



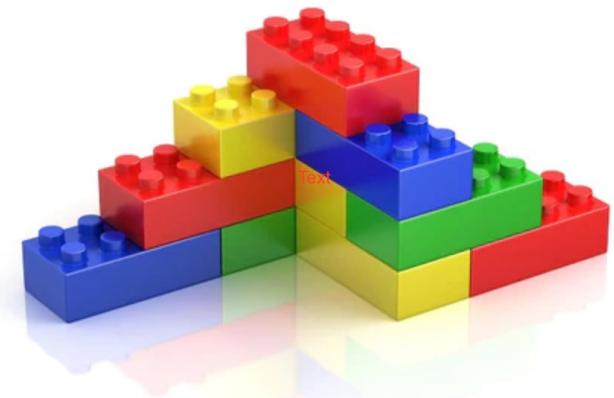
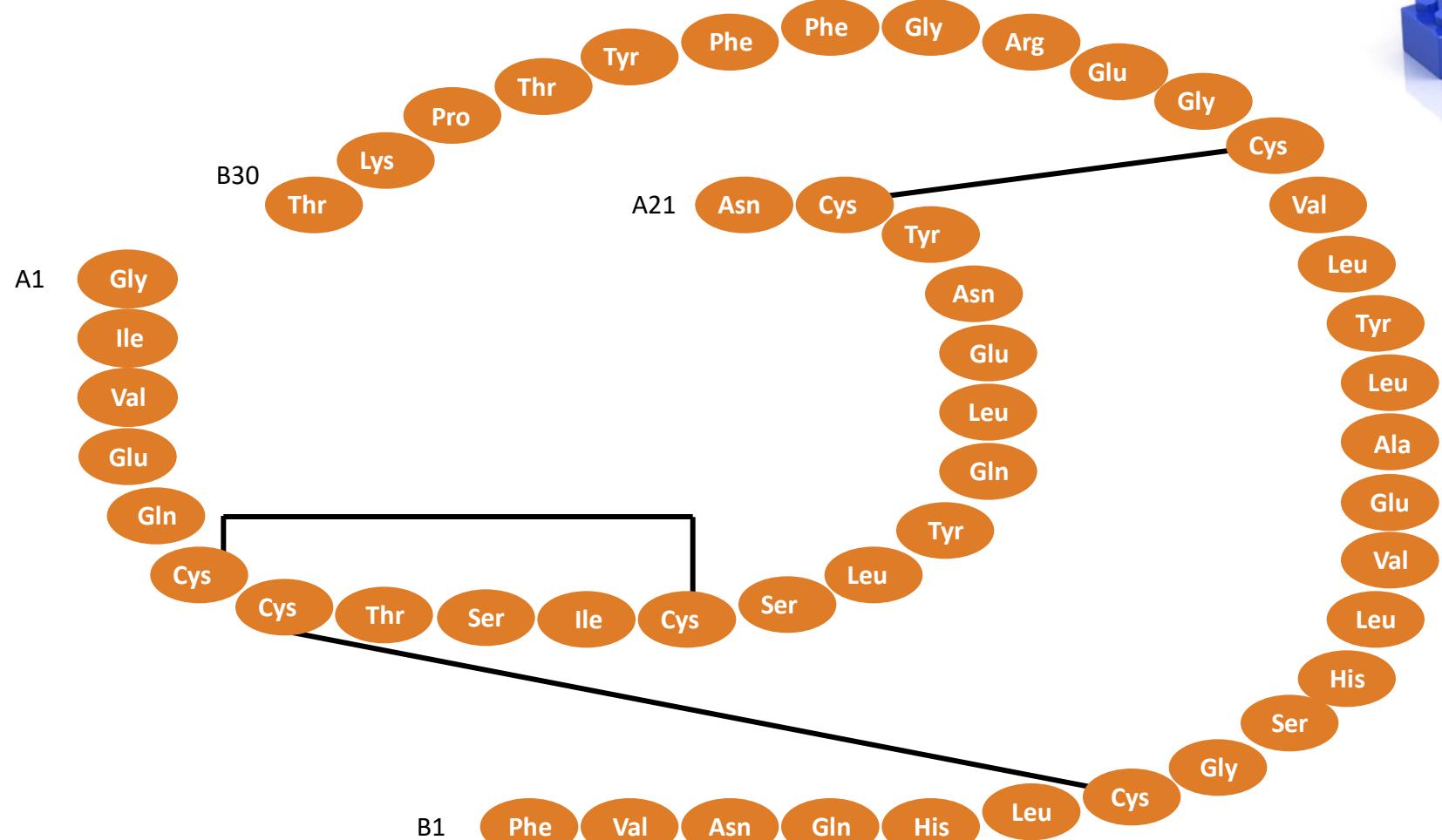
Prof Johan Jendle
Örebro Universitetssjukhus
Nya läkemedel vid
typ 1- och typ 2-diabetes

