How does diabetes affect my patient's heart?

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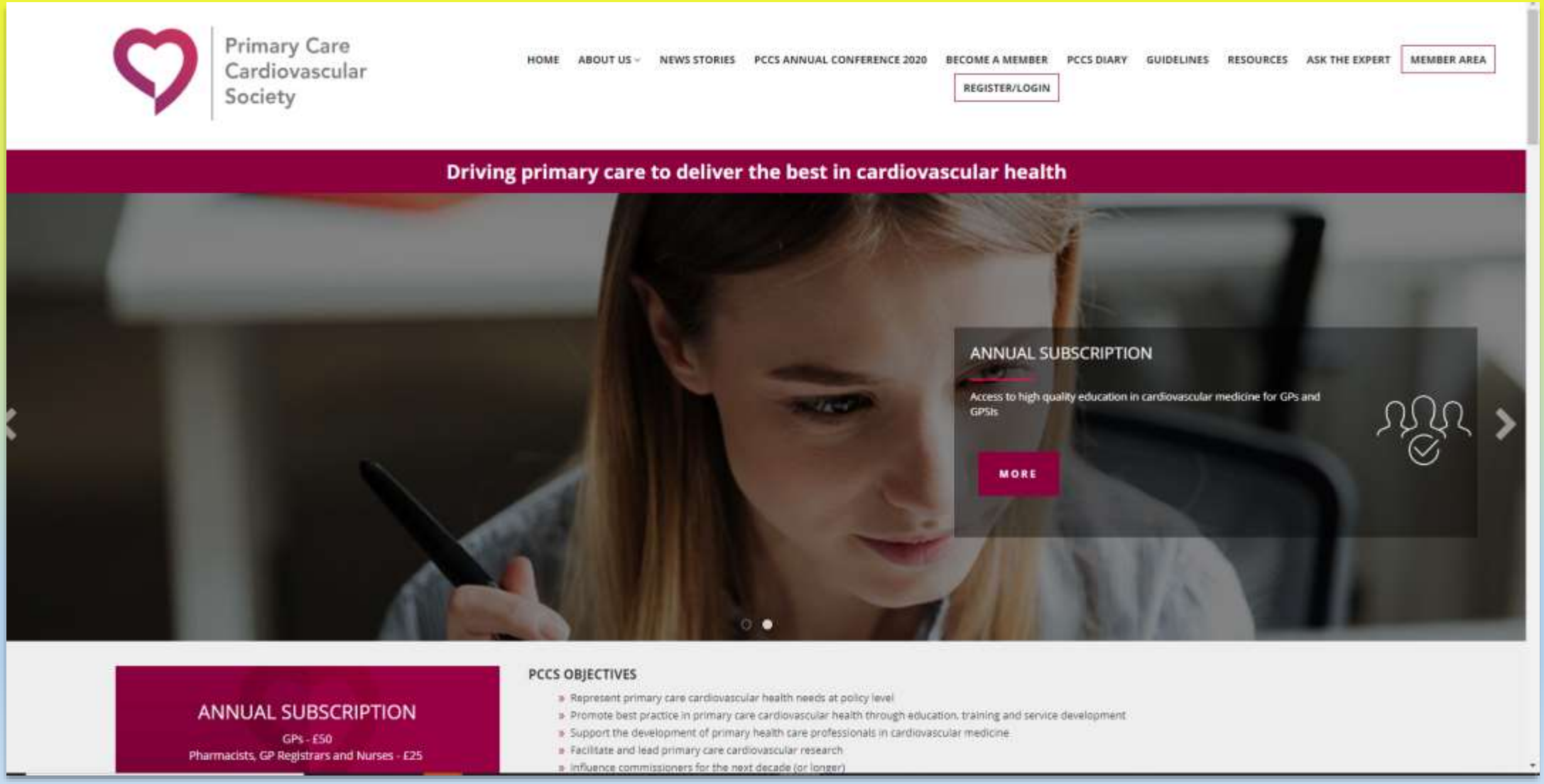


