

# Foundations of Cardiometabolic Health Certification Course

# Certified Cardiometabolic Health Professional (CCHP)



# Diabetes and Heart Failure

Keith C. Ferdinand, MD, FACC, FAHA, FASPC, FNLA  
Gerald S. Berenson Endowed Chair in Preventative Cardiology  
Professor of Medicine  
Tulane University School of Medicine  
New Orleans, LA

# Treating HFrEF in Patients with DM

- **TZDs** strong relationship with increased risk of HF
- **SUs** and **Insulin** have equivocal safety in HF
- **DPP4 Inhibitor** saxagliptin was associated with an increased risk of HF hospitalization
- **Saxagliptin and alogliptin:** FDA warning HF risk
- **GLP-1 RAs-** null or modest benefit
- **SGLT2 inhibitors:** associated with reduction in HF hospitalizations and CVD death in recent clinical trials

# Which of the following agents has an FDA warning for increased HF risk?

- a) Saxagliptin
- b) Long-acting insulin
- c) Dulaglitide
- d) Empagliflozin

# Which of the following agents has an FDA warning for increased HF risk?

- a) Saxagliptin
- b) Long-acting insulin
- c) Dulaglitide
- d) Empagliflozin

# DM and HF

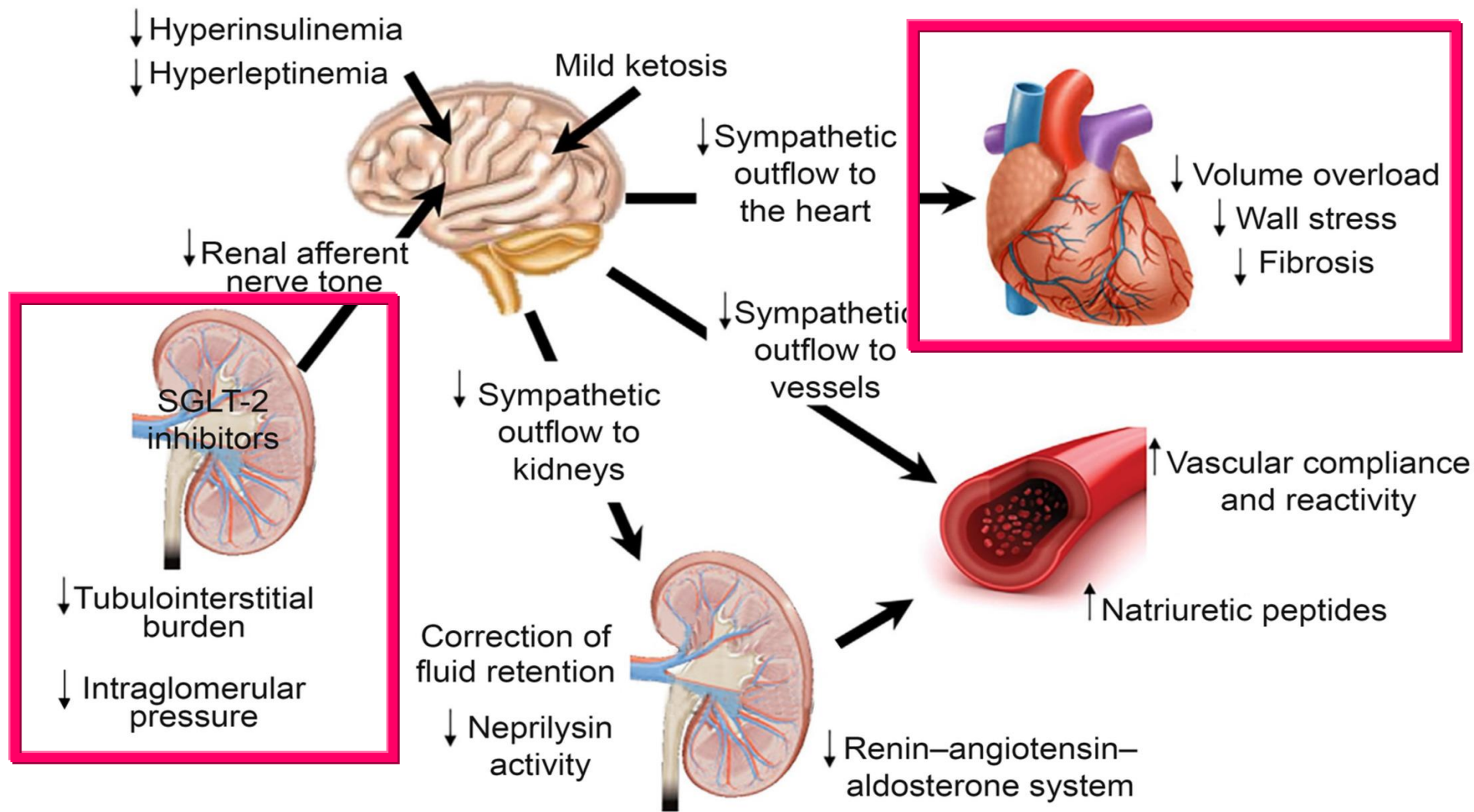
- DM is a major risk factor for HF
- About 50% T2DM may develop HF
- Diabetic cardiomyopathy results in structural myocardial abnormalities
- Leads to both systolic and diastolic dysfunction and ultimately to HF
- HF can occur even in the absent other risk factors

