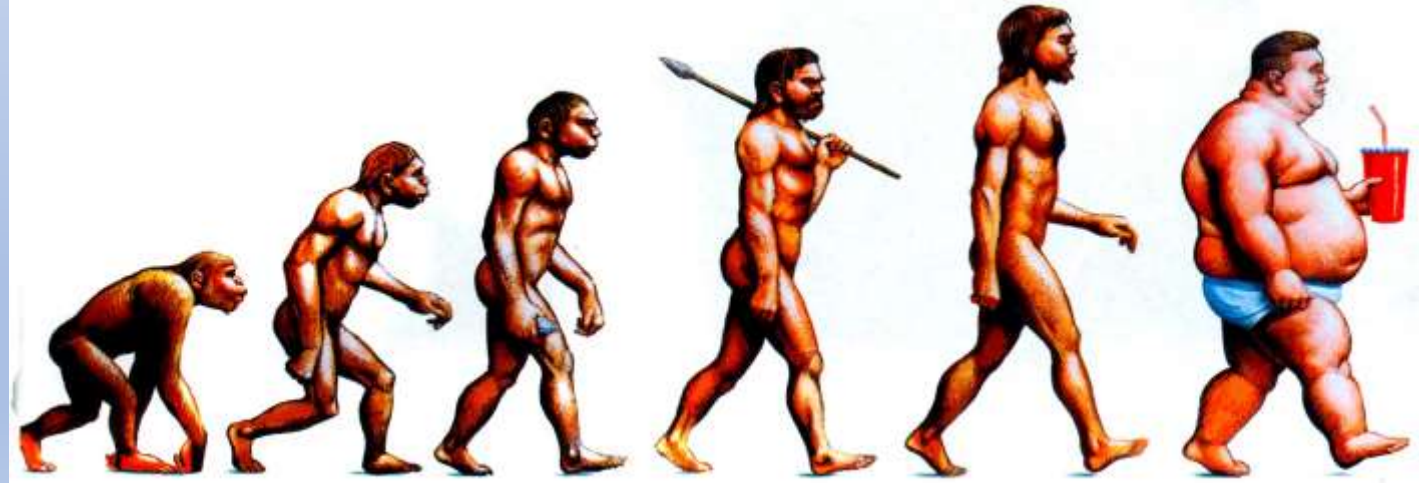
DIABETES ; NEW APPROACHES

CAN MY PATIENT WITH TYPE 2 DIABETES
STOP INSULIN
AND OTHER VIGNETTES OF CURRENT MODERN
DIABETES TREATMENT

Presenter Disclosure

Relationships with commercial interests:	
Grants/Research support NOVONORDISK; SANOFI	
Speaker's bureau/honoraria:DEXCOM; ANIMAS; MEDTRONIC; ELI LILLY NOVORDISK; BI ; SANOFI;	
Consulting/Advisory Board:SAME AS ABOVE	
Other/Patents	

The shape of things to come



2018

ABCDES^3 of Diabetes Care

✓ A • A1C – optimal glycemic control (usually ≤7%)

✓ B • BP – optimal blood pressure control (<130/80)