How to register for Membership

Annual Subscription
GPs £40
Pharmacists, GP Registrars and Nurses £20

How to Register
To register for membership please follow this link
http://pccs.lcwmed.co.uk

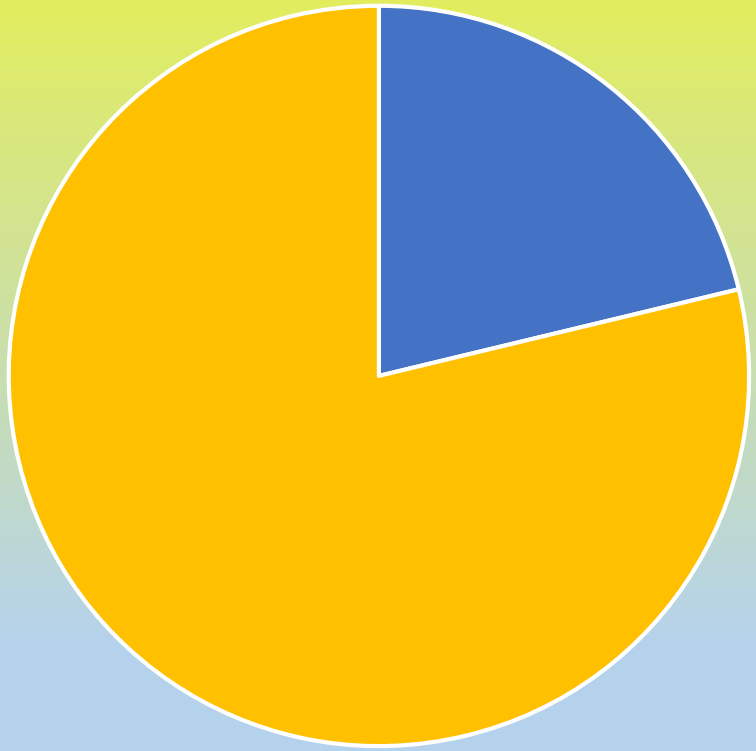
Or call 01444 414264
Or email registrations@LCWmed.co.uk

Aims

By the end of this session you will be able to

- i) evaluate the impact of diabetes and heart health
- ii) recognise lifestyle interventions which can improve cardiovascular outcomes and
- iii) consider the impact that drug therapies can have on heart health, beyond glycaemic control.

The real of the cost of diabetes



†

‡

Excess mortality in Type 2 Diabetes is largely related to Cardiovascular Disease[1]

Around one third of people with T2D also have CV disease[2]

CV disease is responsible for approximately half of all deaths in people with T2D[2], with many of these deaths premature[3]

