

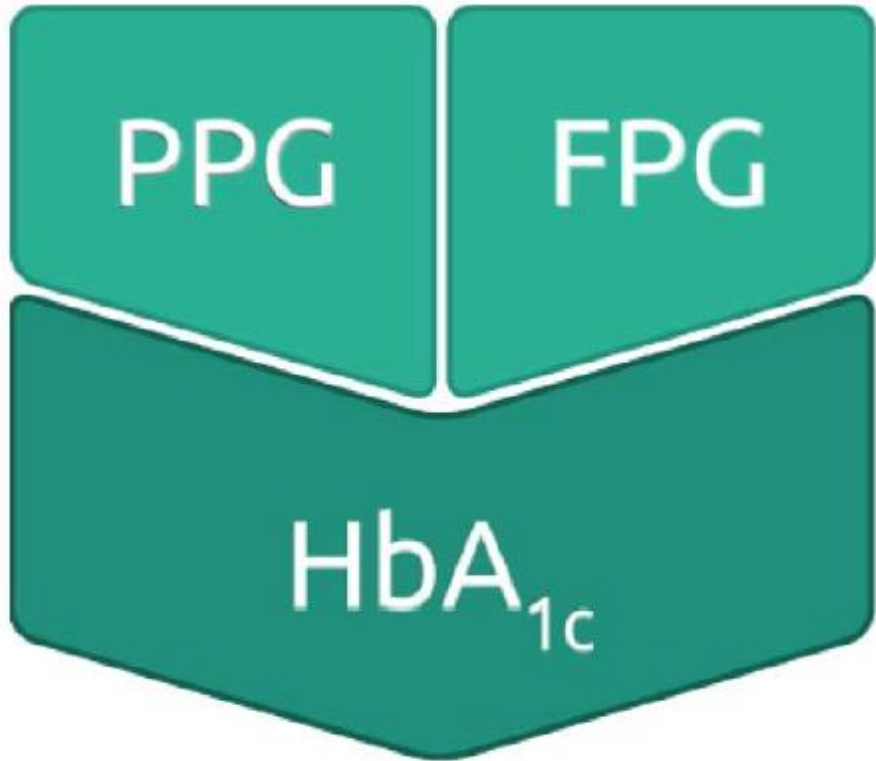
Diabetes Mellitus – case studies

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Definition of diabetes (metabolic disorder)

- Chronically raised blood glucose (hyperglycaemia)
- Insulin/Glucagon
 - Insulin is responsible for lowering glucose levels
 - Glucagon is responsible for increasing glucose levels
- Two major subtypes
 - Type 1 diabetes – absolute insulin deficiency (5-15%)
 - Type 2 diabetes – impaired insulin secretion and insulin resistance (85-95%)
 - Prevalence: 8% of population