✓ C • Cholesterol – LDL <2.0 mmol/L or >50% reduction

✓ D • Drugs to protect the heart

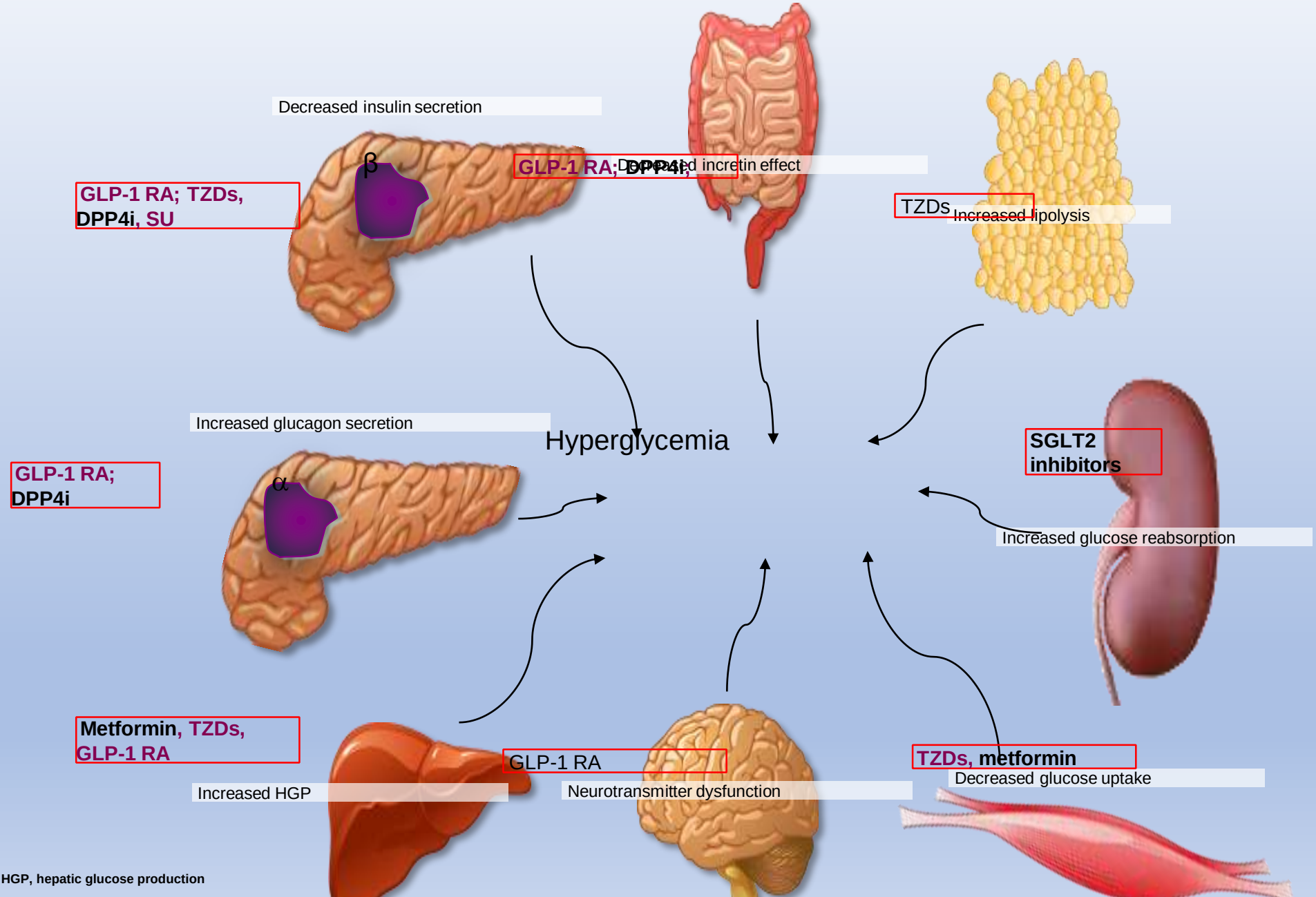
A – ACEi or ARB | S – Statin | A – ASA if indicated | SGLT2i/GLP-1 RA with demonstrated CV benefit if type 2 DM with CVD and A1C not at target