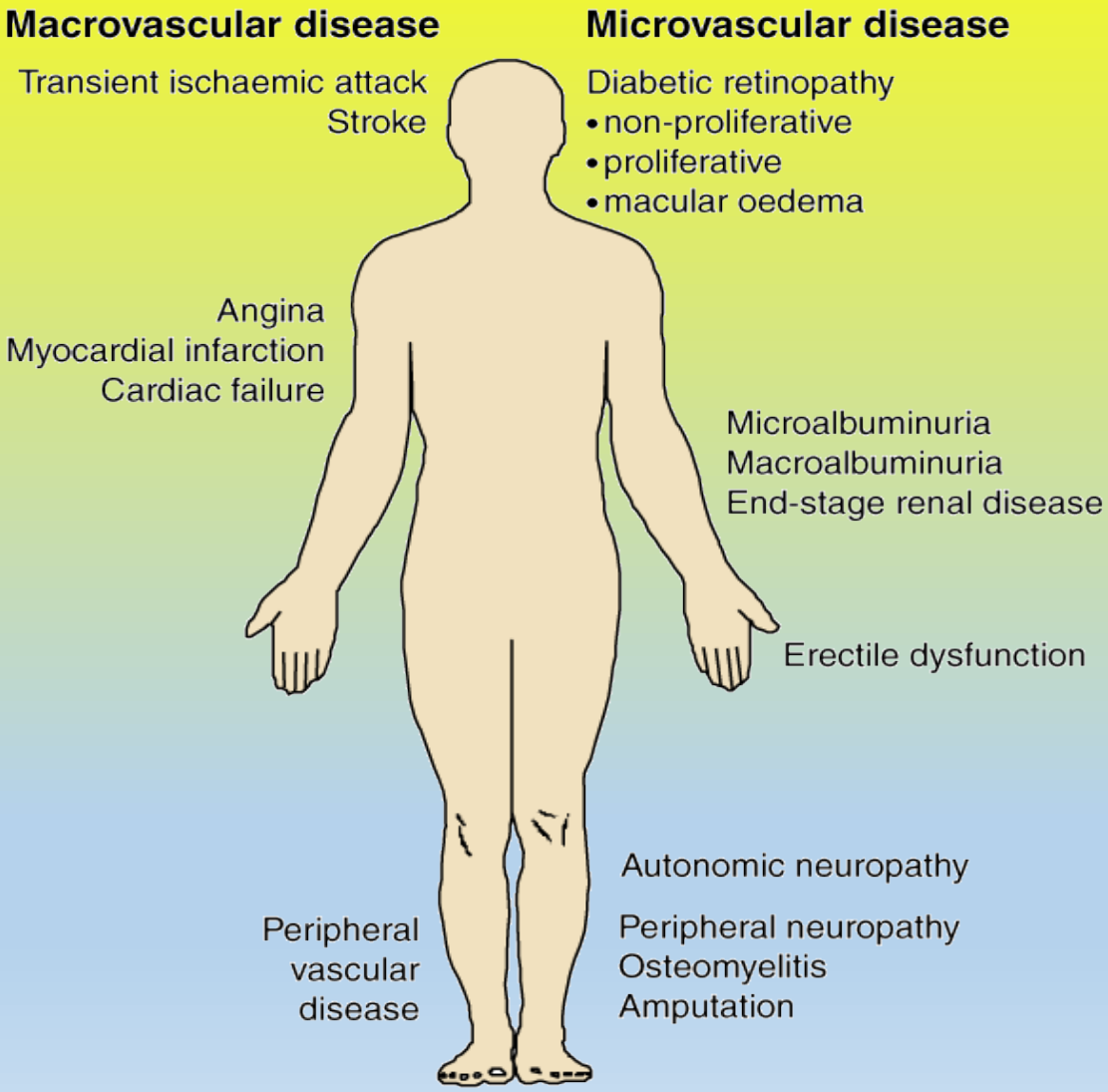
CV disease can occur 10–15 years earlier in patients with diabetes compared with those without diabetes[4,5]