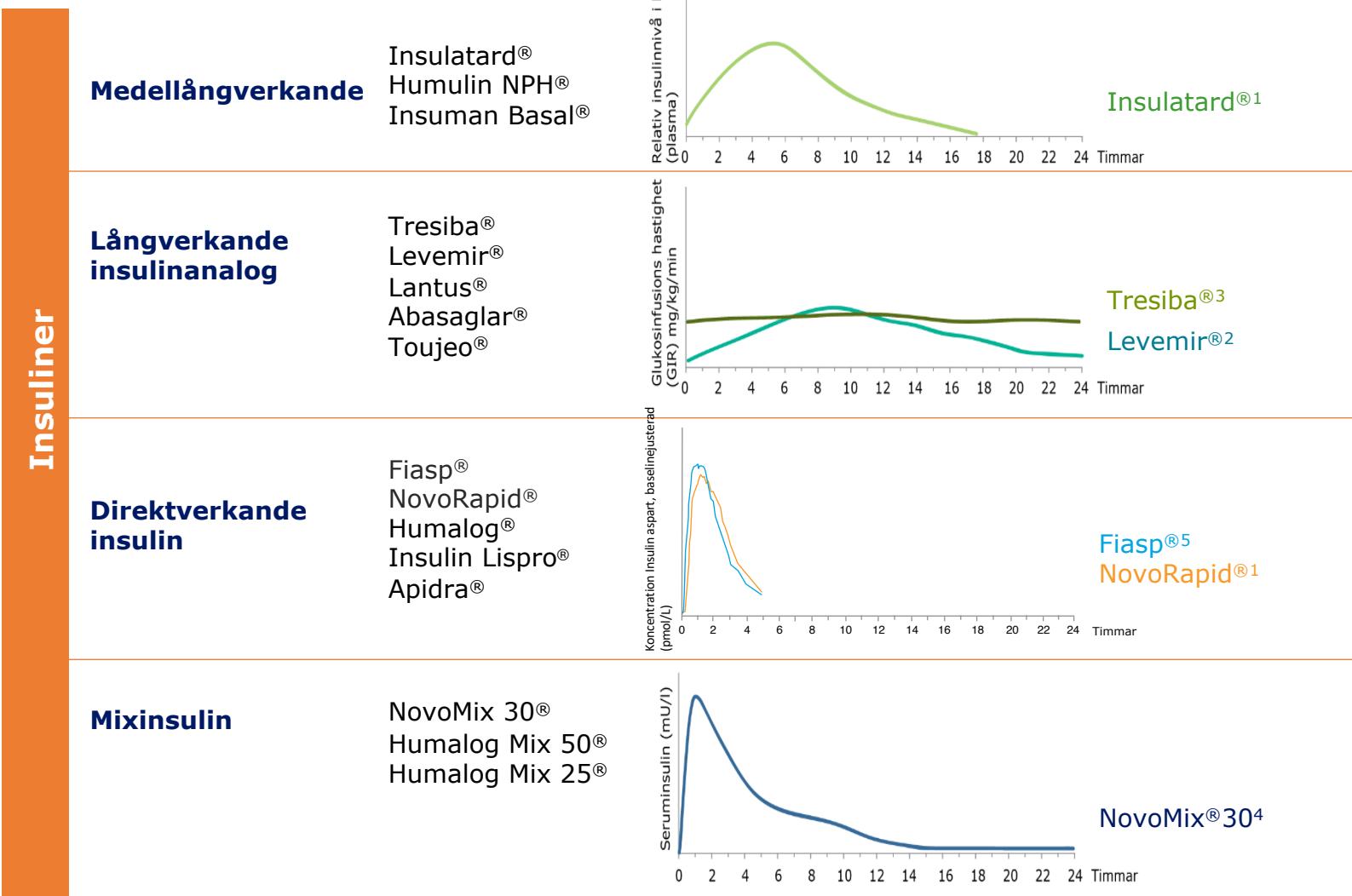
Dagens Medicin 20221111

Behandling typ 1 diabetes

- Destruktion av insulinproducerande betaceller (coxackie virus)
- Leder till insulinbrist
- Behandlas med exogen insulintillförsel
- Insulin ges parenteralt (iv, sc, intraperitonealt, intrapulmonellt)
- Vanligen via pennor eller pump