✓ E • Exercise / Healthy Eating

✓ S • Screening for complications

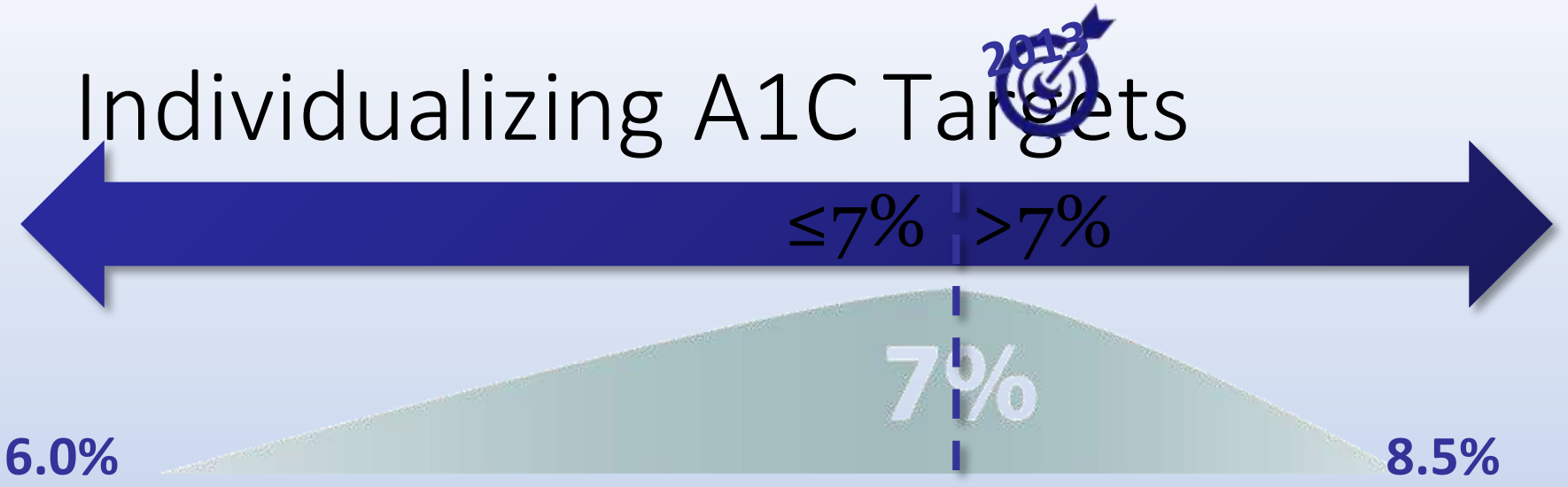
✓ S • Smoking cessation

✓ S • Self-management, stress and other barriers



HGP, hepatic glucose production

Individualizing A1C Targets



A target A1C ≤6.5% may be considered in some patients with type 2 diabetes to further lower the risk of nephropathy and retinopathy which must be balanced against the risk of hypoglycemia

Most patients with type 1 and type 2 diabetes

Consider 7.1-8.5% if:

- Limited life expectancy
- High level of functional dependency
- Extensive coronary artery disease, at high risk of ischemic events
- Multiple comorbidities
- History of recurrent severe hypoglycemia
- Hypoglycemia unawareness
- Longstanding diabetes for whom it is difficult to achieve an A1C ≤7%, despite effective doses of multiple antihyperglycemic agents, including intensified basal-bolus insulin therapy

