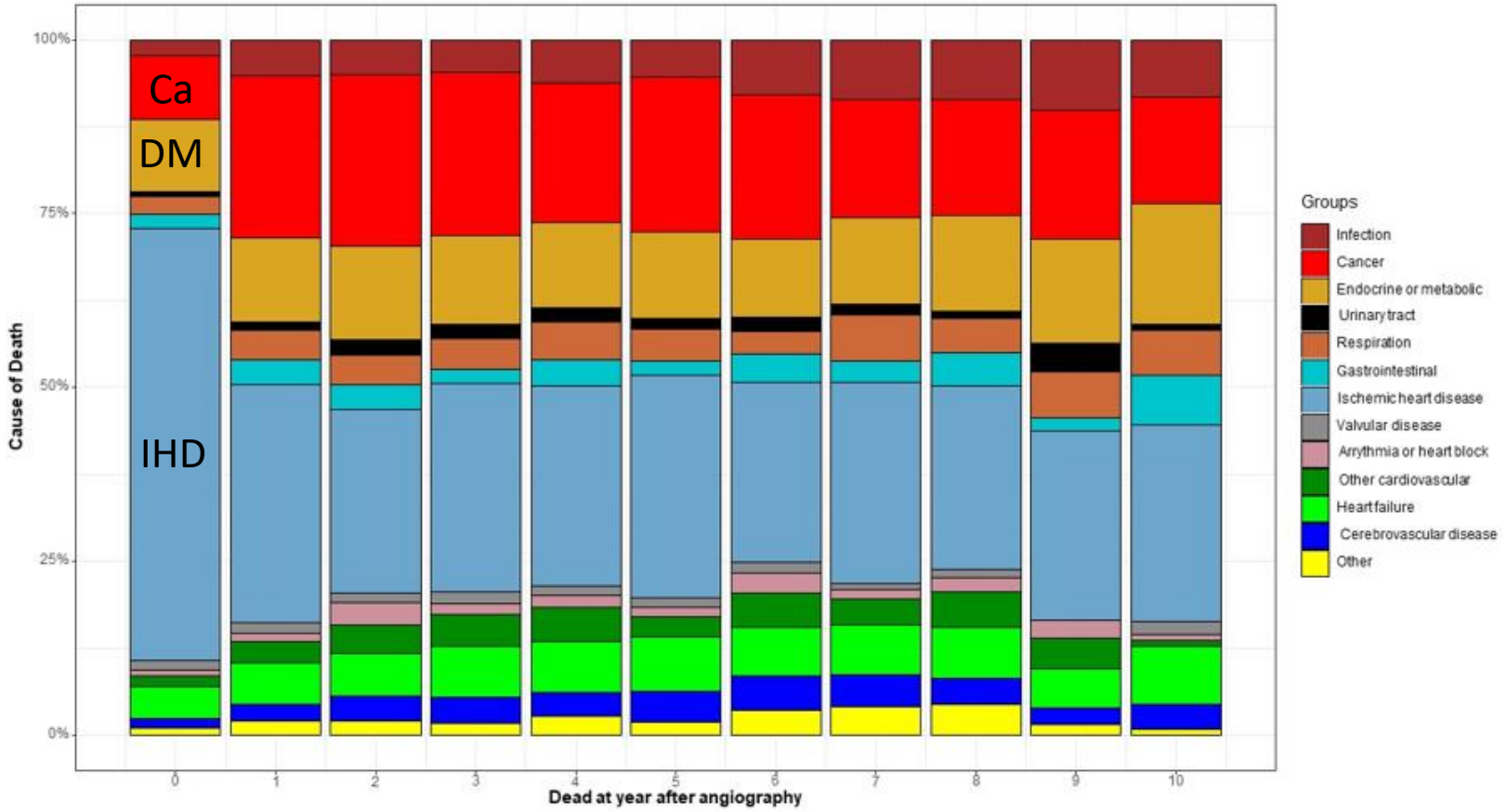
Viveca Ritsinger[1,2*], Kamila Avander[3], Bo Lagerqvist[4], Pia Lundman[3] and Anna Norhammar[1,5]

Mortality cause after CVD in diabetes

SWEDEHEART, 2010 to 2021, n=38,671 with DM
31% stable CAD, 69% STEMI/nonSTEMI infarction

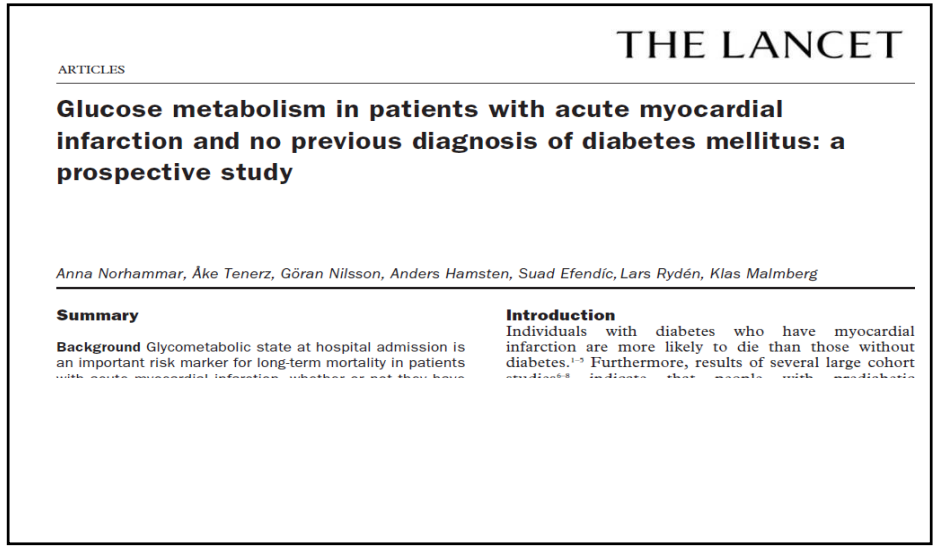
Mortality cause first year 60% IHD, second year cancer+ endocrine catches up



Ritsinger et al. Cardiovascular Diabetology (2024) 23:290

Glukosstörningar vanligt
≈ 60% av patienter med hjärtinfarkt om OGTT

OGTT 4-5 dagar efter infarkt



THE LANCET

ARTICLES

Glucose metabolism in patients with acute myocardial infarction and no previous diagnosis of diabetes mellitus: a prospective study

Anna Norhammar, Åke Tenerz, Göran Nilsson, Anders Hamsten, Suad Efendic, Lars Rydén, Klas Malmberg

Summary

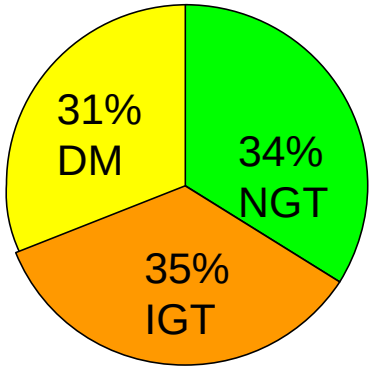
Background Glycometabolic state at hospital admission is an important risk marker for long-term mortality in patients

Introduction

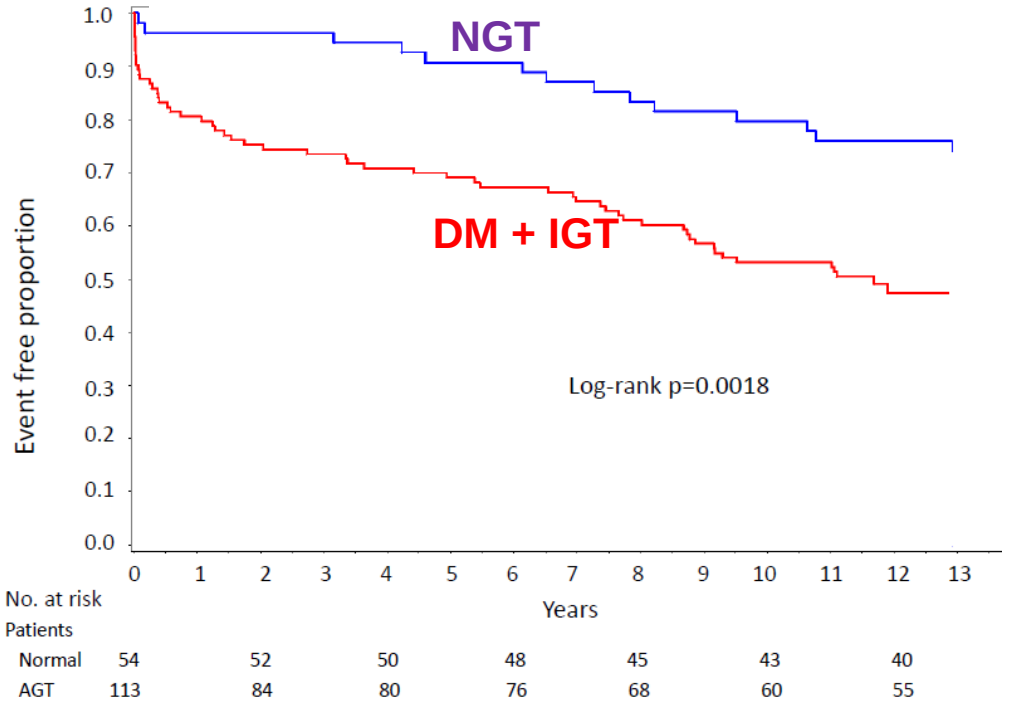
Individuals with diabetes who have myocardial infarction are more likely to die than those without diabetes.[1-3] Furthermore, results of several large cohort