Diagnostic criteria



FPG – fasting plasma glucose

DM > 7 mmol/l

PPG – postprandial glucose

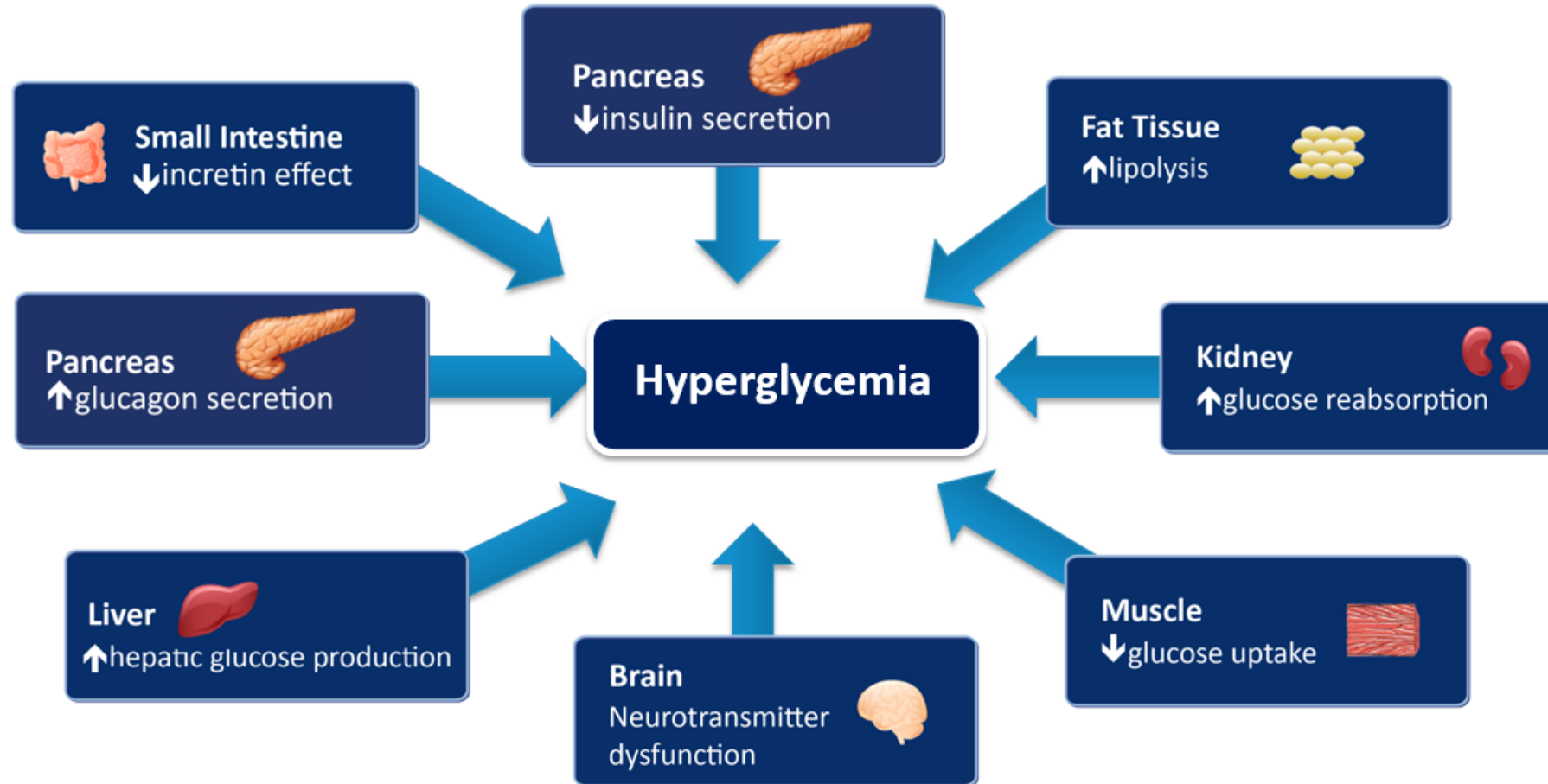
DM > 11,1 mmol/l

HbA_{1c} – glycated hemoglobin

DM ≥ 6,5% (48 mmol/mol)

CZ HbA _{1c} (mmol/mol)	US/studies HbA _{1c} (%)
31	5
42	6
53	7
64	8
75	9
86	10
97	11
108	12