# Selected DM Medications

- Metformin
- Insulins
- Thiazolidinediones
- Dipeptidyl peptidase-4 (DPP-4) inhibitors
- **Glucagon-like peptide-1 (GLP-1) receptor agonists**
- **Sodium/Glucose co-Transporter 2 (SGLT-2) inhibitors**



# Potential Mechanisms: Cardioprotective & Renoprotective Effects of SGLT-2is - CV Outcomes Trials



# Updated Guidelines: May 2022

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY  
© 2022 BY THE AMERICAN HEART ASSOCIATION, INC., THE AMERICAN COLLEGE OF  
CARDIOLOGY FOUNDATION, AND THE HEART FAILURE SOCIETY OF AMERICA.  
PUBLISHED BY ELSEVIER

VOL. 79, NO. 17, 2022

**CLINICAL PRACTICE GUIDELINE: FULL TEXT**

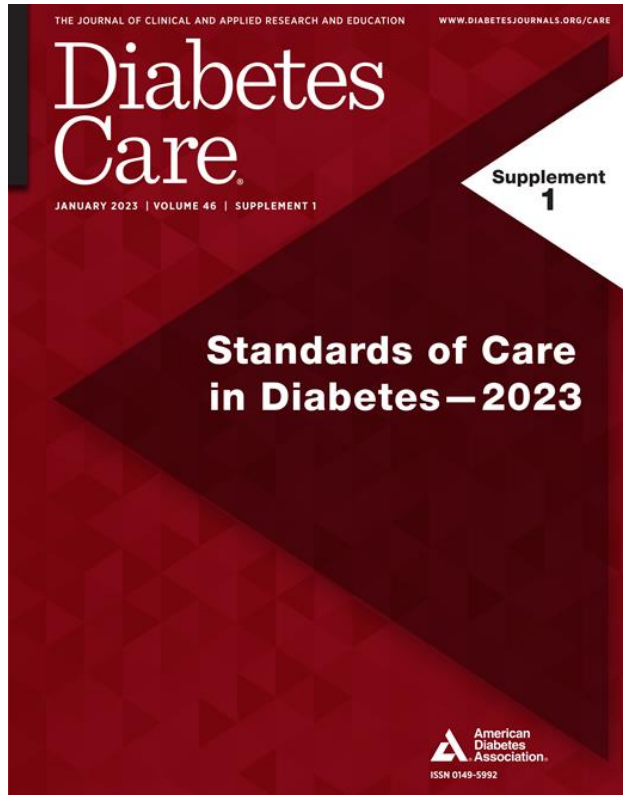
## 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure



A Report of the American College of Cardiology/American Heart Association  
Joint Committee on Clinical Practice Guidelines