Norhammar et al Lancet 2002; 359: 2140

60%



10 års uppföljning
CV event; CV death, MI, stroke, heart failure

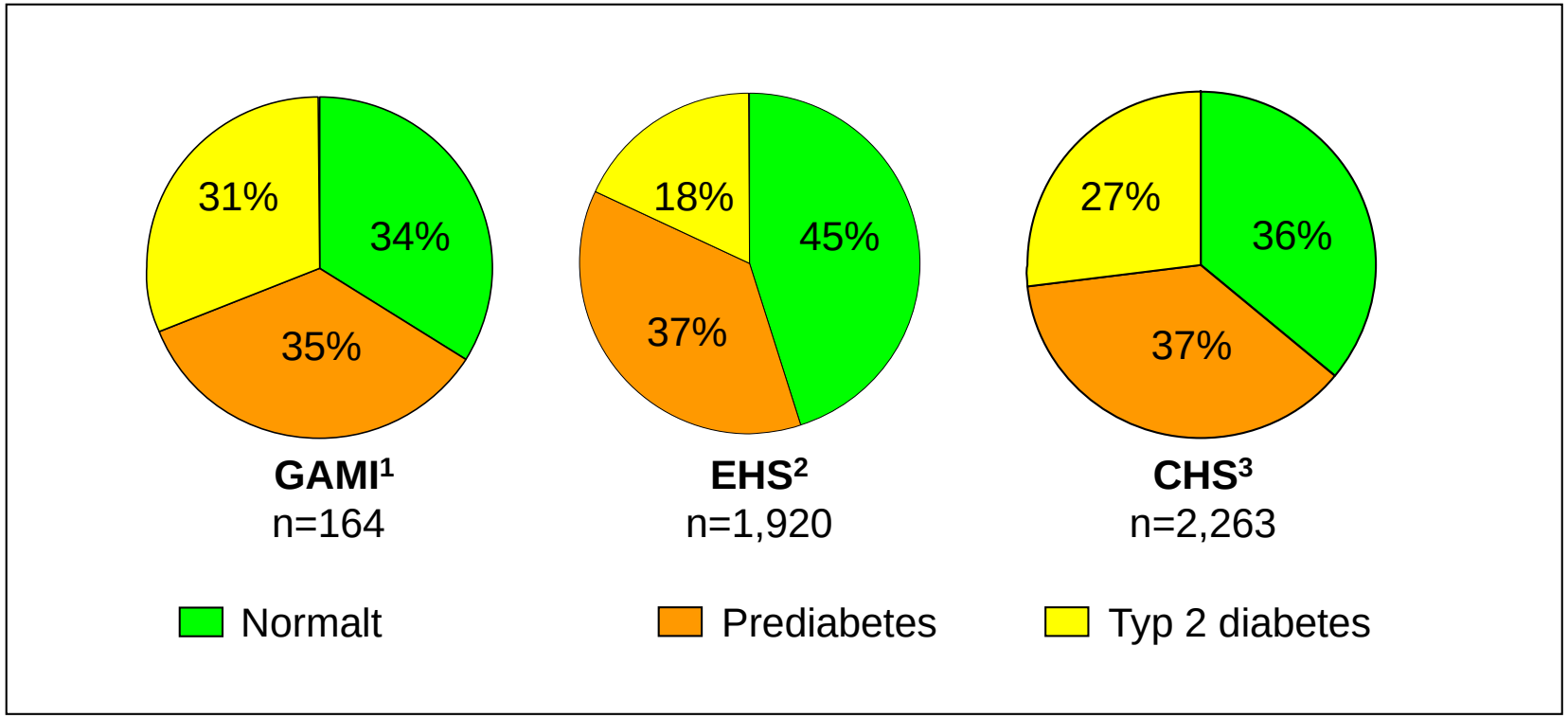


Ritsinger et al Diab Vas Dis Res 2014

AGT 2.30; 1.24-4.25, p=0.008

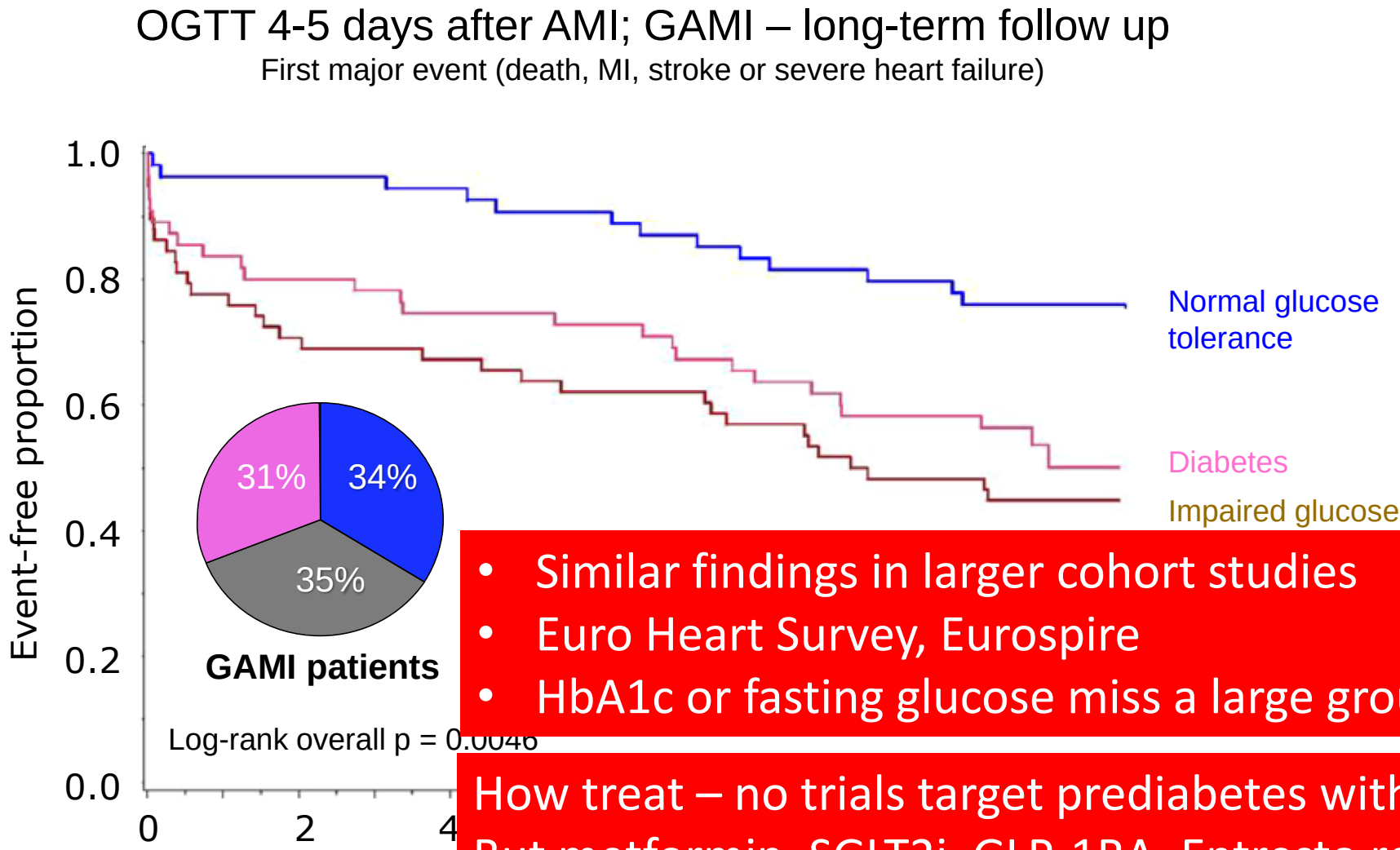
Glucose disturbances are common (60-65%) in AMI

Repeated results in Sweden, Europe, China…….