MEET SARAH

PREVIOUS GDM ; PCOS

NOW TYPE 2 DM SINCE AGE 35

PRESENTLY 45 YEARS OF AGE; ON

HUMALOG 60 UNITS AC MEALS

LANTUS 100 UNITS AT NIGHT

LIPITOR

AVAPRO

METFORMIN

COULDNT TOLERATE;SGLT2 INHIBITORS OR GLP1 AGONIST

EXAM

BP 140/70 bmi 39

NO RETINOPATHY

CVS NORMAL

FEET NORMAL MONOFILAMENT

LABS

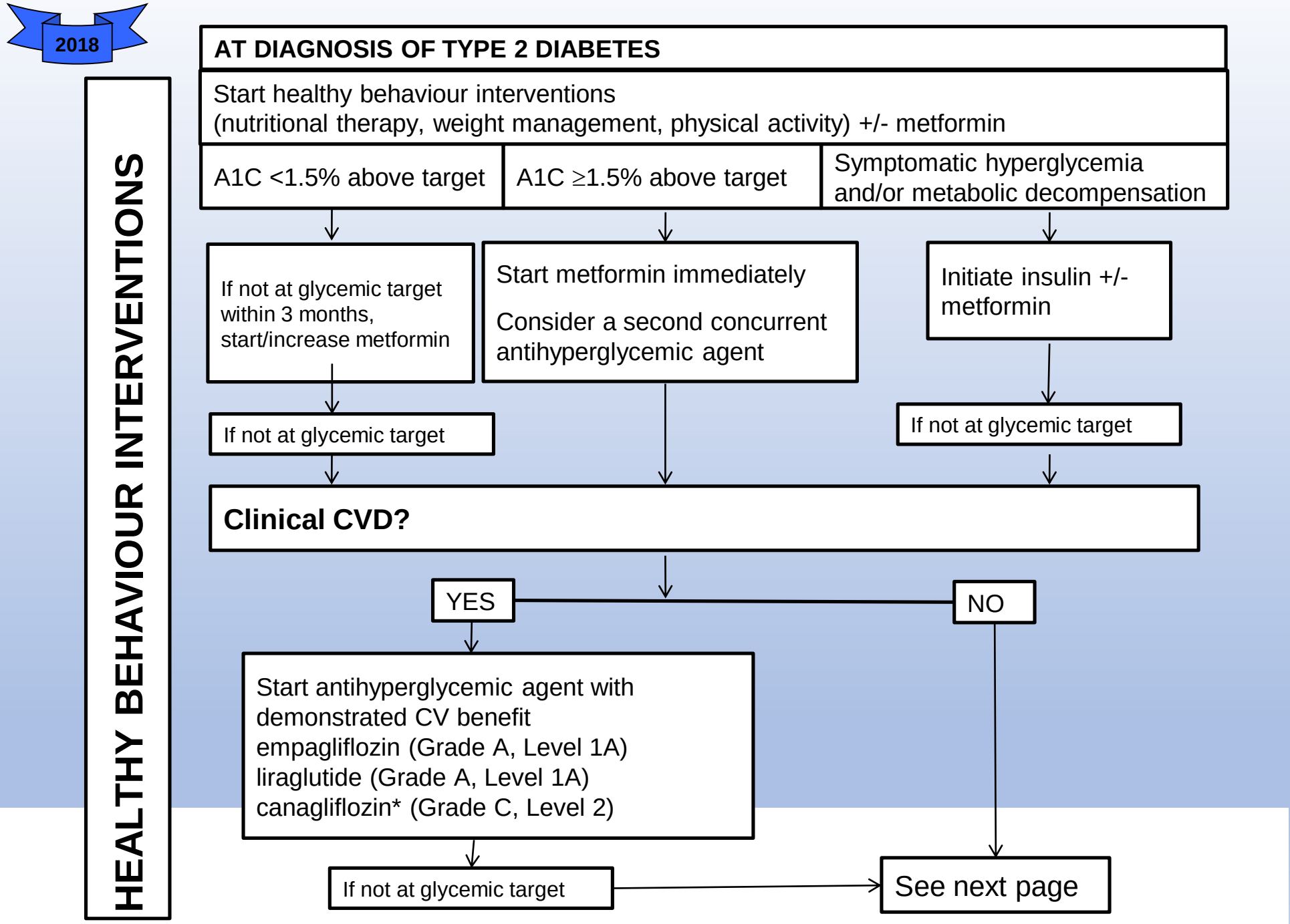
A1C 0.089

LDL 2.0

SEVERE NEPHROPATHY; 4 GRAM PER 24 HOURS

CREATININE NORMAL

LFTS ELEVATED



* Avoid in people with prior lower extremity amputation

2018

Diabetes Canada Recommendation

Clinical CVD?

NO

Add an additional antihyperglycemic agent best suited to the individual based on the following:

CLINICAL CONSIDERATIONS	CHOICE OF AGENT
Avoidance of hypoglycemia and/or weight gain with adequate glycemic efficacy	DPP-4 inhibitor, GLP-1 receptor agonist or SGLT2 inhibitor
Other considerations: Reduced eGFR and/or albuminuria Clinical CVD or CV risk factors Degree of hyperglycemia Other comorbidities (heart failure, hepatic disease) Planning pregnancy Cost/coverage **Patient preference**	See Renal Impairment Appendix

Lipscombe L et al. *Can J Diabetes* 2018;42;S88–S103.