# Glucose-Lowering Therapies and HF

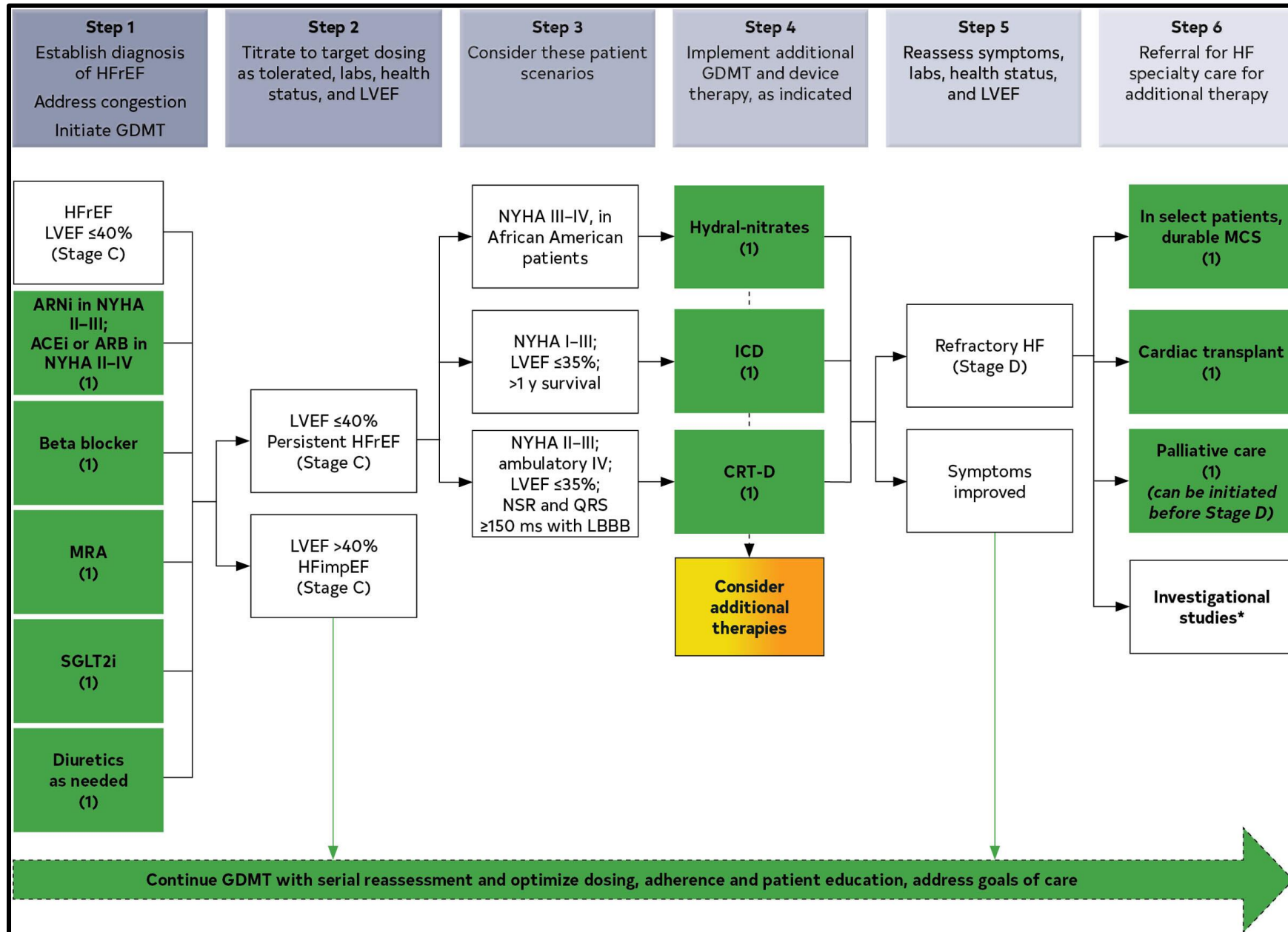


- Therefore, in people with **type 2 diabetes and established HFpEF or HFrEF**, an **SGLT2 inhibitor with proven benefit** in this patient population is **recommended to reduce the risk of worsening heart failure and cardiovascular death**. In addition, an SGLT2 inhibitor is recommended in this patient population to **improve symptoms, physical limitations, and quality of life**.
- The benefits seen in this patient population may represent a class effect, and they appear unrelated to glucose lowering given comparable outcomes in people with HF with and without diabetes.