Diabetes accelerates the time to the first CV event[6]*

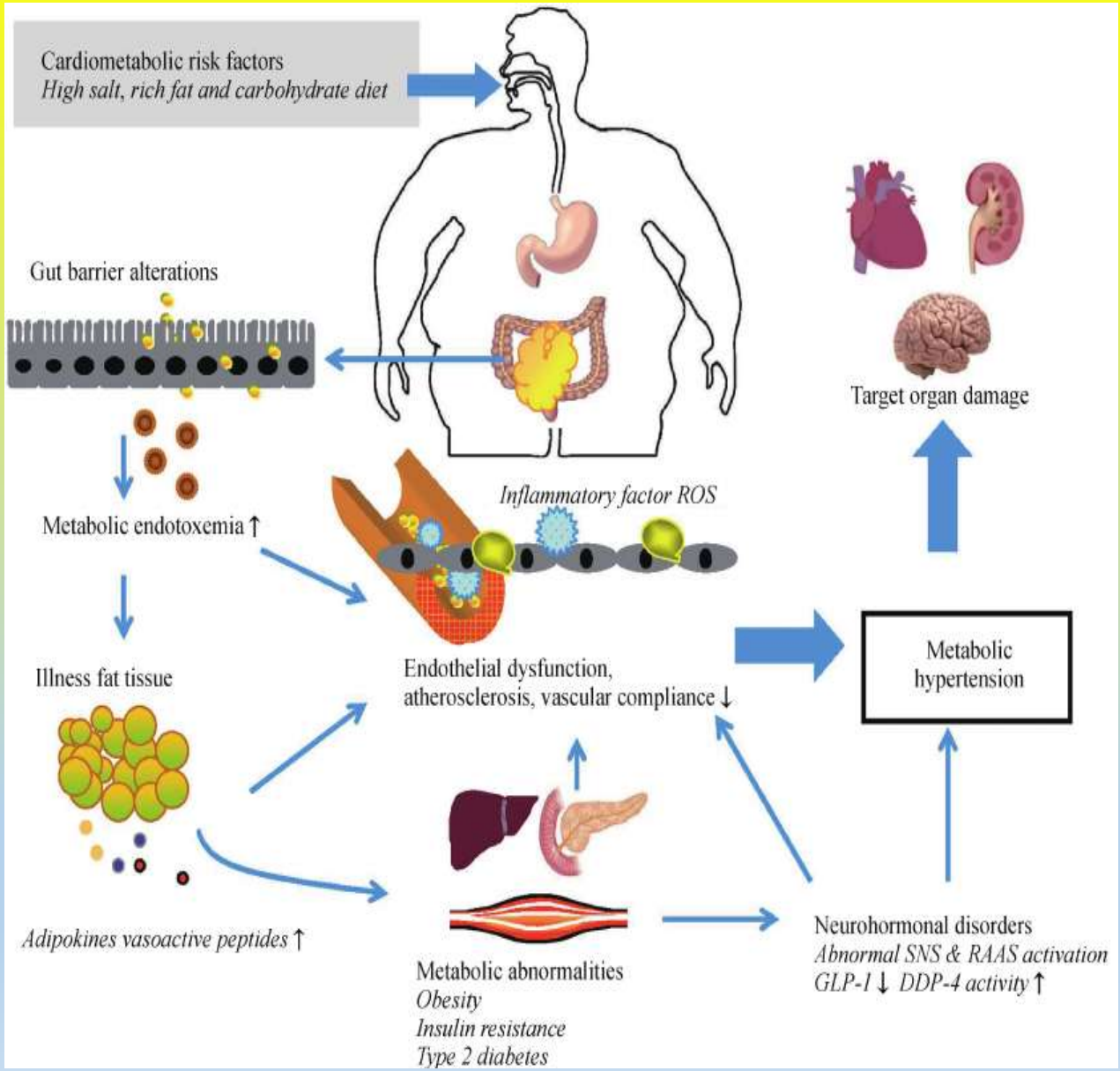
*Time to first myocardial infarction event or first heart failure hospitalisation. CV = cardiovascular; T2D = type 2 diabetes.

1. Tancredi M, *et al*. *N Engl J Med* 2015;373:1720–1732; 2. Einarson TR, *et al*. *Cardiovasc Diabetol* 2018;17:83; 3. Fisher M, Shaw KM. *Pract Diab Int* 2001;18:183–184; 4. Malmberg K, *et al. Circulation* 2000;102:1014–1019; 5. Booth GL, *et al. Lancet* 2006;368:29–36; 6. McMurray JJV, *et al. Lancet Diabetes Endocrinol* 2014;2:843–851.