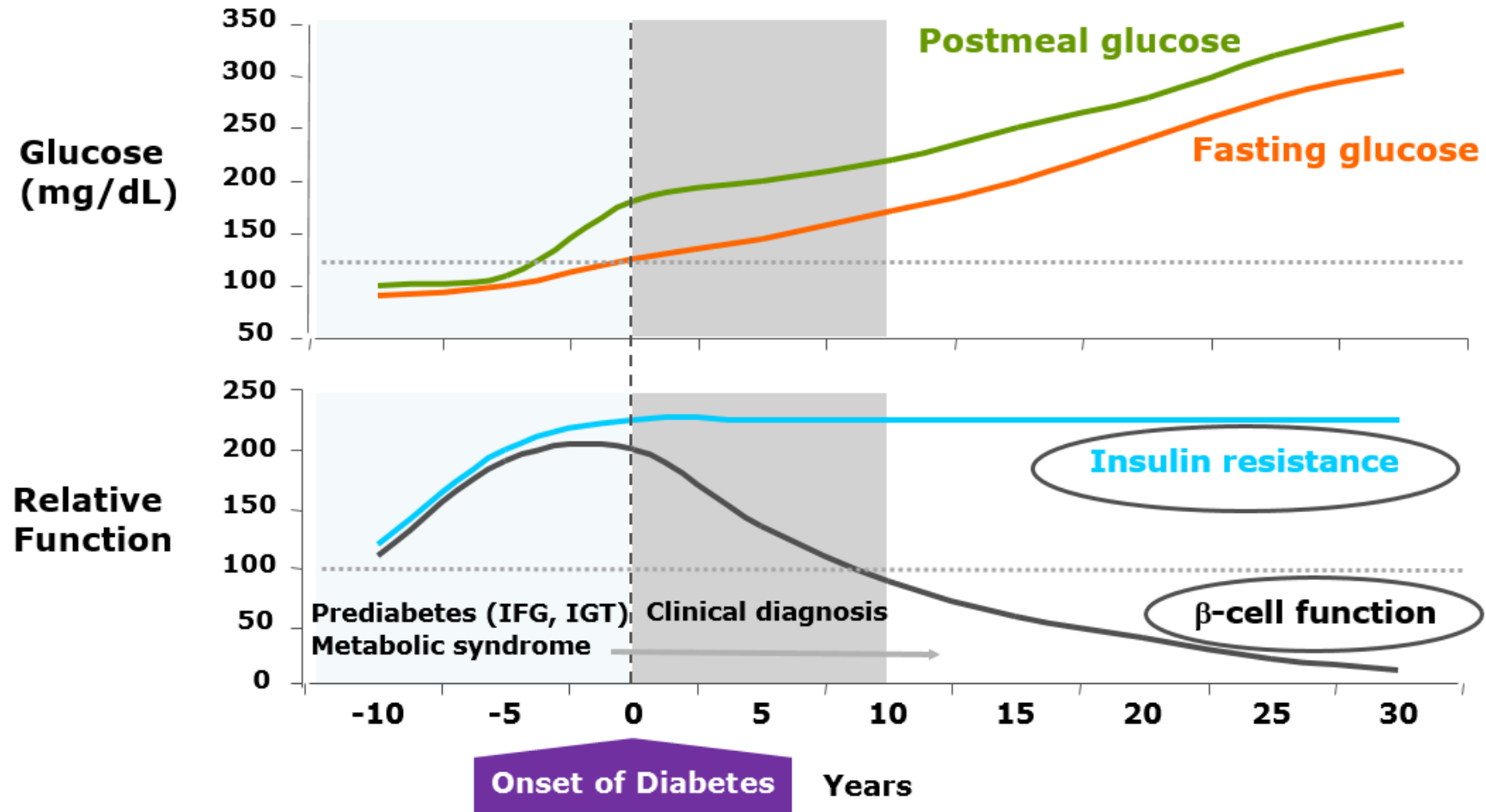
Octet of pathogenesis



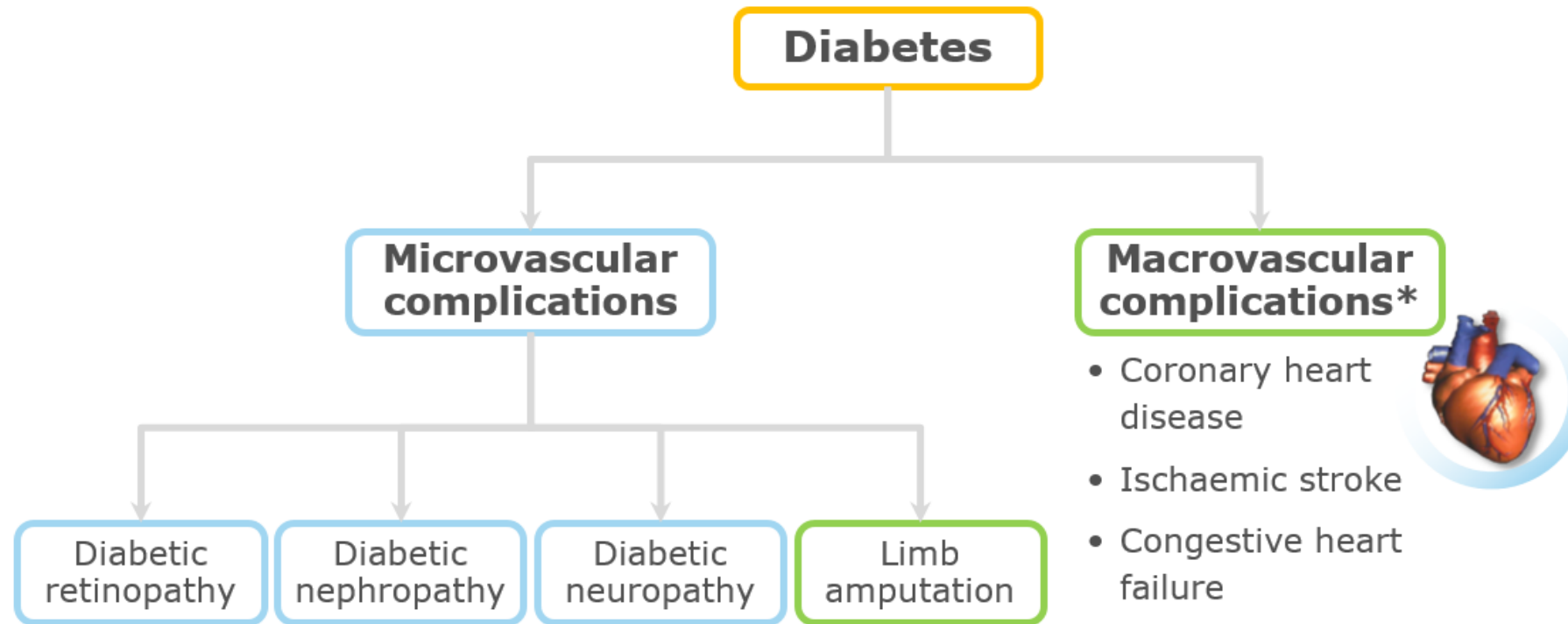
Kruger DF, et al. *Diabetes Educ.* 2010 Jul-Aug;36 Suppl 3:44S-72S.