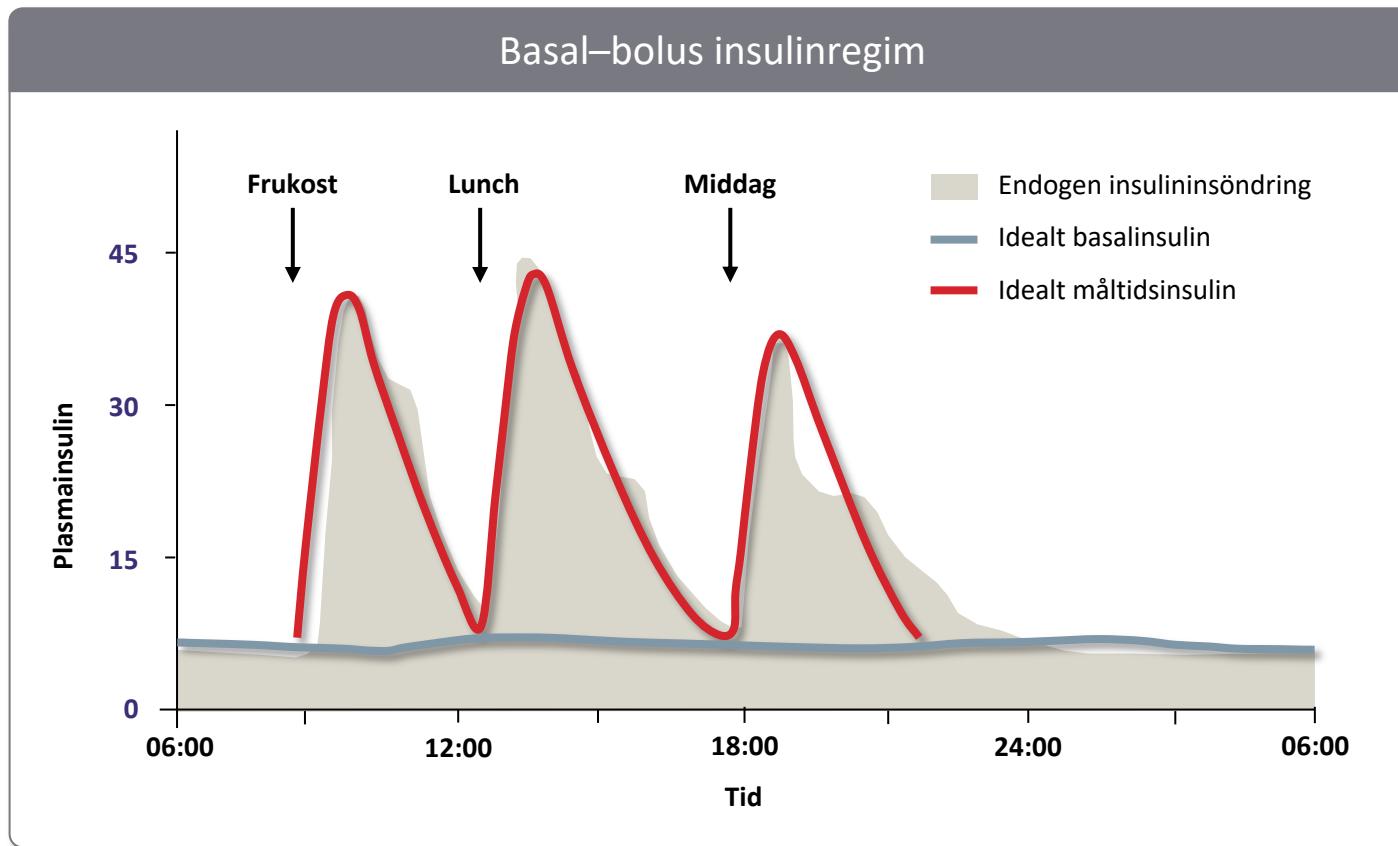
Humant insulin





1. Hirsch N. Engl J Med 2005;253:174-83.
2. Klein O. et al. Diab Obes Metab 2007;9:290-299.
3. Heise S. et al. Diab Obes Metab 2012;14(10):944–50.
4. Liebl A. et al. Drugs 2012;72(11):1495-1520.
5. Fiasp (insulin aspart) produktresumé 01/2017.

Den ideala insulinregimen bör efterlikna den endogena insulininsöndringen