# Conclusions: Treatment and HF

- GDMT should be maximized for HFrEF
- HFpEF clinical trials produced neutral results to date
- However, HTN control and appropriate diuretics essential
- Sacubitril/valsartan may add benefits to ACEI/ARB therapy
- SGLT2i's appear to be a major shift in the treatment of HFrEF with and without T2D and in the future HFpEF

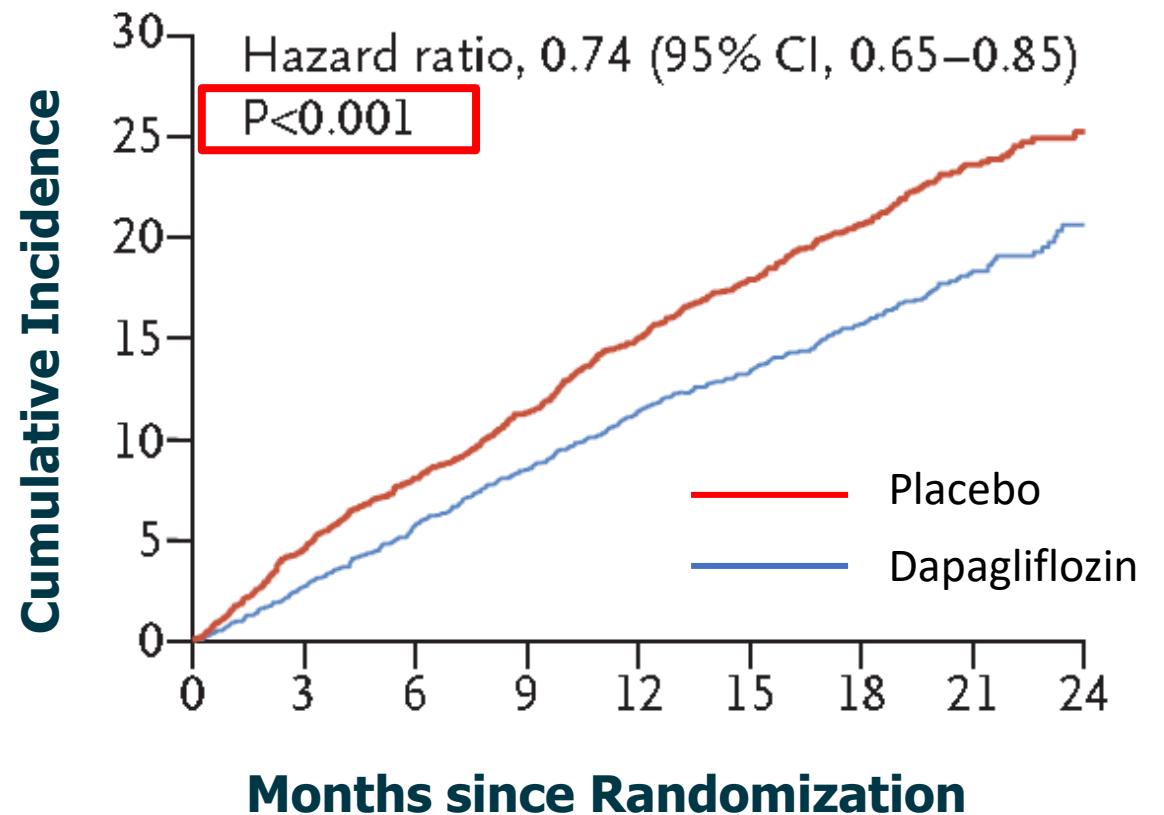
# 2022 AHA/ACC/HFSA Heart Failure Guidelines