Add additional antihyperglycemic agent best suited to the individual by prioritizing patient characteristics
(***agents listed in alphabetical order by CV outcome data***):

Class	Effect on CVD Outcome	Hypo-glycemia	Weight	Relative A1C lowering when added to metformin	Other therapeutic considerations	Cost
GLP-1 receptor agonists	lira: Superiority in people with type 2 diabetes with clinical CVD exenatide LAR & lixi: Neutral	Rare	↓↓	↓↓ to ↓↓↓	GI side effects, Gallstone disease Contraindicated with personal/family history of medullary thyroid cancer or MEN 2 Requires subcutaneous injection	$$$$
SGLT-2 inhibitors	Cana & empa: Superiority in people with type 2 diabetes with clinical CVD	Rare	↓↓	↓↓ to ↓↓↓	Genital infections, UTI, hypotension, dose-related changes in LDL-C Caution with renal dysfunction, loop diuretics, in the elderly. Dapagliflozin not to be used if bladder cancer. Rare diabetic ketoacidosis (may occur with no hyperglcemia). Increased risk of fracture and amputations with canagliflozin. Reduced progression of nephropathy & CHF hospitalization with empagliflozin and canagliflozin in persons with clinical CVD.	$$$
DPP-4 inhibitors	alo, saxa, sita: Neutral	Rare	Neutral	↓↓	Caution with saxagliptin in heart failure Rare joint pain	$$$
Insulin	glar: Neutral degludec: non-inferior to glar	Yes		↓↓↓↓	No dose ceiling, flexible regimens Requires subcutaneous injection	$- $$$$
Thiazolidinediones	Neutral	Rare		↓↓	CHF, edema, fractures, rare bladder cancer (pioglitazone), cardiovascular controversy (rosiglitazone), 6-12 weeks required for maximal effect	$$
Alpha-glucosidase inhibitor (acarbose)		Rare	Neutral	↓	GI side effects common Requires 3 times daily dosing	$$
Insulin secretagogues: **Meglitinide** **Sulfonylurea**		 Yes Yes		 ↓↓ ↓↓	More rapid BG-lowering response Reduced postprandial glycemia with meglitinides but usually 3 to 4 times daily dosing Gliclazide and glimepiride associated with less hypoglycemia than glyburide. Poor durability	 $$ $
Weight loss agent (orlistat)		None	↓	↓	GI side effects Requires 3 times daily dosing	$$$

Lipscombe L et al. C*an J Diabetes* 2018;42;S88–S103.

common terminology

- secretagogues
- biguanides
- dpp4 inhibitors
- glp1 agonists
- slgt2 inhibitors
- tzd
- alphaglucosidase inhibitors
- basal insulin
- basal plus
- mdi