Kruszynska YT. et al. *Diabetologia* 1987;30:16–21

Tillförsel av insulin kräver diabetes hjälpmedel

1921

Insulin
syringes



1985

Insulin
pens



1983

Insulin
pumps



2006

Insulin pumps
with integrated
CGM Realtime



2013

LGS

2014

PLGM

2017

Hybrid
closed loop



2017

Insulin pen
and an
intuitive
mobile app



2018

Connected
insulin pen



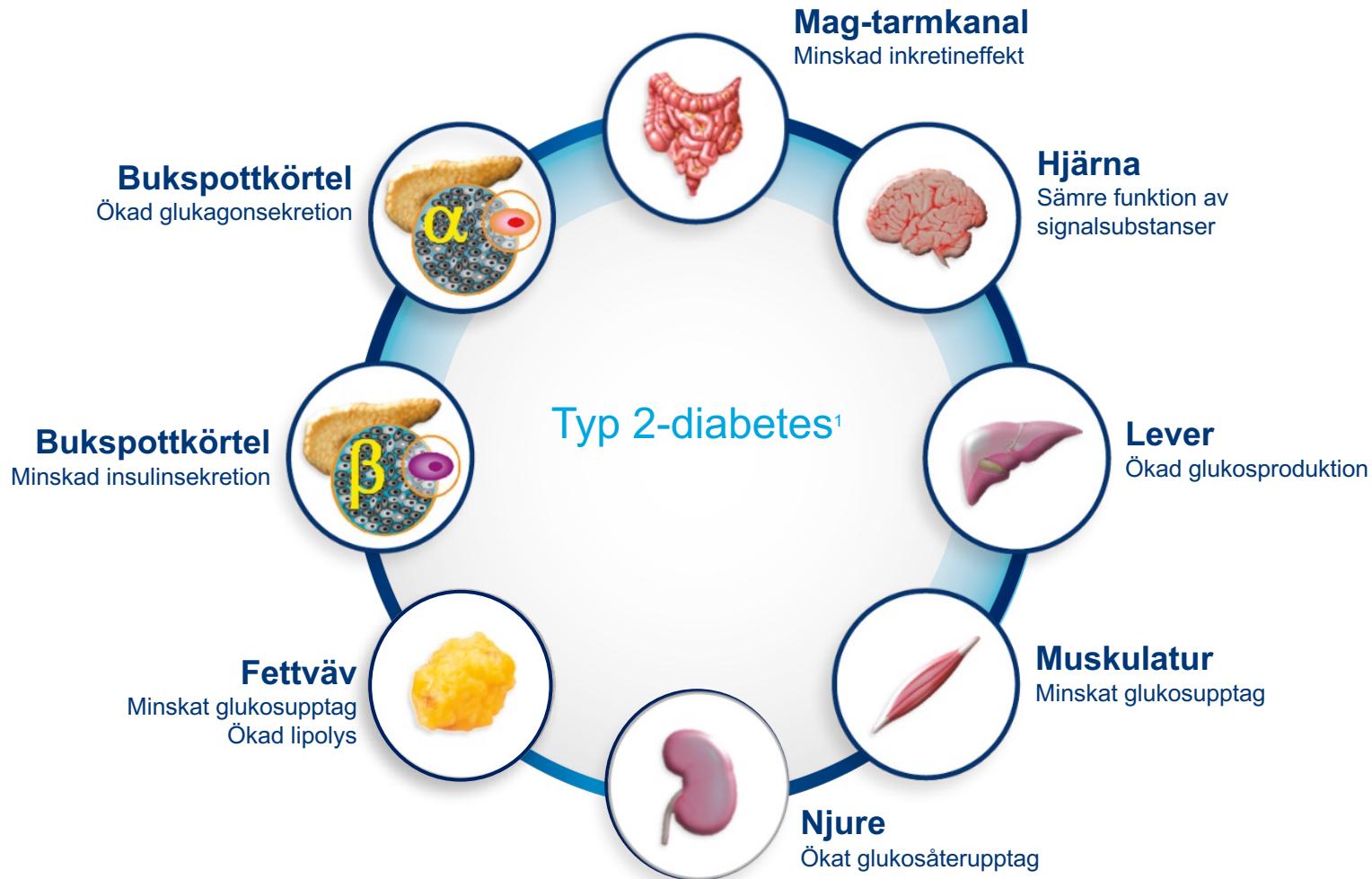
Utvecklingen går allt snabbare!