1. DeFronzo RA, et. al *Metabolism.* 1989;38:387–395. 2. Groop LC, et. al. *J Clin Invest.* 1989;84:205–213

Natural history of type 2 diabetes



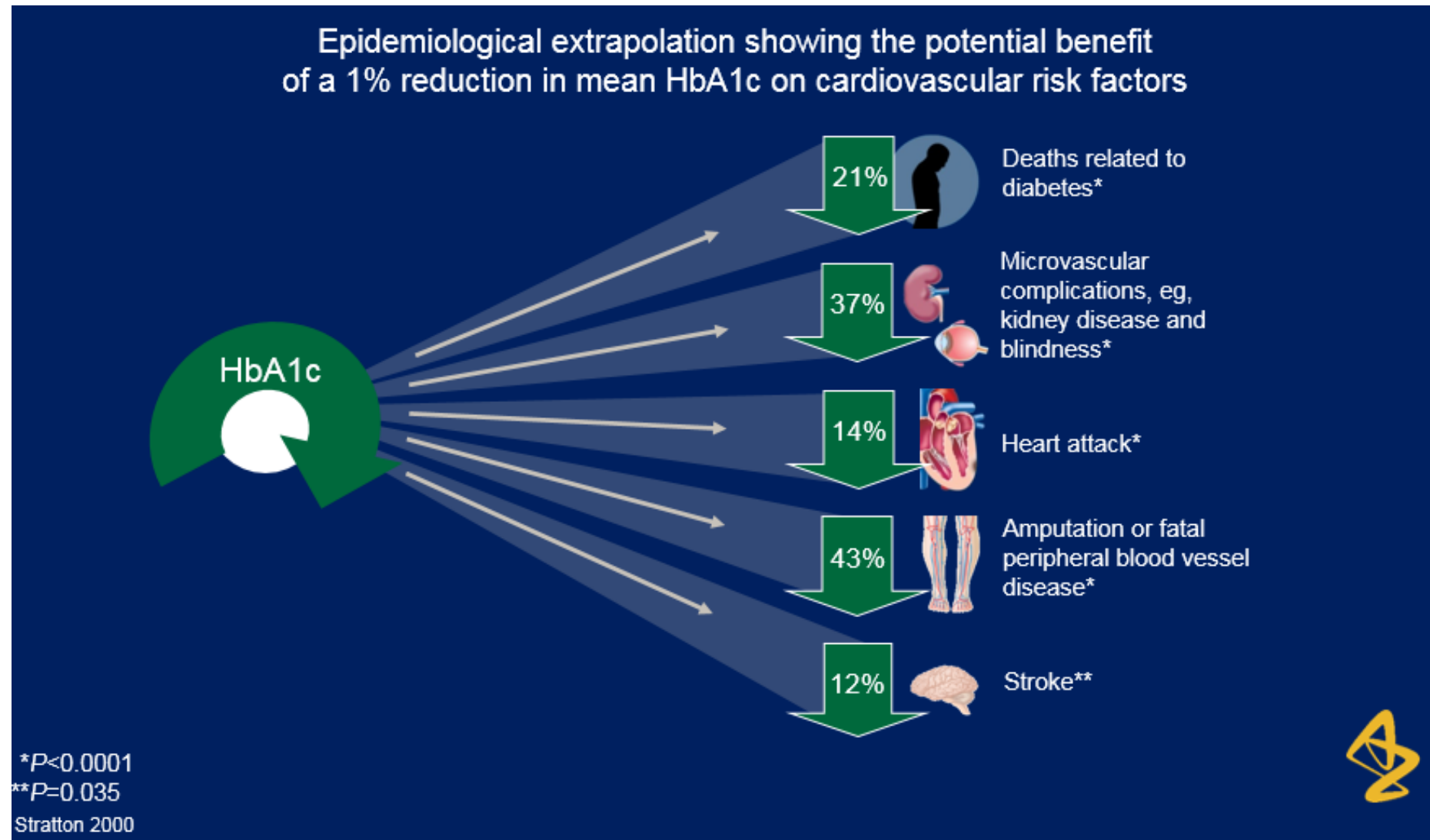
Macrovascular and microvascular complication of diabetes