(1. Norhammar et al. Lancet. 2002;359:2140–4)
(2. Bartnik et al. Eur Heart J. 2004;25:1880–90)
(3. Hu et al. Eur Heart J. 2006;27:2573–9)

Newly detected glucose abnormalities – at CV risk



- Similar findings in larger cohort studies
- Euro Heart Survey, Eurospire
- HbA1c or fasting glucose miss a large group

How treat – no trials target prediabetes with CAD
But metformin, SGLT2i, GLP-1RA, Entresto reduces glucose levels after AMI or HF with prediabetes

GAMI: Glucose abnormalities in patie

Screening for diabetes – ESC 2023 diabetes guidelines

Recommendation Table 1 — Recommendations for diagnosing diabetes

Recommendations	Class[a]	Level[b]
Screening for diabetes is recommended in all individuals with CVD,[c] using fasting glucose and/or HbA1c.[5–7,36,37,39]	I	A
It is recommended that the diagnosis of diabetes is based on HbA1c and/or fasting plasma glucose, or on an OGTT if still in doubt.[d,5–8,10,11]	I	B

1. HbA1c/faste-glukos
2. OGTT om tveksamt resultat

Table 5 Revised concepts 2023 Guidelines

Focus of the Guidelines is prevention and management of cardiovascular disease in diabetes
The aspect of pre-diabetes is no longer covered in the current Guidelines.

2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes, EHJ 2023

2023 ESC guidelines on diabetes
Diagnostic criteria by WHO and ADA

Table 6 Biochemical diagnostic criteria for diabetes and pre-diabetes according to the World Health Organization and the American Diabetes Association

Glycaemic marker	WHO criteria (2011, 2019)[5,6]	ADA criteria (2021)[7]
	Diabetes	
FPG	≥7.0 mmol/L (≥126 mg/dL)	
2hPG (OGTT)	≥11.1 mmol/L (≥200 mg/dL)	
HbA1c	≥6.5% (≥48 mmol/mol)	
RPG	≥11.1 mmol/L (≥200 mg/dL)	
	Pre-diabetes	
FPG	6.1–6.9 mmol/L (110–125 mg/dL)	5.6–6.9 mmol/L (100–125 mg/dL)
2hPG (OGTT)	7.8–11.0 mmol/L (140–199 mg/dL)	
HbA1c	6.0–6.4% (42–47 mmol/mol)	5.7–6.4% (39–47 mmol/mol)

ADA, American Diabetes Association; 2hPG, 2 h plasma glucose; FPG, fasting plasma glucose; HbA1c, glycated haemoglobin; RPG, random plasma glucose; OGTT, oral glucose tolerance test; WHO, World Health Organization.

2023 -ESC guidelines algorithm diagnosis diabetes and prediabetes

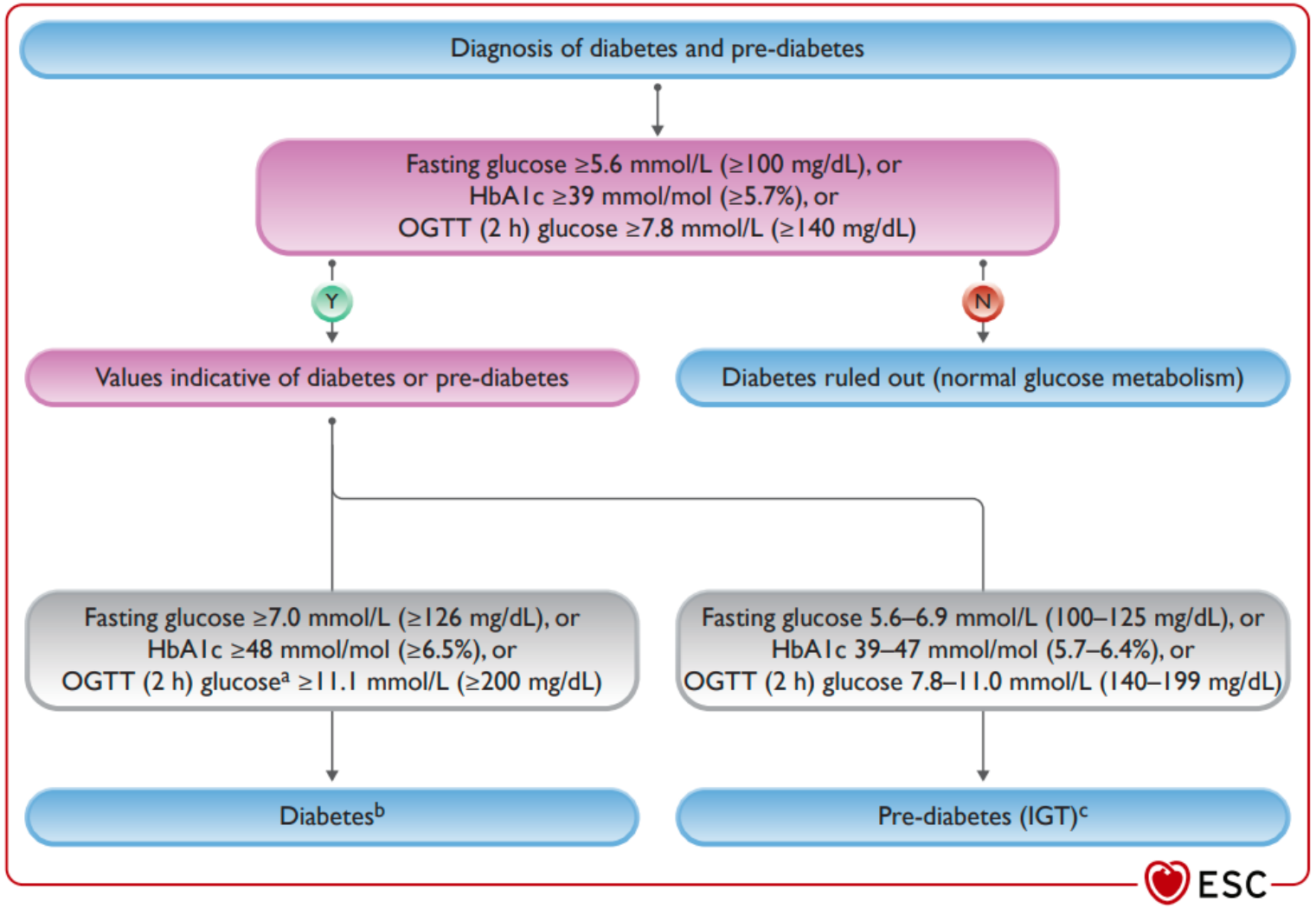


Figure 2 Diagnosis of diabetes and pre-diabetes. HbA1c, glycated haemoglobin; IGT, impaired glucose tolerance; OGTT, oral glucose tolerance test. [a]Rule out stress hyperglycaemia (often manifests as elevated glucose and normal HbA1c). [b]In the presence of symptoms, a single test is enough; in the absence of symptoms, two abnormal tests are required to make the diagnosis. [c]American Diabetes Association criteria are used in this scheme for the diagnosis of pre-diabetes.

ADA criteria – very low fasting and HbA1c cutoffs!

ESC guidelines on prediabetes screening 2023

Table 5 Revised concepts 2023 Guidelines

Focus of the Guidelines is prevention and management of cardiovascular disease in diabetes
The aspect of pre-diabetes is no longer covered in the current Guidelines.
Cardiovascular risk assessment in diabetes
For patients without ASCVD or severe target-organ damage, a novel T2DM-specific risk score (SCORE2-Diabetes) is introduced.
CV risk categories in T2DM are now defined based on the presence of ASCVD or severe target-organ damage or the 10-year CVD risk using SCORE2-Diabetes.