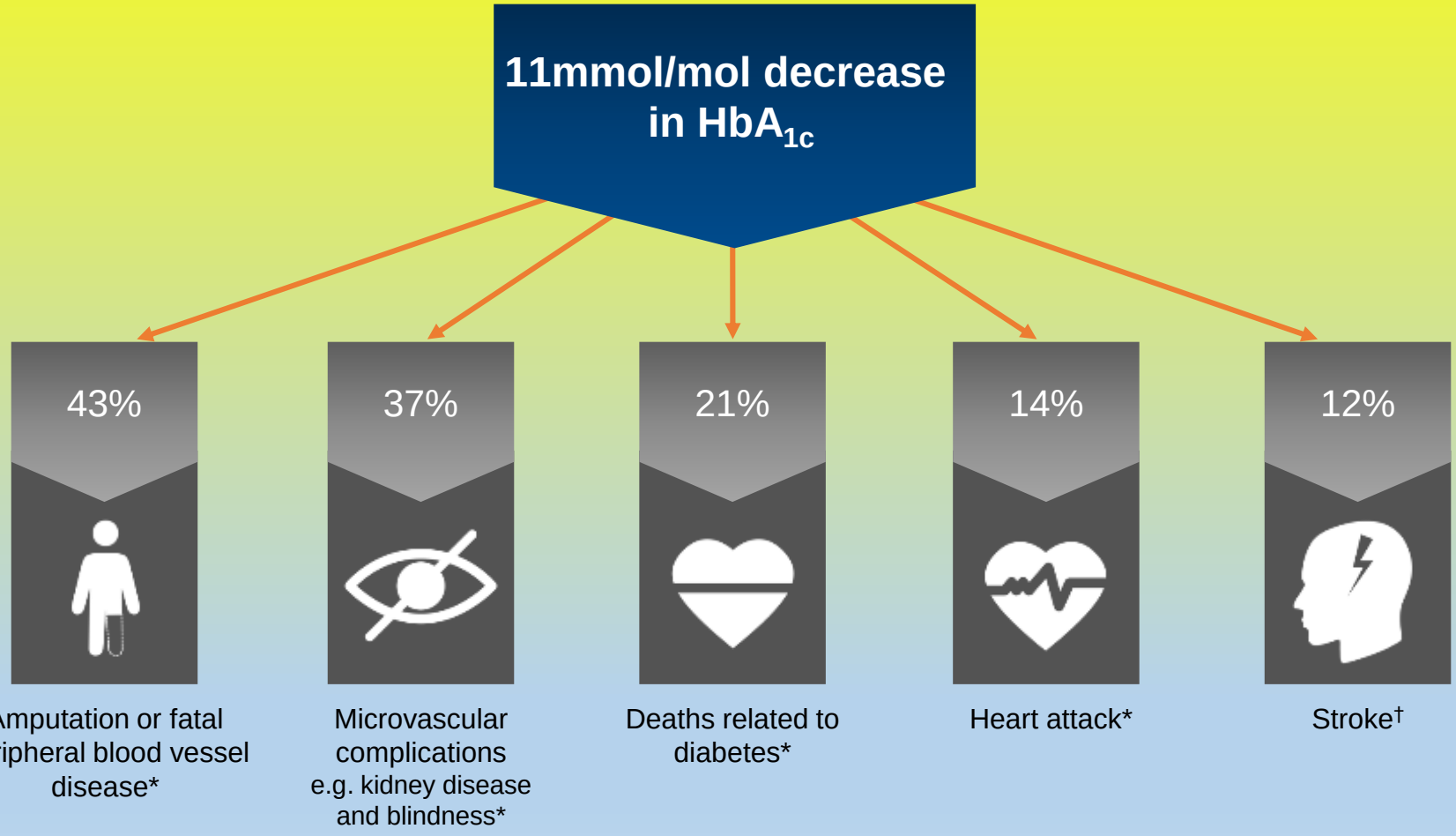
What happens?



Why?