# DAPA-HF: Dapagliflozin in Patients with Heart Failure and Reduced Ejection Fraction

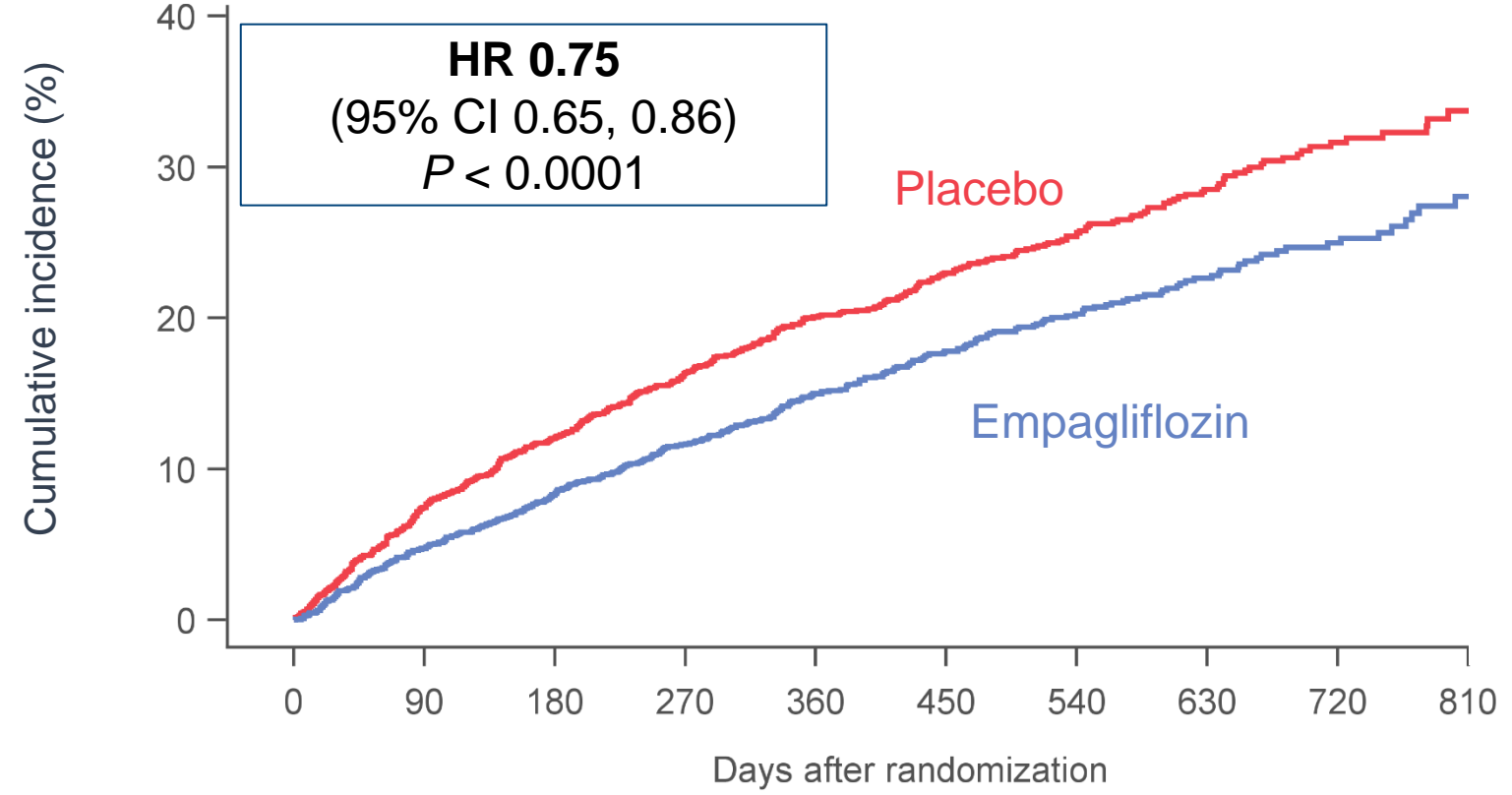
Median follow-up: <b>18.2 months</b>	HR or RR or Difference (95% CI)
<b>Primary Composite Outcome</b>	<b>0.74 (0.65 to 0.85) <i>P</i>&lt;0.001</b>
Hospitalization or an urgent HF visit	0.70 (0.59 to 0.83)
HHF	0.70 (0.59 to 0.83)
Urgent HF visit	0.43 (0.20 to 0.90)
CV death	0.82 (0.69 to 0.98)

## Primary Composite Outcome (CV death and worsening HF)



# EMPEROR-Reduced: Primary Composite Outcome

Primary Composite Outcome (CV death and hospitalization for worsening HF)