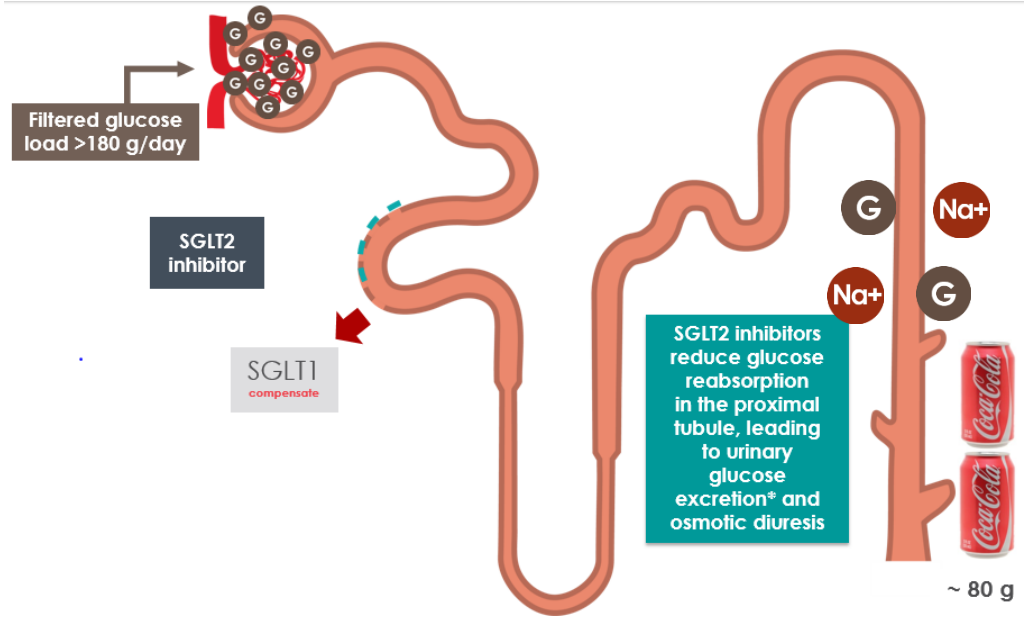
Diabetes och hjärtkärlsjukdom

1. Kardiovaskulär risk – trender och dagsläget
2. Betydelsen av riskfaktor kontroll
3. Kvarstående kardiovaskulära problem
4. Nya möjligheter – kardiovaskulära utfallsstudier

   SGLT-2i

SGLT-2i and GLP1 RA – have different mechanism

SGLT-2i increases glucose and sodium excretion to urine



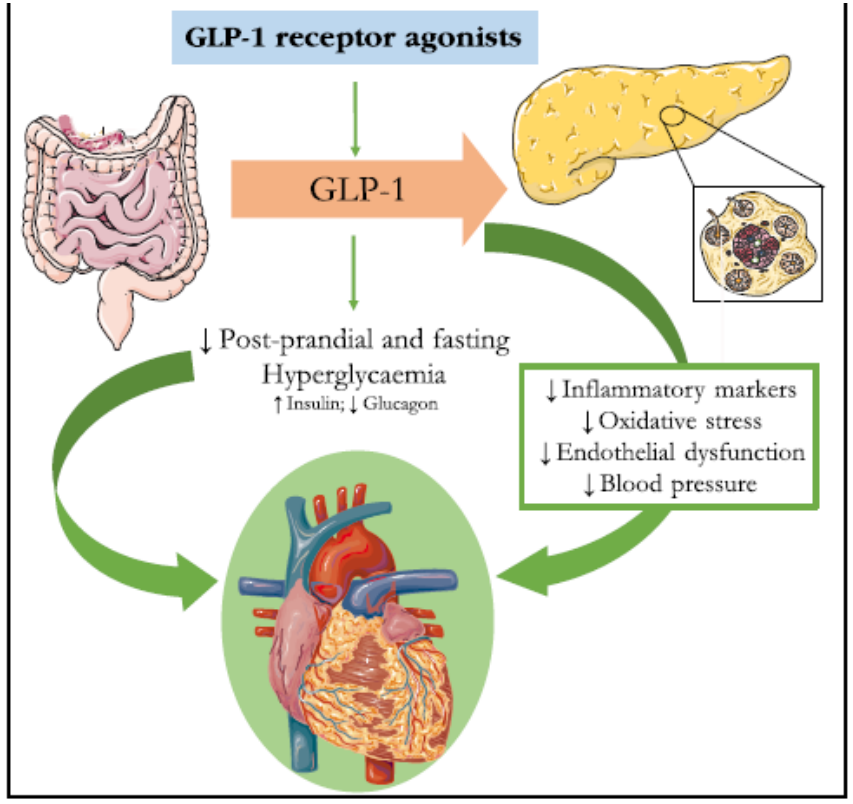
Adopted and By courtesy from BI

Bakris GL, et al. *Kidney Int*. 2009;75;1272–1277.

Ferranini E, Cell 2017 review

Hiddo J.L. Heerspink et al review; Kidney International (2018) 94, 26–39

GLP1 RA stimulates insulin and inhibits glucagon secretion



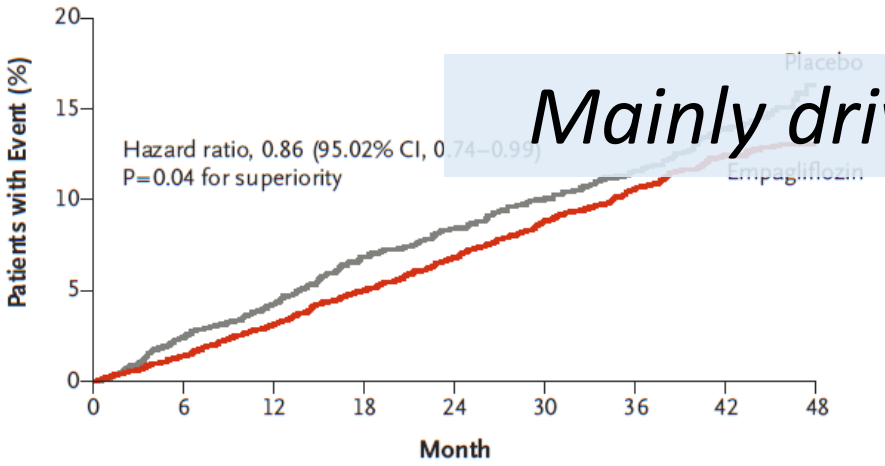
Lotte Bjerre Knudsen Frontiers in Endocrinology April 2019

Daniel Drucker Diabetes 2018;67:1710–1719

MACE (primary endpoint- CV-death/MI/Stroke)

EMPAREG OUTCOME

N= 7020, 100% CVD



HR 0.86 (0.74-0.99)

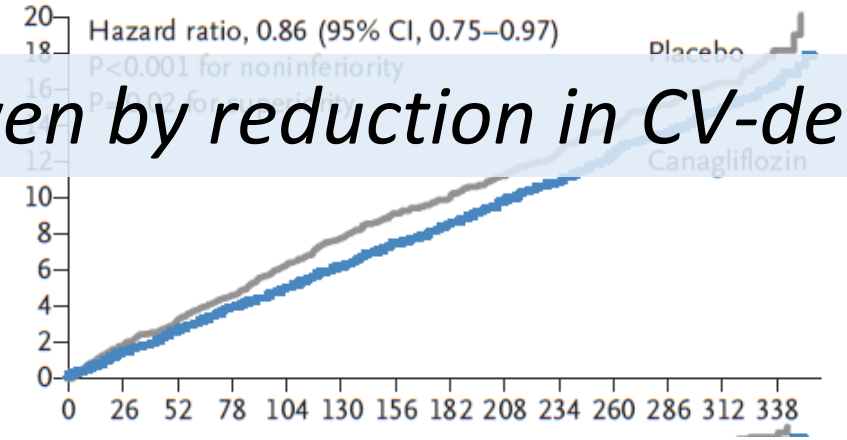
Superiority p=0.04

Zinman et al. N Engl J Med 2015; 373:2117

Mortality HR 0.68 (0.57-0.82)