Cardiometabolic risk factors
High salt, rich fat and carbohydrate diet
Gut barrier alterations
Metabolic endotoxemia ↑
Inflammatory factor ROS
Illness fat tissue
Endothelial dysfunction,
atherosclerosis, vascular compliance ↓
Target organ damage
Metabolic
hypertension
Adipokines vasoactive peptides ↑
Metabolic abnormalities
Obesity
Insulin resistance
Type 2 diabetes
Neurohormonal disorders
Abnormal SNS & RAAS activation
GLP-1 ↓ DDP-4 activity ↑

UKPDS: HbA1c lowering and complication risk



*P<0.0001; †P=0.035.
UKPDS=UK Prospective Diabetes Study.

Stratton IM et al (2000) BMJ 321: 405–12

Lifestyle – underpins all

Clinical practice in the UK: NICE Guideline 28 does not currently include Cardiovascular Outcome Trial Data

Dec 2015 — **NG28 published**

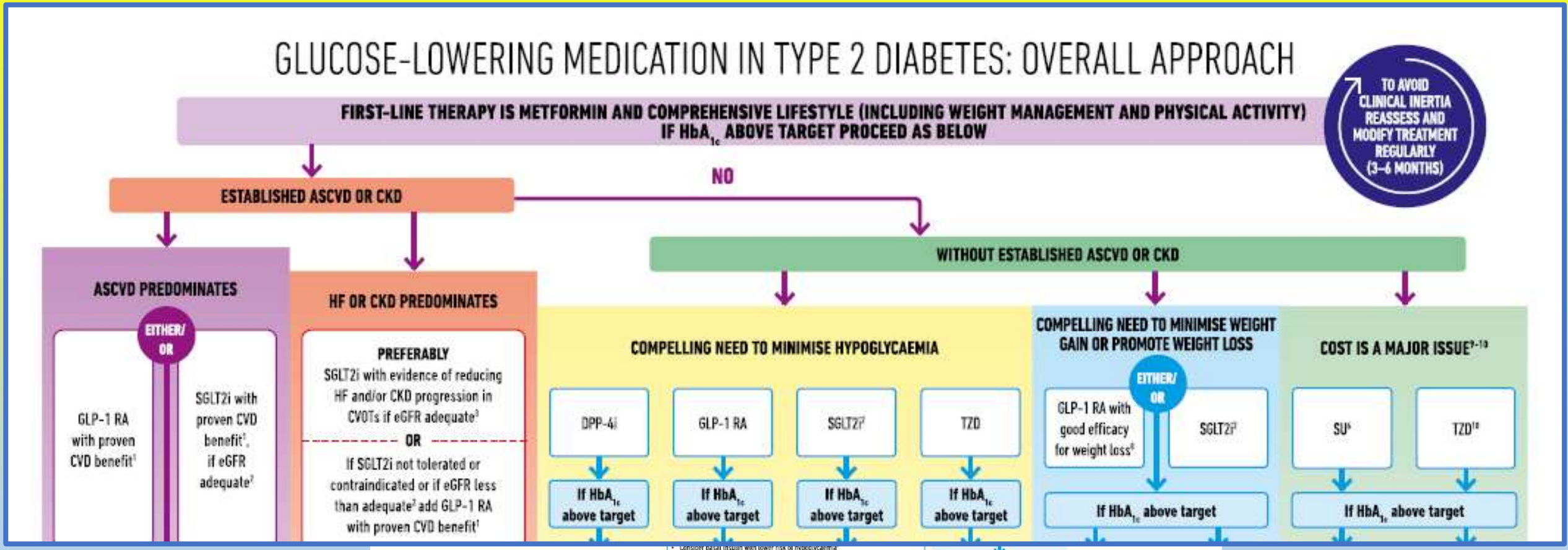
May 2017 — **NG28 updated**

2020 — **NG28: review due (new guidance TBC)**

BMI = body mass index; DPP-4i = dipeptidyl peptidase-4 inhibitor; GLP-1 = glucagon-like peptide-1; SGLT2i = sodium-glucose co-transporter-2 inhibitor; SU = sulphonylurea.