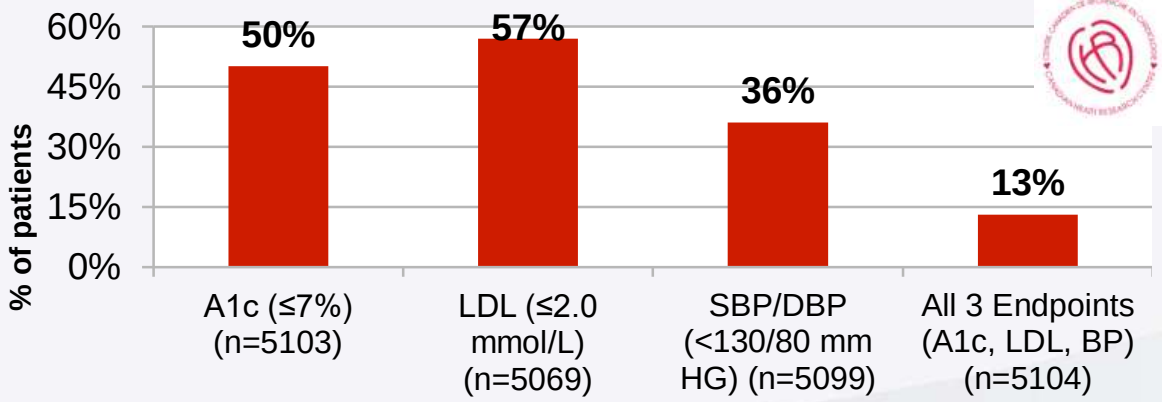
WHAT NEXT

PATIENT DEPRESSED

SHE IS NOT HAPPY WITH HER CURRENT TREATMENT

SHE HAS DECIDED TO GO WITH BARIATRIC SURGERY

Guideline Targets Achieve



Canadian Heart Research Centre

Leiter LA et al. Can J Diabetes 2013; in press