CANVAS Program

N= 10142, 66% CVD



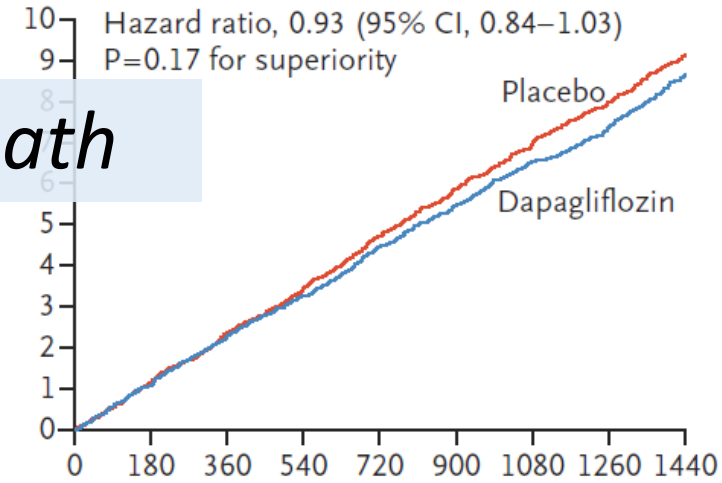
HR 0.86 (0.75-0.97)

Superiority p=0.02

Neal B et al. N Engl J Med. 2017

DECLARE TIMI-58

N= 17160, 40% CVD



HR 0.93 (0.84-1.03)

Superiority p=0.17

Wiviott SD et al. N Engl J Med. 2018 Nov.10

Mainly driven by reduction in CV-death

Jämförelser mellan olika studier ska göras med försiktighet pga skillnader i studiedesign, population och inklusion/exklusions kriterier

Hospitalisation for heart failure and renal events

(Renal events; renal function, renal transplantation, renal death)

	Heart failure	Renal events
EMPAREG OUTCOME N= 7020, 100% CVD	**HR 0.66** (0.50-0.85)	**HR 0.61** (0.53-0.70)
CANVAS Program N= 10142, 66% CVD	**HR 0.67** (0.52-0.87)	**HR 0.60** (0.47-0.77)
DECLARE TIMI-58 N= 17160, 40% CVD	**HR 0.73** (0.61-0.88)	**HR 0.53** (0.43-0.66)

Consistent robust significant reductions in HF and renal events

Ftichett D European Heart Journal (2016) 37, 1526

Wanner N Engl J Med 2016;375:323-34.

Neal B et al. N Engl J Med. 2017

Wiviott SD et al. N Engl J Med. 2018 Nov.10

Jämförelser mellan olika studier ska göras med försiktighet pga skillnader i studiedesign, population och inklusion/exklusions kriterier

SGLT2-hämmare - ny hjärtsvikt medicin vid HFrEF och HFpEF, med eller utan diabetes

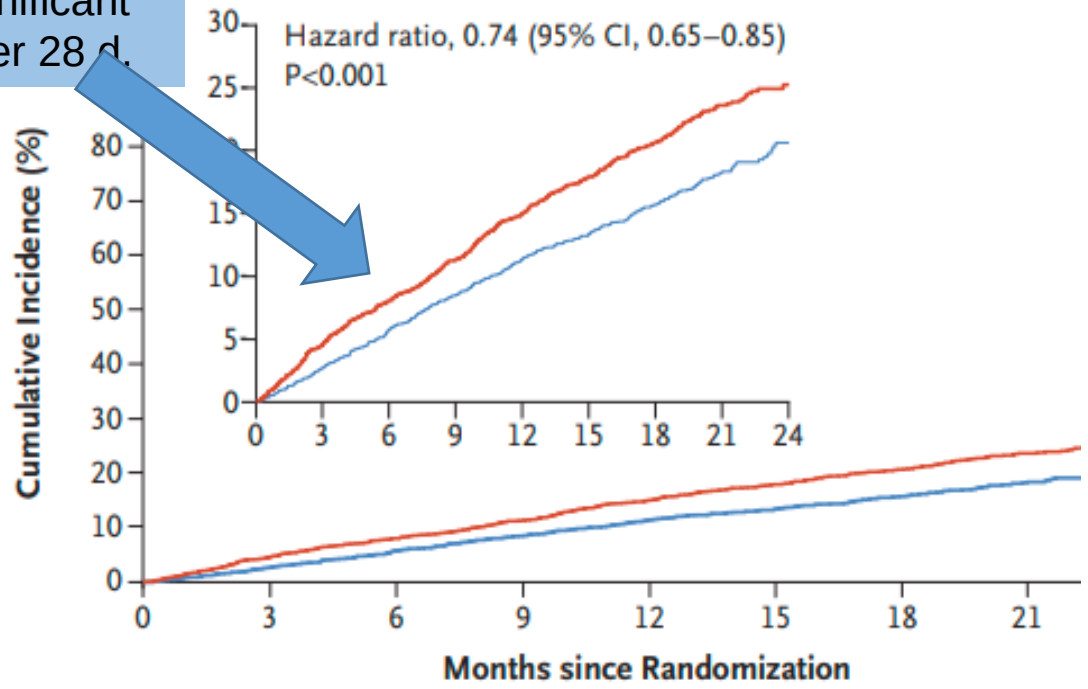
Chronic HFrEF; primary outcome

DAPA-HF 2019

N=4744, LVEF ≤40%, NYHA 2-4, EGFR> 30 ml/min
Primary outcome; CV-death + worse HF/urgent HF
SGLT-2i 10 mg dapagliflozin vs placebo
Mean age 66, mean EF 31%

HR 0.74 (0.65-0.85)

Fast effect significant after 28 d.



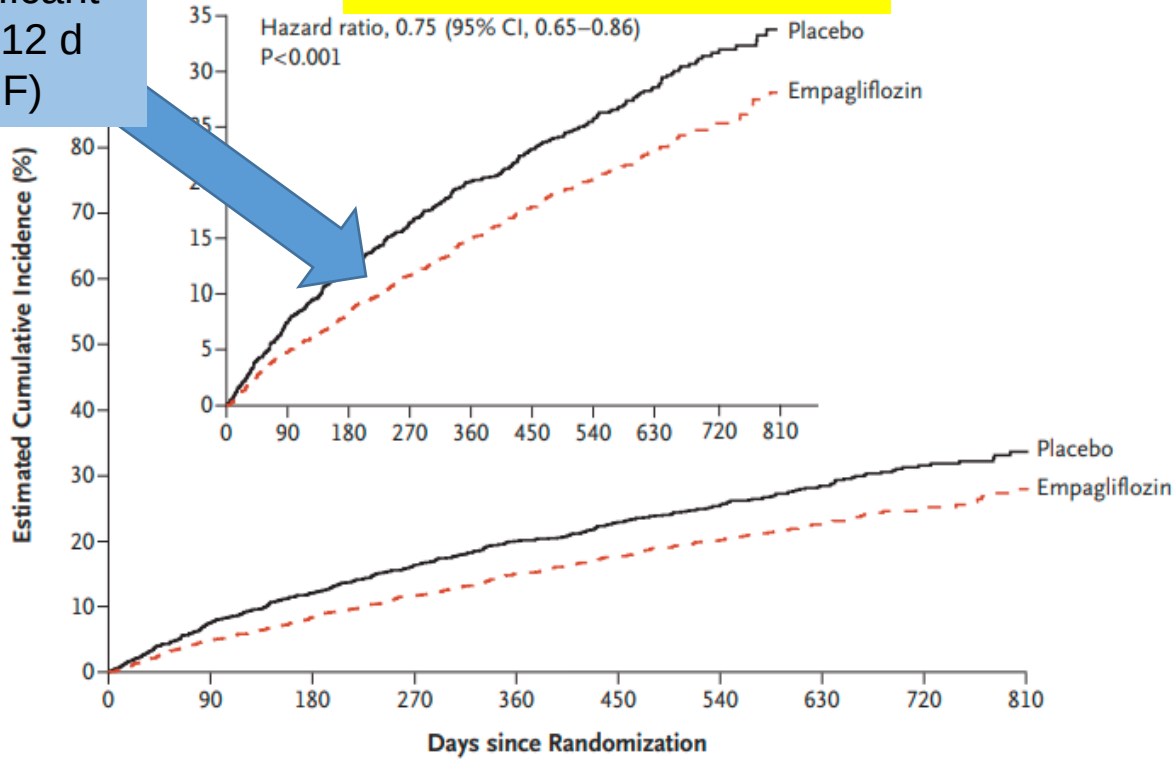
J.J.V. McMurray, NEJM 2019

EMPEROR-Reduced 2020

N=3730 , LVEF ≤40%, NYHA 2-4, eGFR>20ml/min
Primary outcome; CV-death + worse HF
SGLT-2i 10 mg empagliflozin vs placebo
Mean age 67, mean EF 27%