National Institute for Health and Care Excellence (December 2015, last updated April 2017) Algorithm for blood glucose lowering therapy in adults with type 2 diabetes. Available from: http://www.nice.org.uk/guidance/ng28/resources/algorithm-for-blood-glucose-lowering-therapy-in-adults-with-type-2-diabetes-2185604173 (accessed January 2019).

The 2018 EASD/ADA consensus report has incorporated Cardiovascular Outcome Trial Data



The EASD/ADA report is a consensus statement and should not be used as guidance.
ADA = American Diabetes Association; CVOT = cardiovascular outcome trial; EASD = European Association for the Study of Diabetes.

What about this?

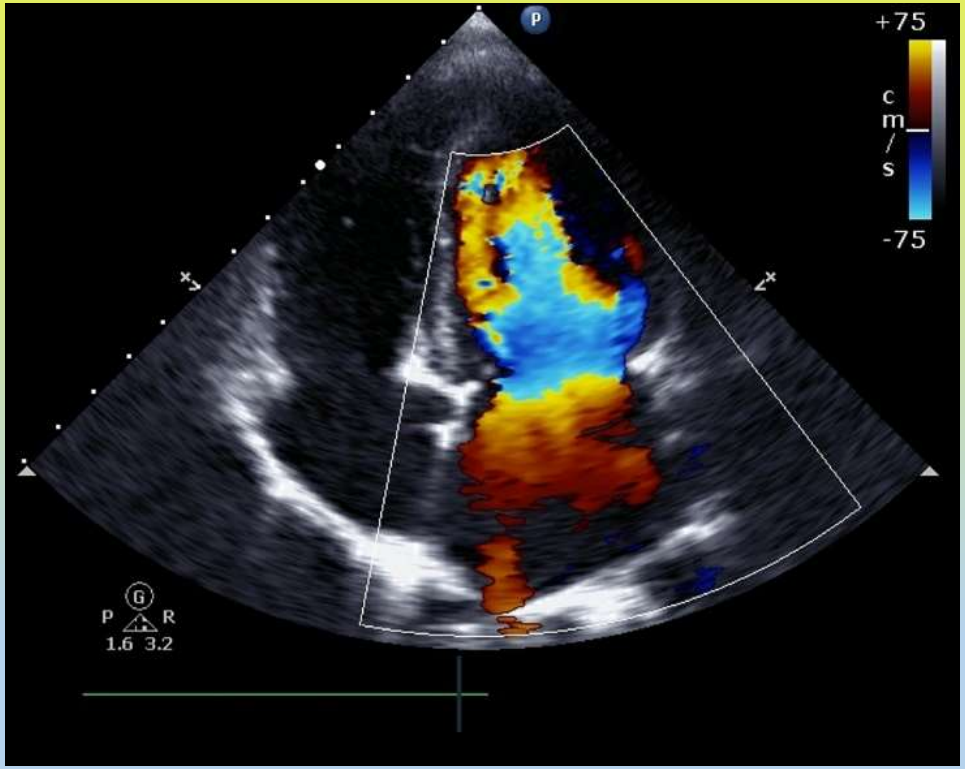
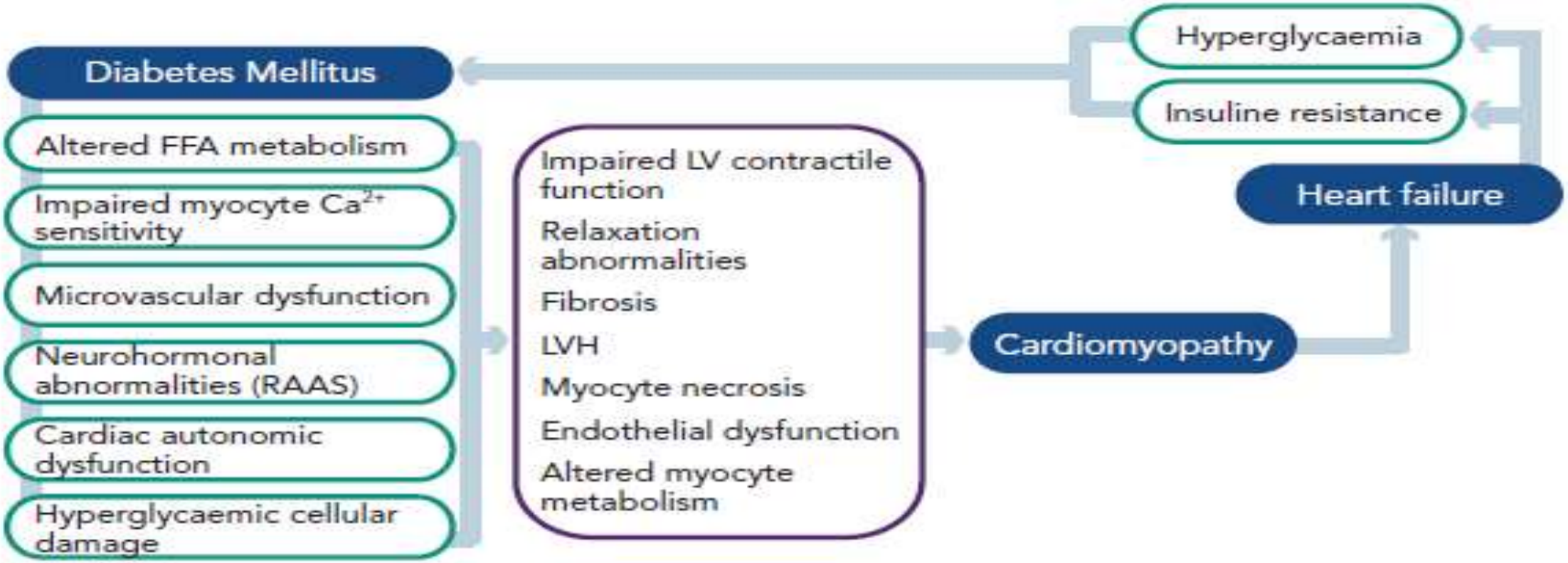