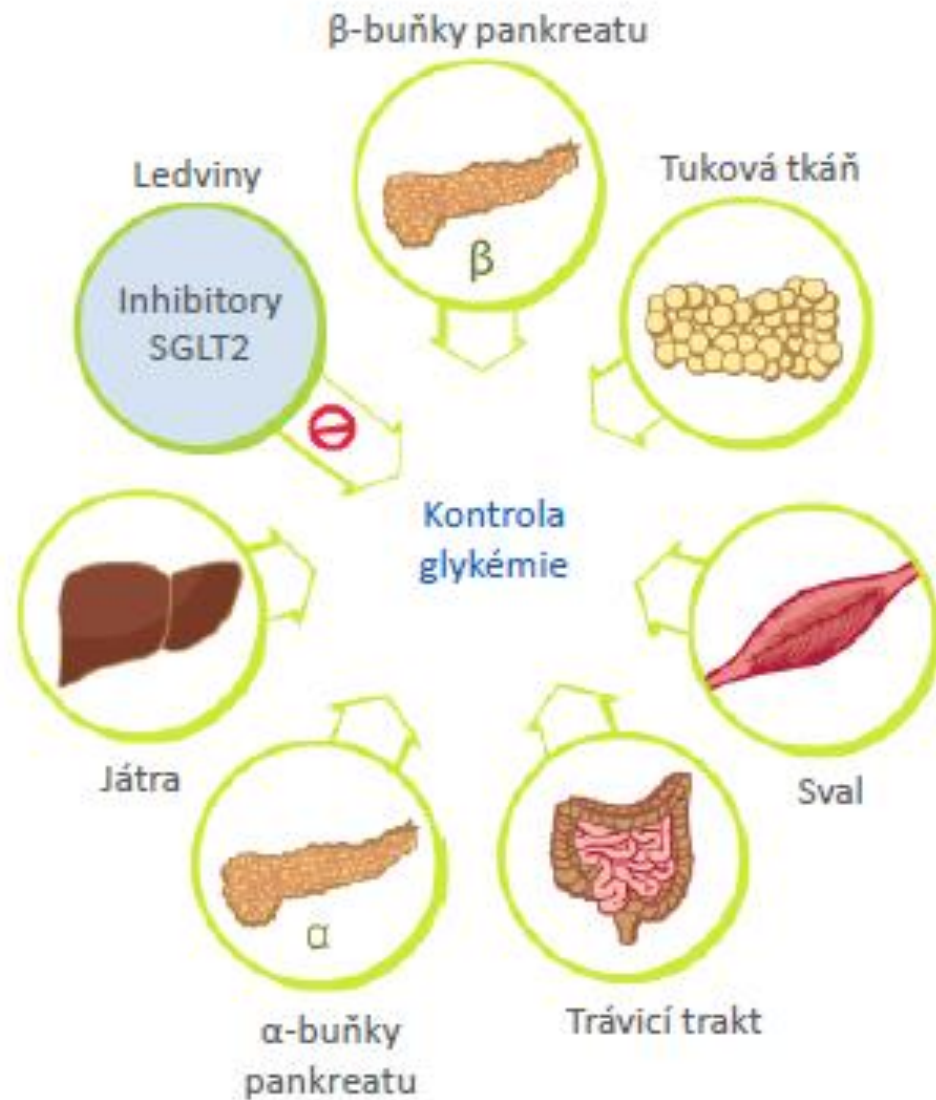
*The most common cause of death in patients with diabetes