HR 0.75 (0.65-0.86)

Significant after 12 d (all HF)



M. Packer, NEJM 2020 & M Packer Circulation 2021

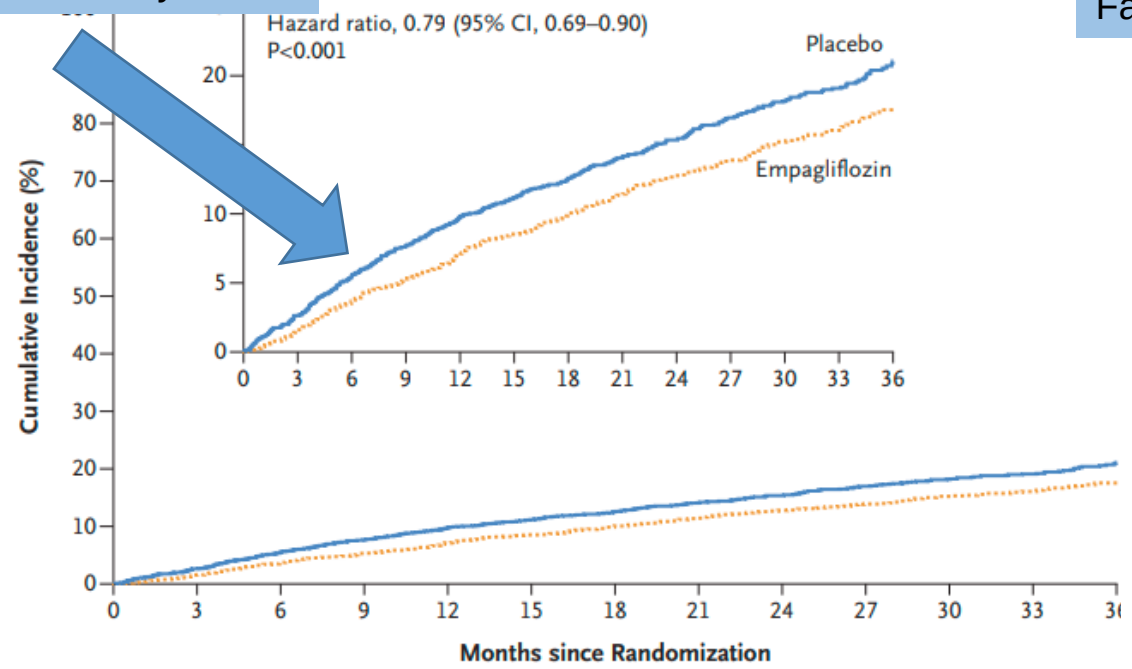
HFpEF/HFmrEF; primary outcome

EMPEROR-preserved 2021

N=5998, LVEF >40%+ structural HF, NYHA 2-4, eGFR> 19 ml/min
Primary outcome; CV-death + hosp HF
SGLT-2i empagliflozin 10 mg vs placebo
Mean age 72, mean EF 54.3%, mean follow-up26.2 months

HR 0.79 (0.69-0.90)

Fast effect, mainly HHF



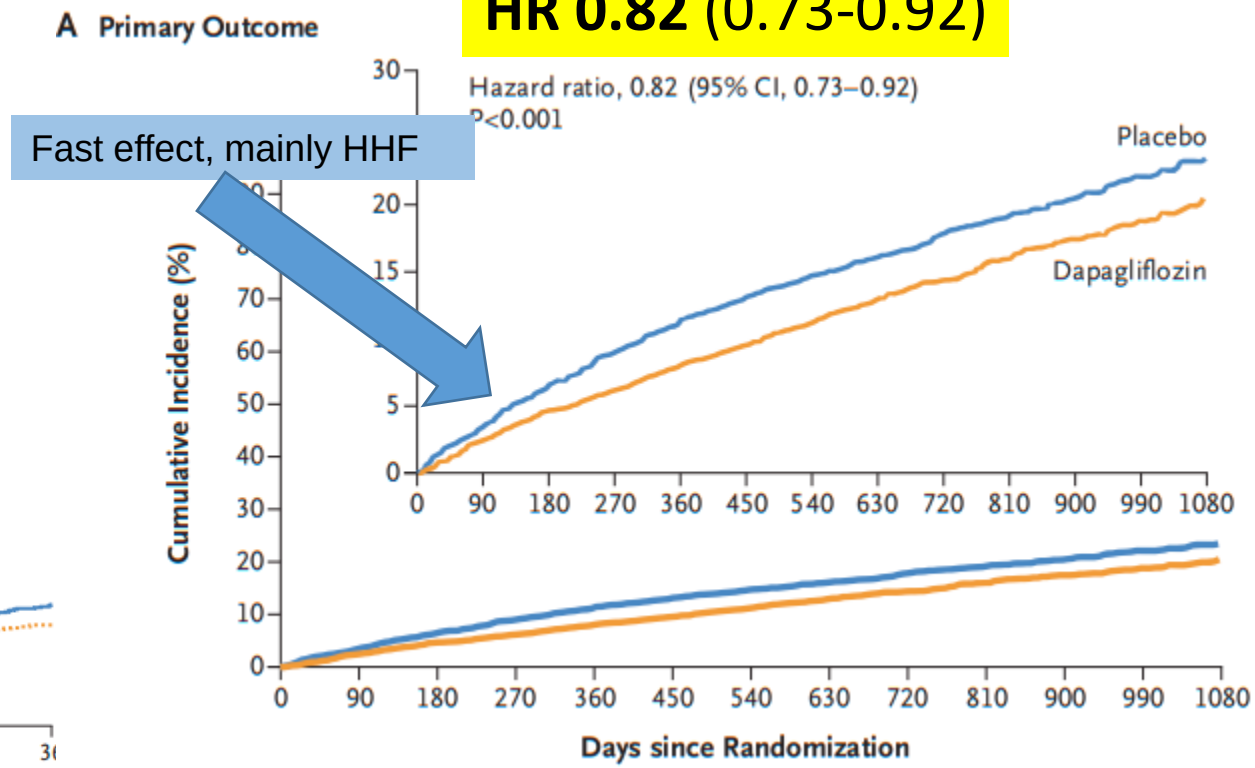
S.D. Anker et al, NEJM 2021

DELIVER 2022

N=6263, LVEF >40%+ structural HF, NYHA 2-4, eGFR> xx ml/min
Primary outcome; CV-death + hosp HF+ urgent HF
SGLT-2i dapgliflozin 10 mg vs placebo
Mean age 72, mean EF 54%, mean follow-up 2.3 yr.

HR 0.82 (0.73-0.92)