Behandling typ 2 diabetes

- Insulinresistens, över tid sjunkande insulinproduktion
- Behandas med flertal olika glukossänkande läkemedel, olika MOA
- Insulinbehandling vanligt efter många års diabetes duration
- Heterogen sjukdomsgrupp, *olika beh till olika typer*

Patofysiologi vid typ 2-diabetes



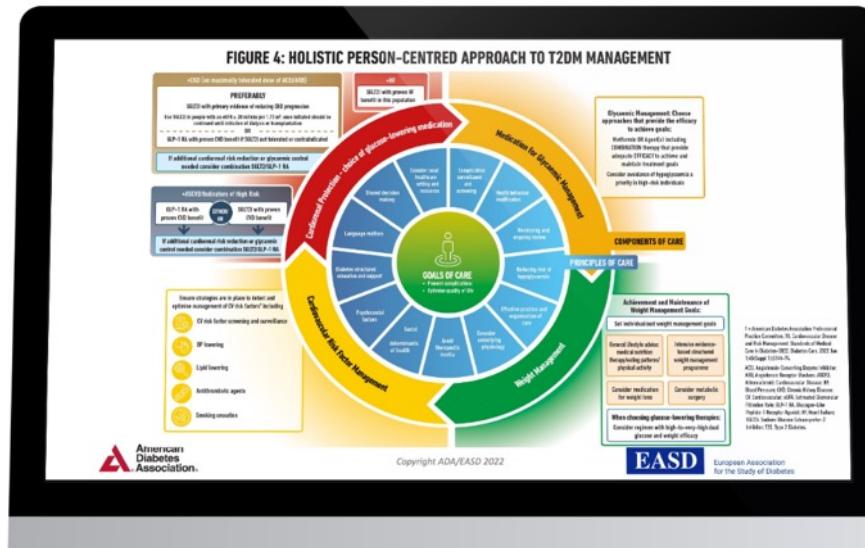
Referenser: 1. DeFronzo RA, Eldor R, Abdul-Ghani M. Pathophysiologic approach to therapy in patients with newly diagnosed type 2 diabetes. *Diabetes Care*. 2013;36(Suppl2):S127-S138.

Effekt och säkerhet olika diabetesläkemedel DM-2

	HbA1c	Blod tryck	Vikt	CVD risk
Insulin	⬇	—	⬆	— ?
Sulfonylurea	⬇	—	⬆	— ?
Metformin	⬇	—	⬇	⬇ ?
α-glukosidas抑制器	⬇	—	—	?
Glitazoner (TZDs)	⬇	⬇	⬆	⬆ ? ⬇
DPP4 hämmare	⬇	⬇	—	—
GLP-1 receptor agonister	⬇	⬇	⬇	⬇
SGLT-2 hämmare	⬇	⬇	⬇	⬇
Dual agonister GLP-1 and GIP	⬇	⬇	⬇	?