guidelines.diabetes.ca | 1-800-BANTING (226-8464) | diabetes.ca

Canadian Diabetes Association

Process of Type 2 Diabetes is Already Well Underway

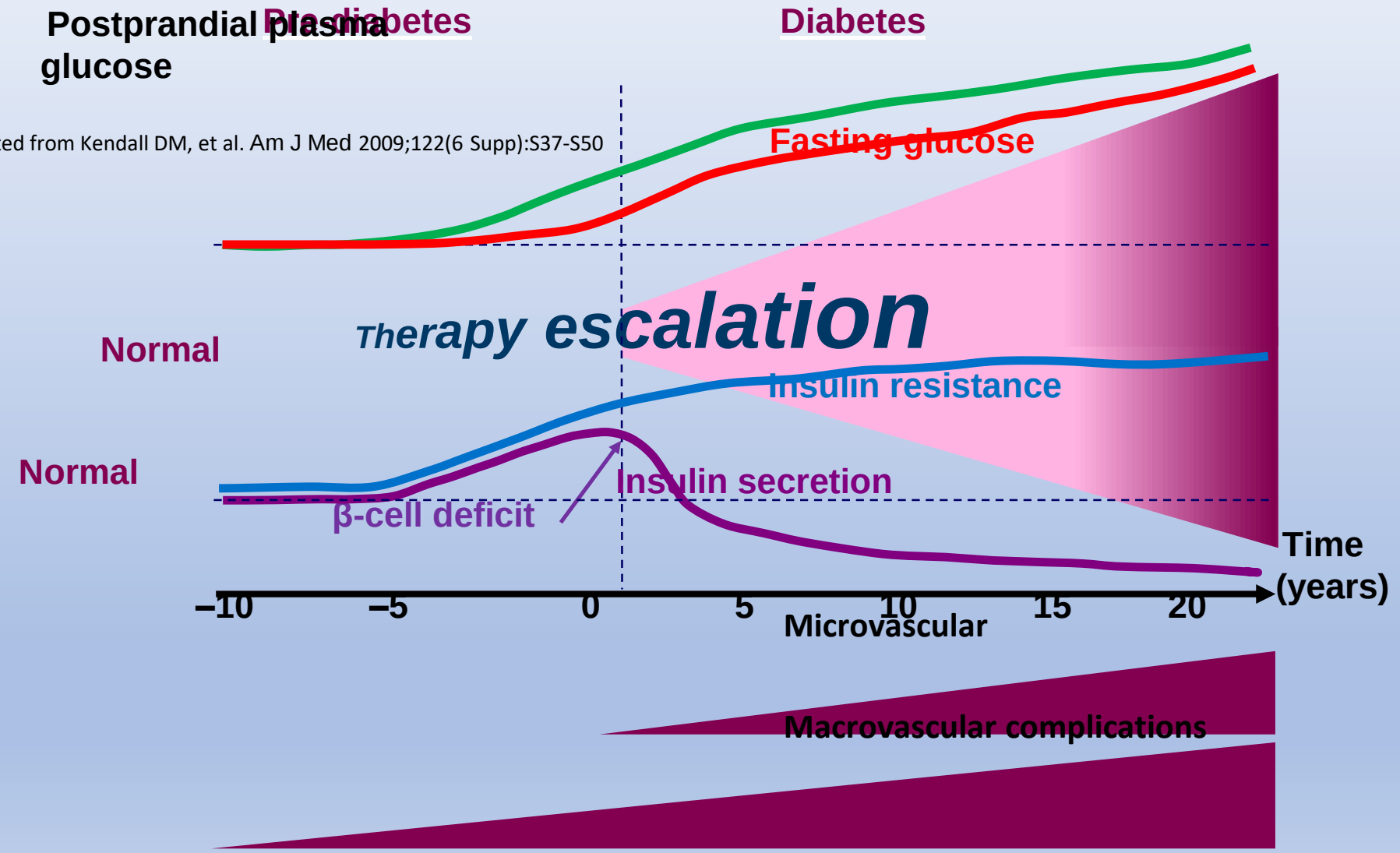
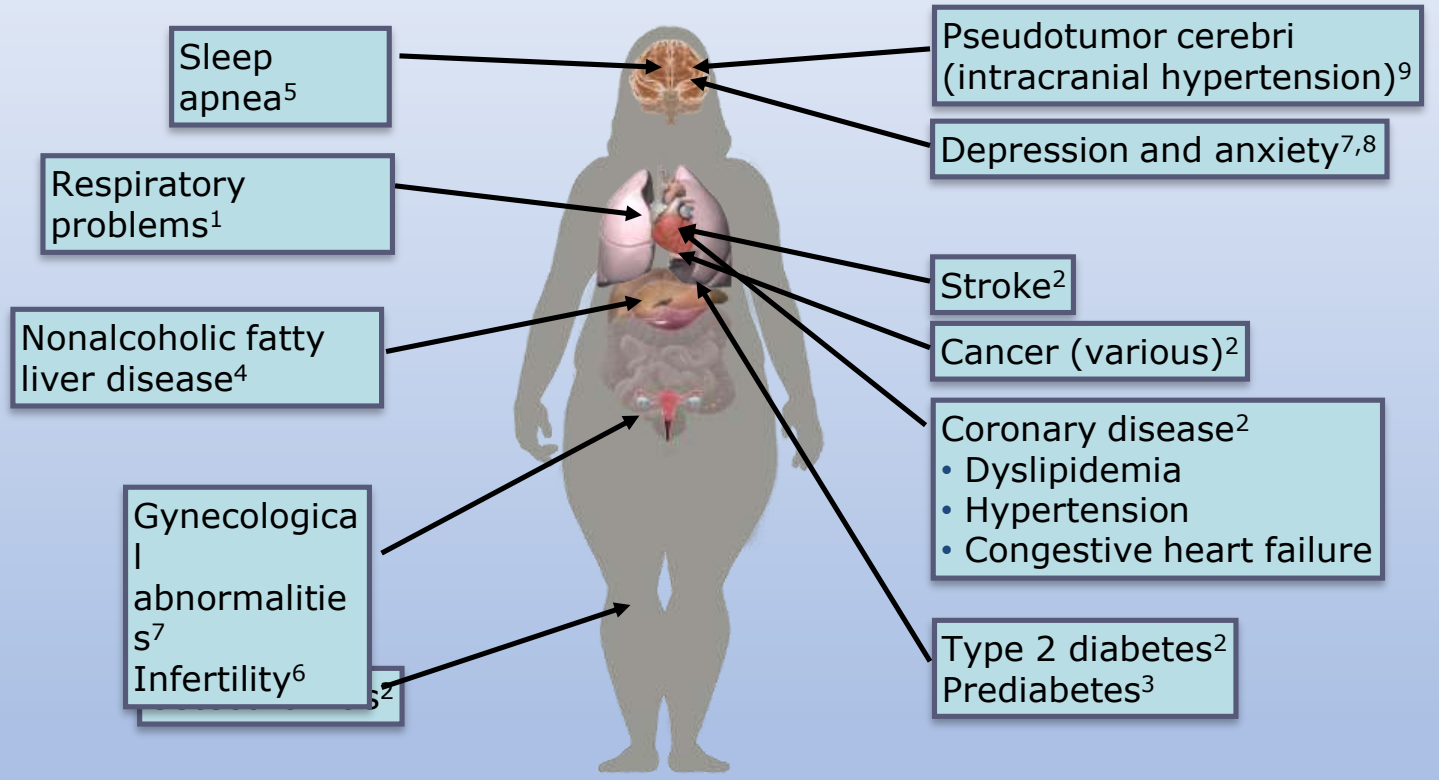