Fast effect, mainly HHF



S.D. Solomon et al, NEJM 2022

Diabetes och hjärtkärlsjukdom

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2. Betydelsen av riskfaktor kontroll
3. Kvarstående kardiovaskulära problem
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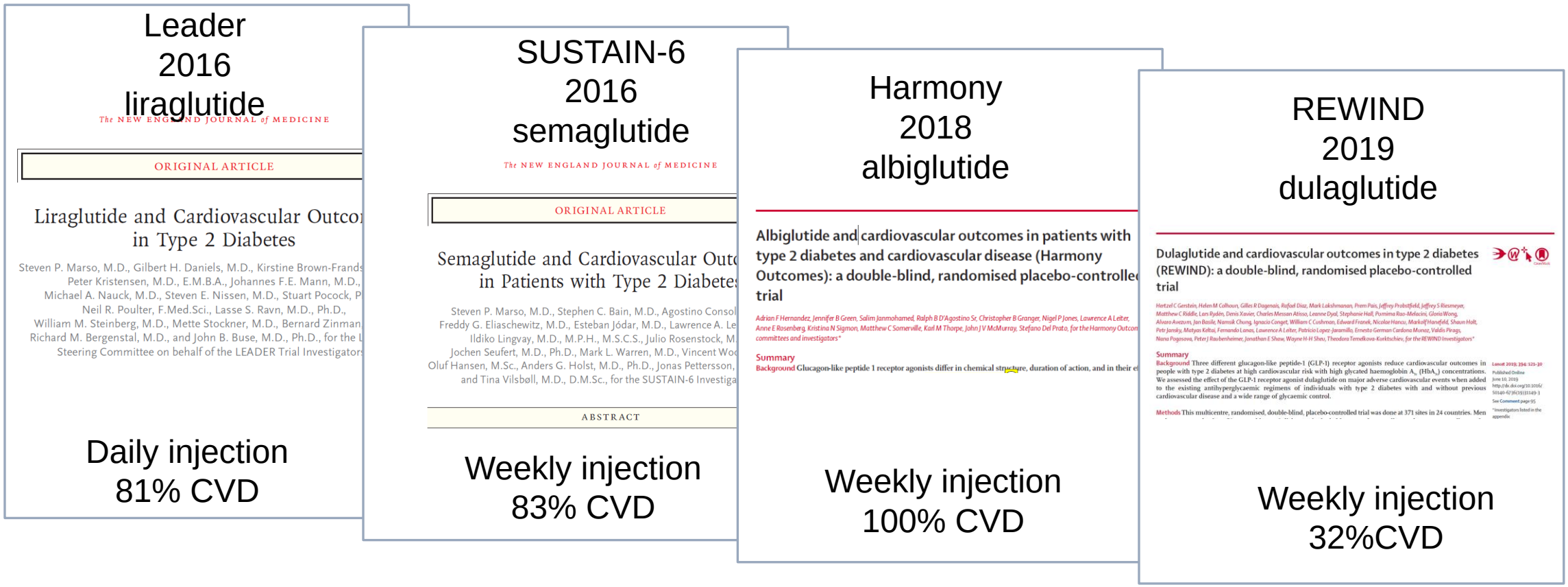
    SGLT-2i

    GLP-1 RA

GLP1-RA; 4 major CVOT trials CV-preventive effects

Different modified GLP-1 RA



Marso et al. N Engl J Med 2016

Marso SP et al. N Engl J Med 2016

Hernandez Lancet 2018

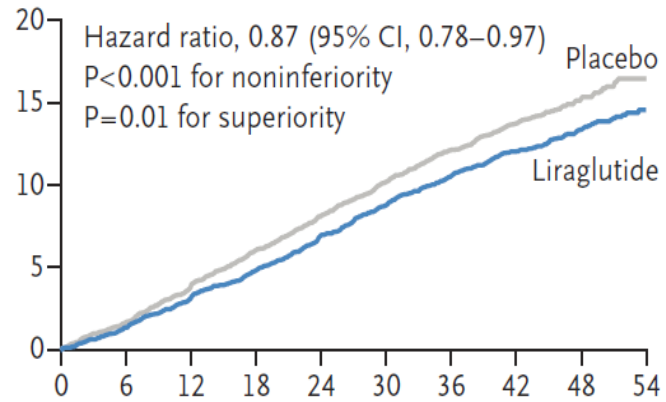
Gersein H Lancet 2019:394: 121–30

MACE (primary endpoint)

LEADER

N= 9340, 81% CVD

Once daily



HR 0.87 (0.78-0.97)

Superiority p=0.01

Mortality

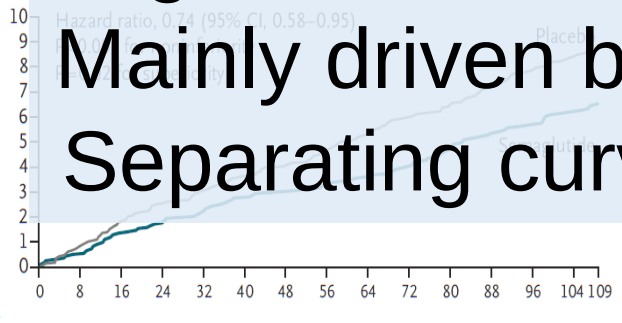
HR 0.85 (0.74-0.97)

Marso et al. N Engl J Med 2016

SUSTAIN-6

N= 3297, 83% CVD

Weekly



HR 0.74 (0.58-0.95)

Superiority p=0.02

Mortality

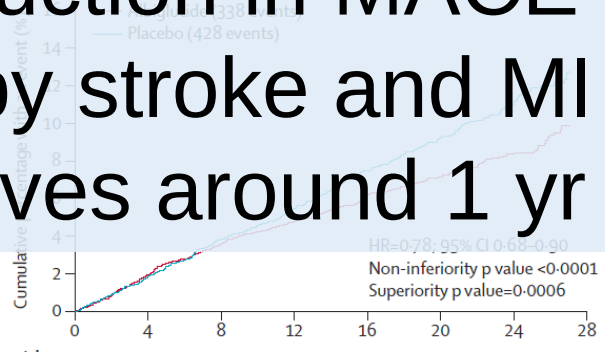
HR 1.05 (0.74-1.50)

Marso SP et al. N Engl J Med 2016

HARMONY

N= 17160, ´100% CVD

Weekly



HR 0.78 (0.68-0.90)

Superiority p=0.0006

Mortality

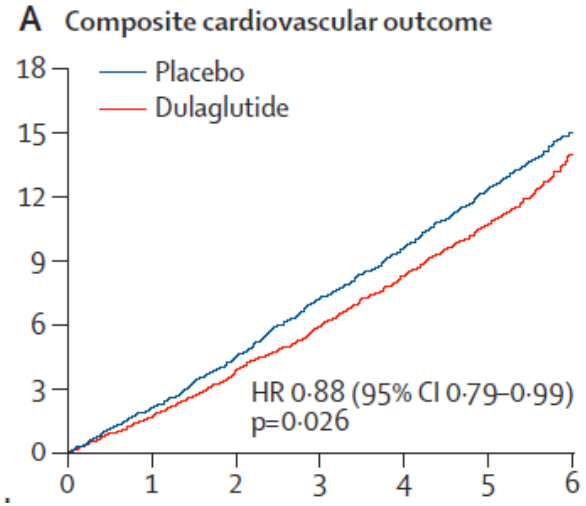
HR 0.95 (0.79-1.16)

Hernandez Lancet 2018

REWIND

N= 9901, 32% CVD

Weekly



HR 0.88 (0.79-0.99)

p=0.026

Mortality

HR 0.90 (0.80-1.01)

Gersein H Lancet 2019:394: 121–30

Significant reduction in MACE

Mainly driven by stroke and MI

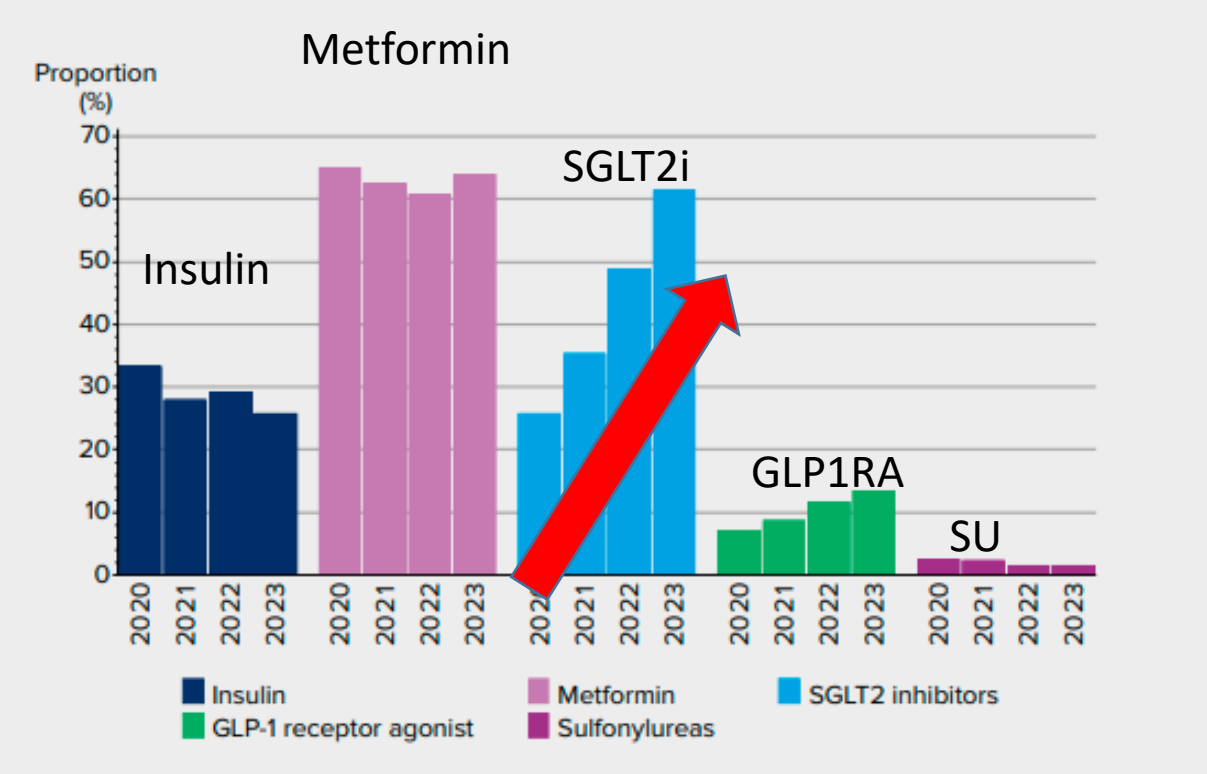
Separating curves around 1 yr

Jämförelser mellan olika studier ska göras med försiktighet pga skillnader i studiedesign, population och inklusion/exklusions kriterier