Figure 1: The Bi-directional Impact of Diabetes Mellitus and Heart Failure



FFA = free fatty acids; Ca2+ = Calcium; RAAS = Renin-angiotensin aldosterone system; LVH = Left ventricular hypertrophy.

- Cardiac Failure Review 2015;1(1):8–10

Newer glycaemic agents – the great HOPE?

- SGLT2 inhibitors:
  - Lower plasma glucose & HbA1c
  - Induce moderate natriuresis
  - Reduce blood pressure
  - Reduce weight
  - Exert cardio-protective properties on the heart

- GLP1- RAs & CVD

Medication

- Triple whammy:
- Glycaemic control
- BP
- Lipids

In summary

- Diabetes impacts on vascular and heart health
- Cost is financial and in terms of
  quality of life/years of life lost
- Both lifestyle interventions and
  drug therapies can improve heart health,
  beyond glycaemic control, in those with
  established disease and those who are at increased risk
- b.bostock@educationforhealth.org

Conclusion

- The management of CVD in diabetes remains a major priority
- We need to individualise treatment choices in CVD & with diabetes
- Individuals with diabetes and CVD may benefit most from SGLT2 inhibitors or certain GLP1 receptor agonists
- Individuals with diabetes and HF and/or CKD may benefit most from SGLT2 inhibitors
- Emerging evidence of SGLT2i beneficial in patients with heart failure without diabetes
- Guidelines are changing – most recently SIGN 2017 & ADA/EASD October 2018
- Watch this space!
  - DAPA-CKD, EMPA-KIDNEY, EMPEROR-Reduced, EMPEROR-Preserved, PRESERVED-HF