Diabetes is a vascular disease

Lowering HbA1c Correlates to a Lower Rate of Cardiovascular Complications

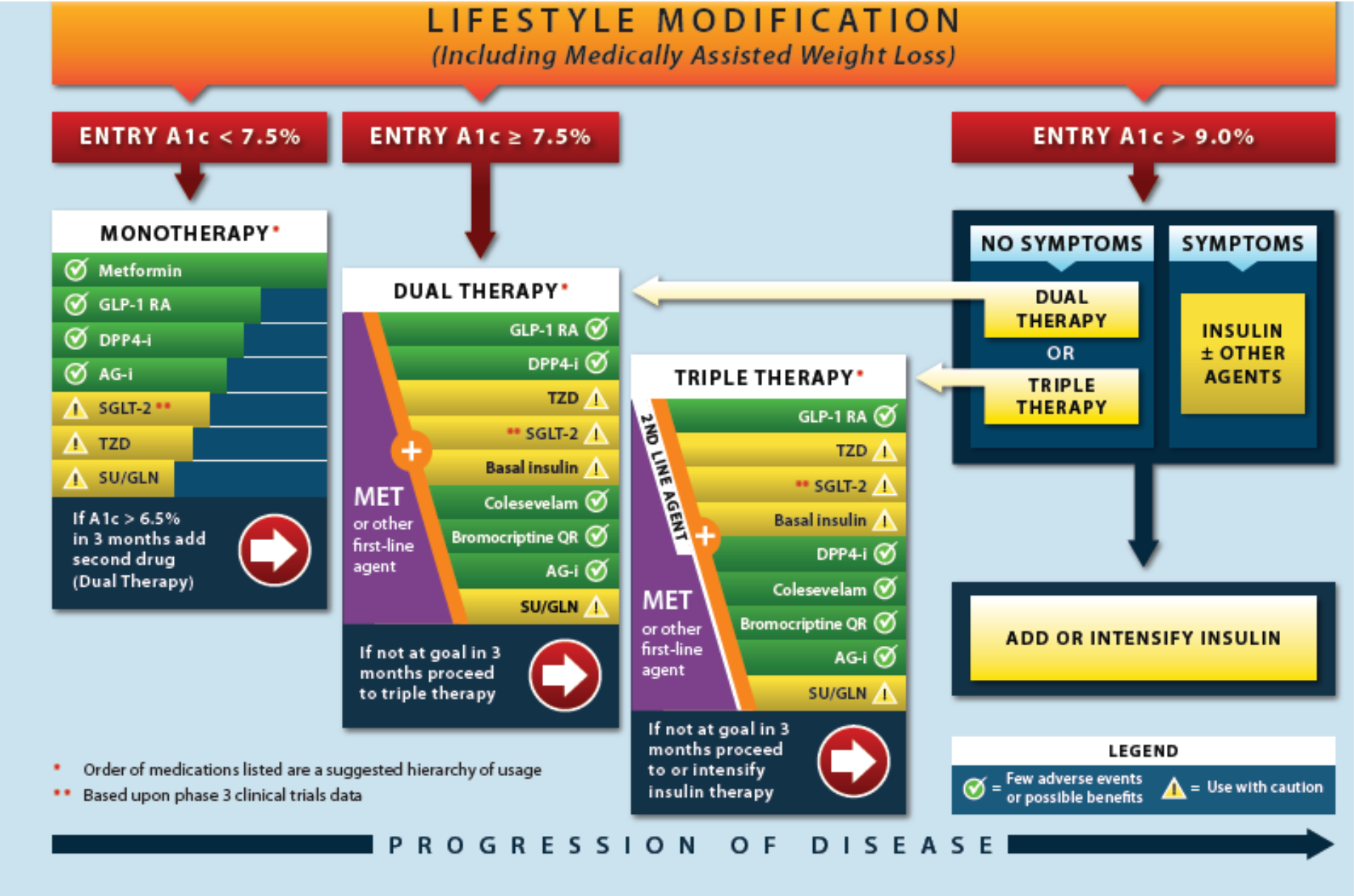


Treatment options



- Metformin – basal treatment
- SU derivatives
- Incretins:
 - GLP-1 agonists
 - DPP-4 inhibitors (gliptins)
- SGLT2 inhibitory (gliflozins)
- Pioglitazon
- Repaglinid
- Insulins