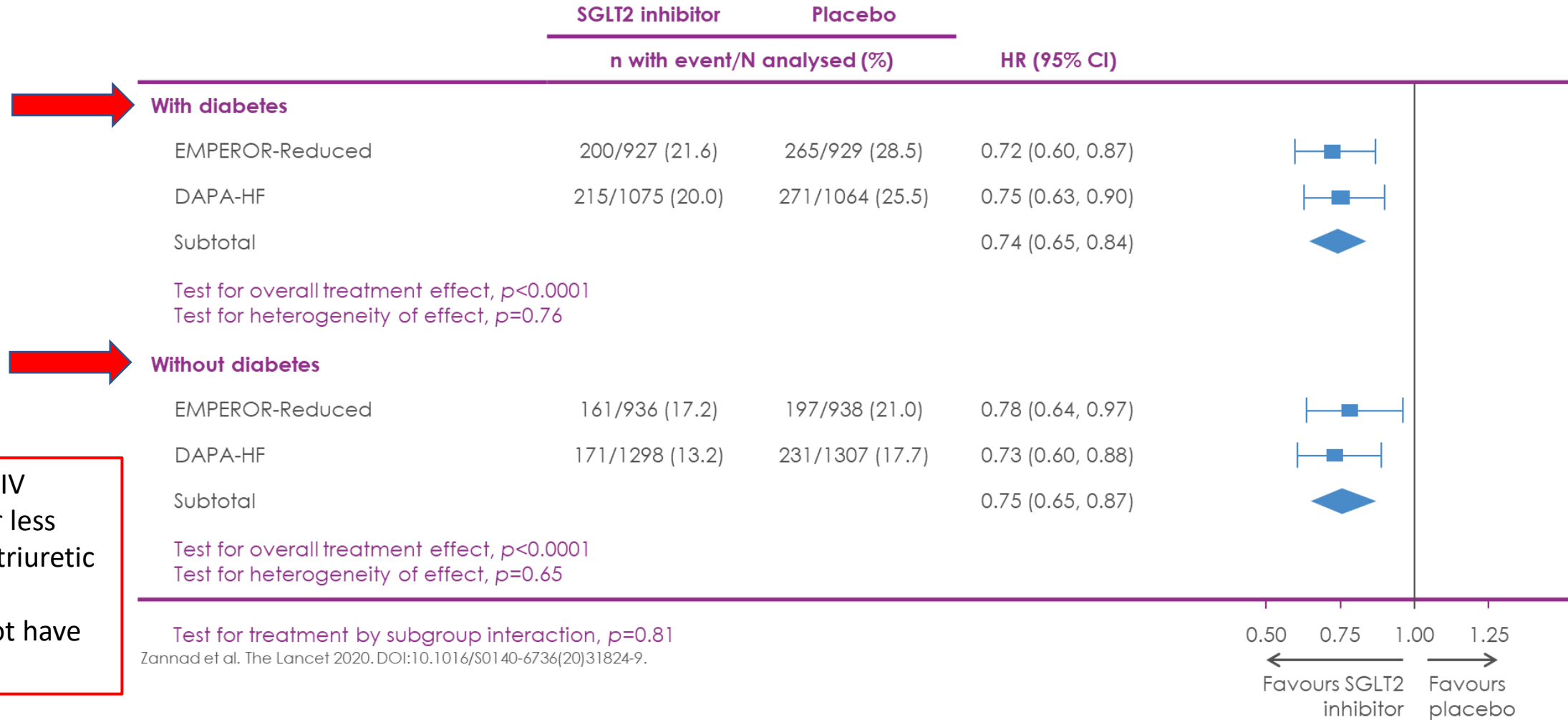


Patients at risk

	0	90	180	270	360	450	540	630	720	810
Placebo	1867	1715	1612	1345	1108	854	611	410	224	109
Empagliflozin	1863	1763	1677	1424	1172	909	645	423	231	101

# Dapagliflozin and Empagliflozin Improve Outcomes in HFrEF with or without Type 2 Diabetes

**Pooled treatment effects of empagliflozin and dapagliflozin on the composite of first hospitalization for heart failure or cardiovascular death in relevant subgroups**



- HF, NYHA II-IV
- LVEF 40% or less
- Elevated natriuretic peptides
- >50% did not have T2DM