Implementation after myocardial infarction

Use of glucose lowering agents in diabetes post-MI SWEDEHEART 2023

Year 2022



- ESC guidelines on diabetes 2019
- Consensus in Sweden 2020
- New diabetes variable pilot 2018
- Mandatory since 2020
- SGLT2 inhibitor and/ or a GLP-1 receptor agonist at the 1st follow-up was 65 % in 2023
- A large increase in SGLT2i, 60 % in 2023
- GLP1 RA around 15 % in 2023

Swedeheart annual report issued 2024

Ritsinger et al. Cardiovascular Diabetology (2024) 23:290
https://doi.org/10.1186/s12933-024-02365-1

Cardiovascular Diabetology

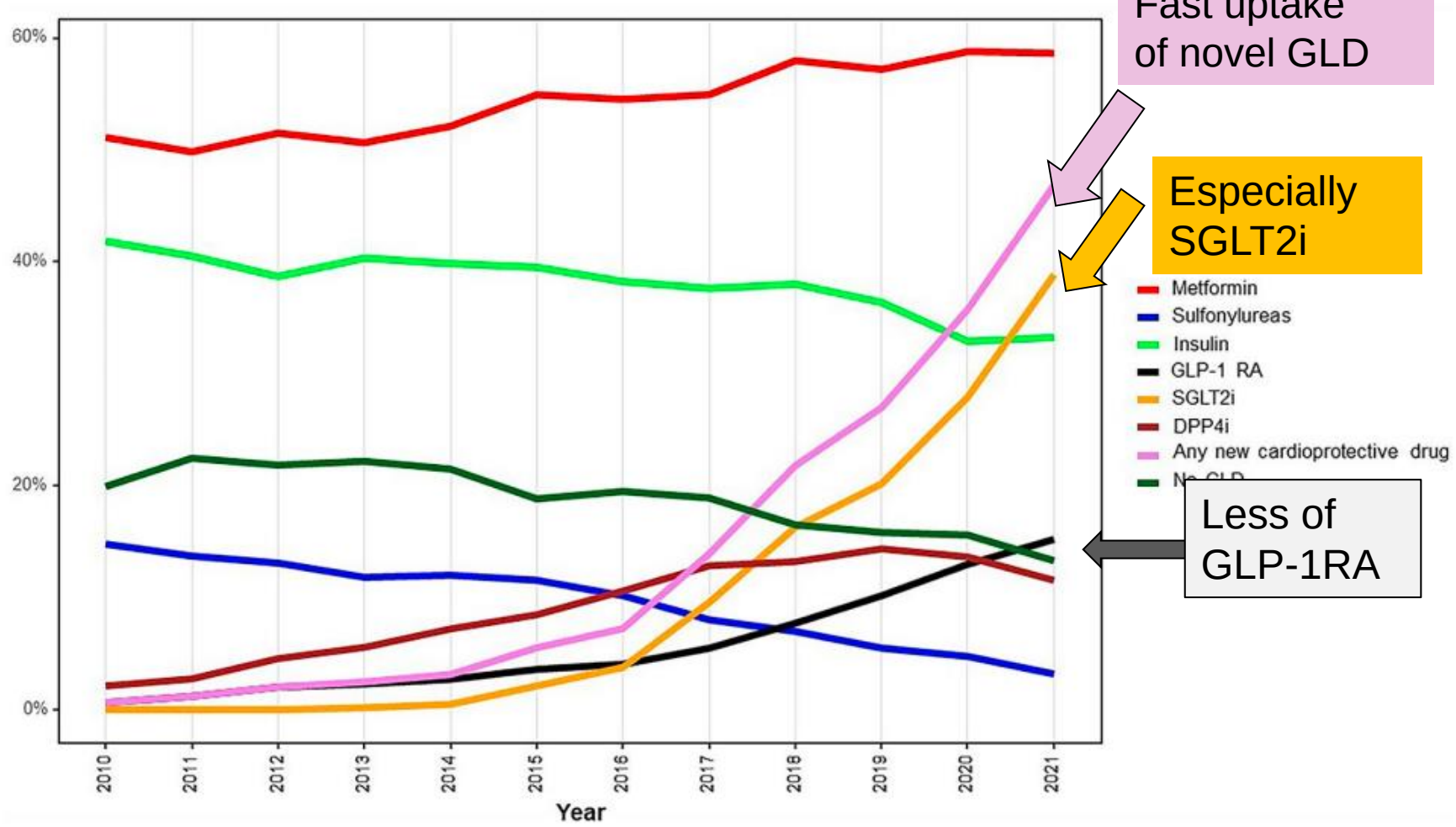
RESEARCH Open Access

Trends in prognosis and use of SGLT2i and GLP-1 RA in patients with diabetes and coronary artery disease

Viveca Ritsinger[1,2*], Kamila Avander[3], Bo Lagerqvist[4], Pia Lundman[3] and Anna Norhammar[1,5]

GLD after CVD in diabetes - underused

SWEDEHEART, 2010 to 2021, n=38,671 with DM
31% stable CAD, 69% STEMI/nonSTEMI infarction



- From 2016 to 2021 (7% till 47%),
- SGLT2i (4% to 38%)
- Less of GLP-1 RA (4% to 15%).
- Insulin reduced
- Metformin stable/increase
- No GLD reduced 20% to 13%
- Less of novel GLD, vs elderly GLD
  - Women
  - Elderly
  - Previous MI
  - Previous HF

Ritsinger et al. Cardiovascular Diabetology (2024) 23:290

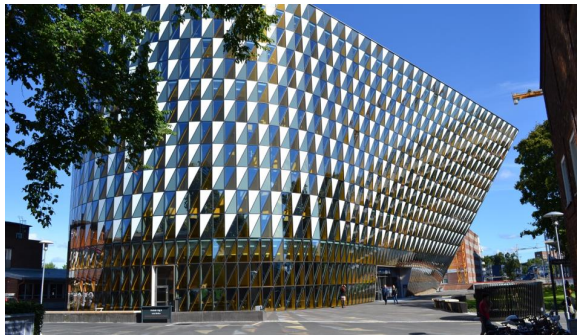
Sammanfattning

- Diabetes typ 2 medför fortfarande ökad risk för hjärtkärlsjukdom och död
- Prediabetes och graviditetsdiabetes medför ökad hjärtkärlrisk
- Prevention är möjligt! Om god multifaktoriell riskfaktor kontroll, men räcker ej alltid
- Förändrat komplikationsmönster vid diabetes då fler överlever hjärtinfarkt, fler hinner få hjärtsvikt och njursvikt…. (och cancer, demens, förmaksflimmer!), Dödsorsak efter hjärtinfarkt förändras
- SGLT2-hämmare förhindrar hjärtsvikt och skyddar mot försämrad njursjukdom samt förlänger liv och minskar hjärtkärldöd
- GLP-1 RA skyddar mot nya hjärtkärlhändelser hos de med etablerad hjärtkärlsjukdom/hög risk, ffa skyddas mot ateroskleroshändelser!
- Underutnyttjas – ges ej till de med hög CV-risk
- Obesitas även vanligt och farligt vid typ 2 diabetes!

Tack för att ni lyssnat!

Anna Norhammar, 2024-11-05

Professor cardiology
Cardiology Unit, Department of Medicine
Karolinska Institutet, Stockholm
Senior consultant Capio S:t Görans hospital
Sweden



“Namaste”

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