Guidelines



New/modern drugs

- DPP4 inhibitors (gliptins)
 - Alogliptin, linagliptin, saxagliptin, sitagliptin, vildagliptin
- GLP1 receptor agonists
 - Exenatide, liraglutide, lixisenatide
- SGLT2 inhibitors (gliflozins)
 - Canagliflozin, dapagliflozin, empagliflozin

Case study 1

– patient with a newly diagnosed type 2 diabetes

Family anamnesis: parents and brother – treated T2D

Personal anamnesis: 75 years, 67 kg, 164cm, hypertensis, after cataract surgery

Current diseases: during autumn 2013 spontaneously lost weight 3 kg/3 month; September 2013 polyuria especially et night hours, after checking with GP hyperglycaemia 19,6 mmol/l – sent to hospitalization in internal medicine

Which testing would you suggest?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Blood tests – glycaemia, liver function tests, lipids, thyroid hormones
 - Hyperglycaemia 19 mmol/l, glycated hemoglobin 127 mmol/mol, slight increase liver function tests, lipids and thyroid hormones normal
- Renal function
 - Mikroalbuminuria 4,0 g/l
- Blood pressure
- Abdominal ultrasound scan
 - Liver steatosis
- Eyes examinations

Which treatment
would you suggest?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Intensified insulin regimen (48IU/day)
- Education – lifestyle modification – food and exercise, glycaemia self-monitoring and insulin application, complications of T2D
- There has been a satisfactory compensation of diabetes
 - Weight 60kg, BMI 22,3
 - Fasting plasma glucose 6,7 mmol/l, postprandial glucose 8,9 mmol/l
- What is the next step?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Release into outpatient care

Would you do some additional testing?

What tests?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Concentration of C-peptid

What is the parametr?

What is it says?

Case study 1

– patient with a newly diagnosed type 2 diabetes

Would you change the current treatment?

Why?

How?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Fixed combination of PAD – Janumet 50mg/1 000mg tbl. BID with Glyclada 60 mg BID

What are active ingredients/agents?

Why these drugs?

What is their mechanism of action?

What are their side effects and potential risks?

Case study 1

– patient with a newly diagnosed type 2 diabetes

- Janumet = sitagliptin (DPP-4 inhibitor) + metformin (biguanid)
- Glyclada = gliklazid (sulfonylurea)

Case study 1

– patient with a newly diagnosed type 2 diabetes

Diabetes was compensated:

- Fasting plasma glucose 5,4-6,2 mmol/l a and then 4,1-5,2 mmol/l
- Postprandial glucose up to 8,7 mmol/l and then maximally 8 mmol/l
- Glycated hemoglobin 59 mmol/mol

What is the next step?

Case study 1

– patient with a newly diagnosed type 2 diabetes

Withdrawal of sulfonylurea

With adherence to lifestyle fixed combination (DPP4i and metformin) is adequate treatment for diabetes control

Case study 2

– patient with type 1 diabetes

Family anamnesis: father – impaired glucose tolerance

Personal anamnesis: 54 years, 65 kg, 170 cm, HbA1c 7,5%, chronic pancreatitis, T1D diagnosed in 2005, hypertension without treatment, after amputation of the thumb and the second toe of the left foot, stopped smoking 2002

Current diseases: BP 135/85, long-term not-healed defect on left leg – fifth toe, hyperkalemia (6,1 mmol/l), microalbuminuria

What treatment would you suggest?

Case study 2

– patient with type 1 diabetes

- Humulin R 6-8-6 IU + Lantus 8 IU et 7 p.m.

What is the next treatment step?

Case study 2

– patient with type 1 diabetes

- Furon 40mg ½-0-0, Lusopress 20 mg 1-0-0
 - What are these medications? Their active ingredient and mechanism of action?
- Vitar soda a NaHCO₃ parenterally
 - What is the cause of hyperkalemia?
- Amputation of the fifth toe + ATB based on culturing + local treatment

Thank you for your attention