1. Tahrani AA, et al. *Lancet*. 2011 Jun 24 [Epub ahead of print]. 2. Tanaka T, et al. 2011 Jul 6. [Epub ahead of print]. 3. Chu NV, et al. *Diabetes Care*. 2002;25(3):542-549.
4. Wagner H, et al. *Diabetes Care*. 2006;29(7):1471-7. 5. Boyne MS, et al. *Diabetes Care*. 1999;22 Suppl 3:C45-53.

Joint ADA/EASD2022— Management of Hyperglycaemia in Type 2 Diabetes



Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, Rosas SE, Del Prato S, Mathieu C, Miringone G, Rossing P, Tankova T, Tsapas A, Buse JB

Diabetes Care 2022; <https://doi.org/10.2337/dc22-0034>. *Diabetologia* 2022; <https://doi.org/10.1007/s00125-022-05787-2>.

FIGURE 4: HOLISTIC PERSON-CENTRED APPROACH TO T2DM MANAGEMENT



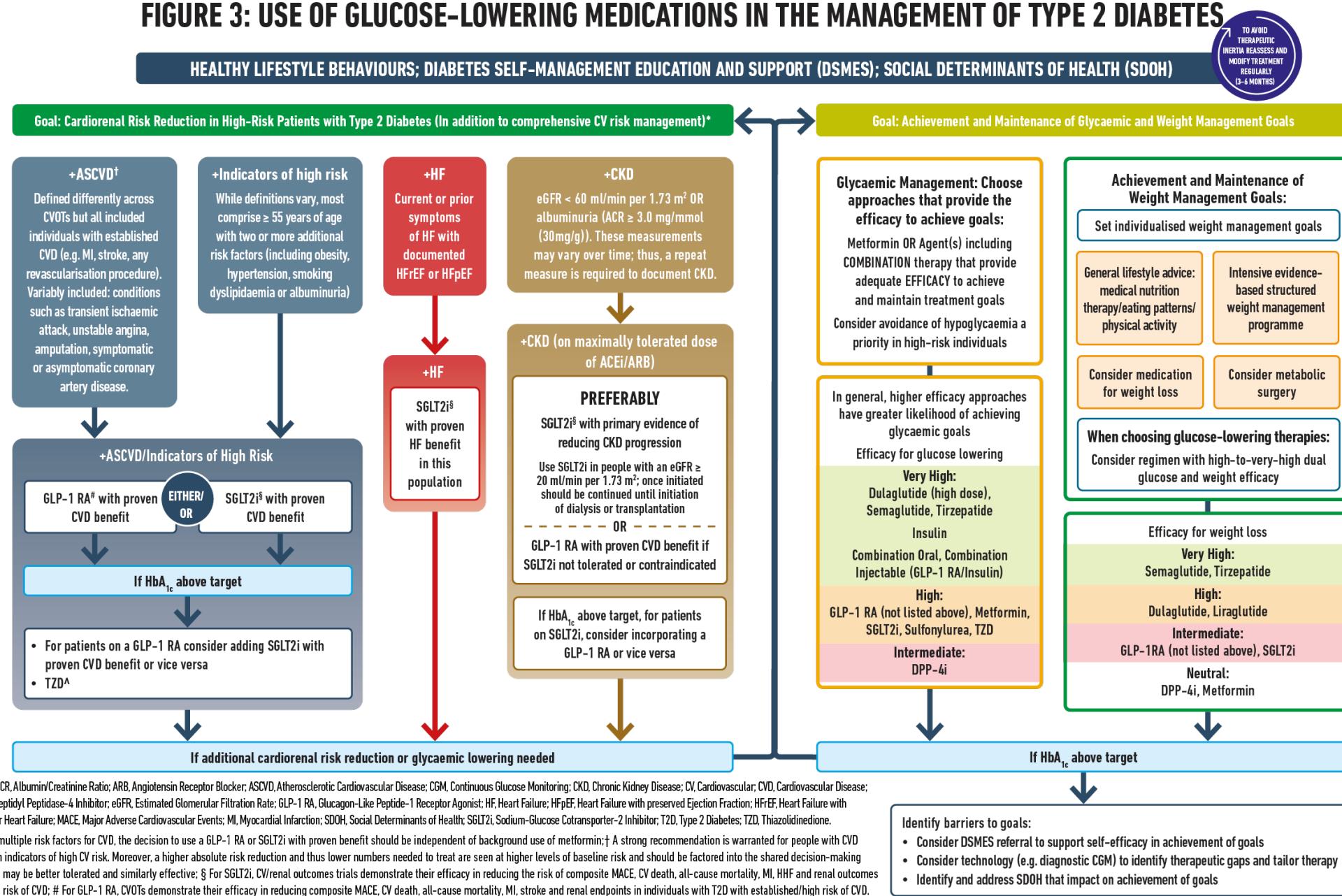
1 = American Diabetes Association Professional Practice Committee. 10. Cardiovascular Disease and Risk Management: Standards of Medical Care in Diabetes-2022. *Diabetes Care*. 2022 Jan 1;45(Suppl 1):S144-74.

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.

Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, Rosas SE, Del Prato S, Mathieu C, Mingrone G, Rossing P, Tankova T, Tsapas A, Buse JB

Diabetes Care 2022; <https://doi.org/10.2337/dci22-0034>. *Diabetologia* 2022; <https://doi.org/10.1007/s00125-022-05787-2>.

FIGURE 3: USE OF GLUCOSE-LOWERING MEDICATIONS IN THE MANAGEMENT OF TYPE 2 DIABETES



ACEI, Angiotensin-Converting Enzyme Inhibitor; ACR, Albumin/Creatinine Ratio; ARB, Angiotensin Receptor Blocker; ASCVD, Atherosclerotic Cardiovascular Disease; CGM, Continuous Glucose Monitoring; CKD, Chronic Kidney Disease; CV, Cardiovascular; CVD, Cardiovascular Disease; CVOT, Cardiovascular Outcomes Trial; DPP-4i, Dipeptidyl Peptidase-4 Inhibitor; eGFR, Estimated Glomerular Filtration Rate; GLP-1 RA, Glucagon-Like Peptide-1 Receptor Agonist; HF, Heart Failure; HFpEF, Heart Failure with preserved Ejection Fraction; HFrEF, Heart Failure with reduced Ejection Fraction; HHF, Hospitalisation for Heart Failure; MACE, Major Adverse Cardiovascular Events; MI, Myocardial Infarction; SDOH, Social Determinants of Health; SGLT2i, Sodium-Glucose Cotransporter-2 Inhibitor; TZD, Type 2 Diabetes; TZD, Thiazolidinedione.

* In people with HF, CKD, established CVD or multiple risk factors for CVD, the decision to use a GLP-1 RA or SGLT2i with proven benefit should be independent of background use of metformin; † A strong recommendation is warranted for people with CVD and a weaker recommendation for those with indicators of high CV risk. Moreover, a higher absolute risk reduction and thus lower numbers needed to treat are seen at higher levels of baseline risk and should be factored into the shared decision-making process. See text for details; ^ Low-dose TZD may be better tolerated and similarly effective; § For SGLT2i, CV/renal outcomes trials demonstrate their efficacy in reducing the risk of composite MACE, CV death, all-cause mortality, MI, HHF and renal outcomes in individuals with T2D with established/high risk of CVD; # For GLP-1 RA, CVOTs demonstrate their efficacy in reducing composite MACE, CV death, all-cause mortality, MI, stroke and renal endpoints in individuals with T2D with established/high risk of CVD.

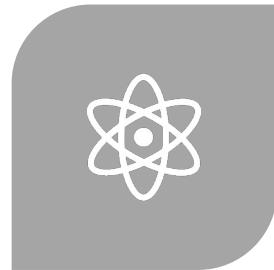
Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, Rosas SE, Del Prato S, Mathieu C, Migrone G, Rossing P, Tankova T, Tsapas A, Buse JB

Diabetes Care 2022; <https://doi.org/10.2337/dc22-0034>. Diabetologia 2022; <https://doi.org/10.1007/s00125-022-05787-2>.

Vilka läkemedel vid typ 2 diabetes?



METFORMIN



GLP-1 RA



SGLT-2 HÄMMARE



KOMBINATIONER AV
OVAN MED INSULIN