Figure adapted from Kendall DM, et al. Am J Med 2009;122(6 Supp):S37-S50

Obesity is a chronic disease that is associated with multiple comorbid conditions



1. Statistics Canada Health Reports. Vol. 17. No. 3. Catalogue no. 82-003-XIE. 2. Guh DP et al. BMC Public Health. 2009;9:88. 3. Shaikh S et al. Int J Diabetes Dev Countries. 2011;31:65–69. 4. Church TS et al. Gastroenterol. 2006;130:2023–2030. 5. Li C et al. Prev Med. 2010;51:18–23. 6. Esmaeilzadeh S et al. Arch Med Sci. 2013;9:499-505. 7. NIH. Obes Res. 1998;6(Suppl 2):51S–209S; 8. Zhao G et al. *Int J Obes (Lond).* 2009;33(2):257-66. 9. Daniel AB et al. *Am J Opthalmol* 2007;143:635-41.

Benefits of 5–10% weight loss

Reduction in risk of type 2 diabetes[1]

n=3234; p<0.001

Reduction in CV risk factors[2]

n=577; p=0.033

Improvements in blood lipid profile[3]

p≤0.001 (based on 70 studies)

Improvements in blood pressure[4]

n=5145 p<0.0001

Improvements in severity of obstructive sleep apnea[5,6]

n=364; p=0.001

Improvements in disability (pain & physical function) and health-related quality of life[7,8,9*]

1 kg ↓ body weight

16% RRR in diabetes[10]

n=2766; p-value not available

RRR = relative risk diabetes. *Ref 7. meta-analysis of 53 studies: n=1337; p<0.01. Ref 8. n=199; p<0.0018. Ref 9. n=417; p=0.05

1. Knowler *et al*. *N Engl J Med* 2002;346:393–403; 2. Li *et al*. *Lancet Diabetes Endocrinol* 2014;2:474–80; 3. Datillo *et al*. *Am J Clin Nutr* 1992;56:320–8; 4. Wing *et al*. *Diabetes Care* 2011;34:1481–6; 5. Foster *et al*. *Arch Intern Med* 2009;169:1619–26; 6. Kuna *et al*. *Sleep* 2013;36:641–9; 7. Warkentin *et al*. *Obes Rev* 2014;15:169–82; 8. Wright *et al*. *J Health Psychol* 2013;18:574–86; 9. Christensen *et* al. *Ann Rheum* Dis. 2007;66:433-9; 10. Diabetes Prevention Program Research Group. Lancet. 2009;374:1677-86.

Indications for bariatric surgery

- BMI ≥40 kg/m^2 without coexisting medical problems or
- BMI ≥35 kg/m^2 and 1+ severe obesity-related comorbidities (T2DM, HTN, OSA, OHS, NAFLD, NASH, pseudotumor cerebri, GERD, asthma, venous stasis dz, severe urinary incontinence, debilitating OA, considerable impaired QoL)
- And have failed attempts at diet/exercise, are motivated and well informed

T2DM: type 2 diabetes, HTN: hypertension, OSA: obstructive sleep apnea; NAFLD: non-alcoholic fatty liver disease; NASH: non-alcoholic steatohepatitis; GERD: gastroesophageal reflux disease; OA: overactive bladder; QoL: quality of life.

one year post

BMI NOW 28

HYPOTENSION; OFF ALL MEDS FOR BP

INSULIN STOP

LAST A1C 0.06; ONLY ON METFORMIN

PROTIENURIA WENT FROM 9 GRAMS A DAY TO

BARELY DETECTABLE PROTEIN ON URINALYSIS

GOOD EXAMPLE; OF EFFECT OF WEIGHT LOSS

THE WHOLE COURSE OF HER DISEASE HAS CHANGED

MEET SIMON

CAME FOR SECOND OPINION

TYPE 2 DM FOR 20 YEARS

OBESITY

PRESENTLY 70 YEARS OLD

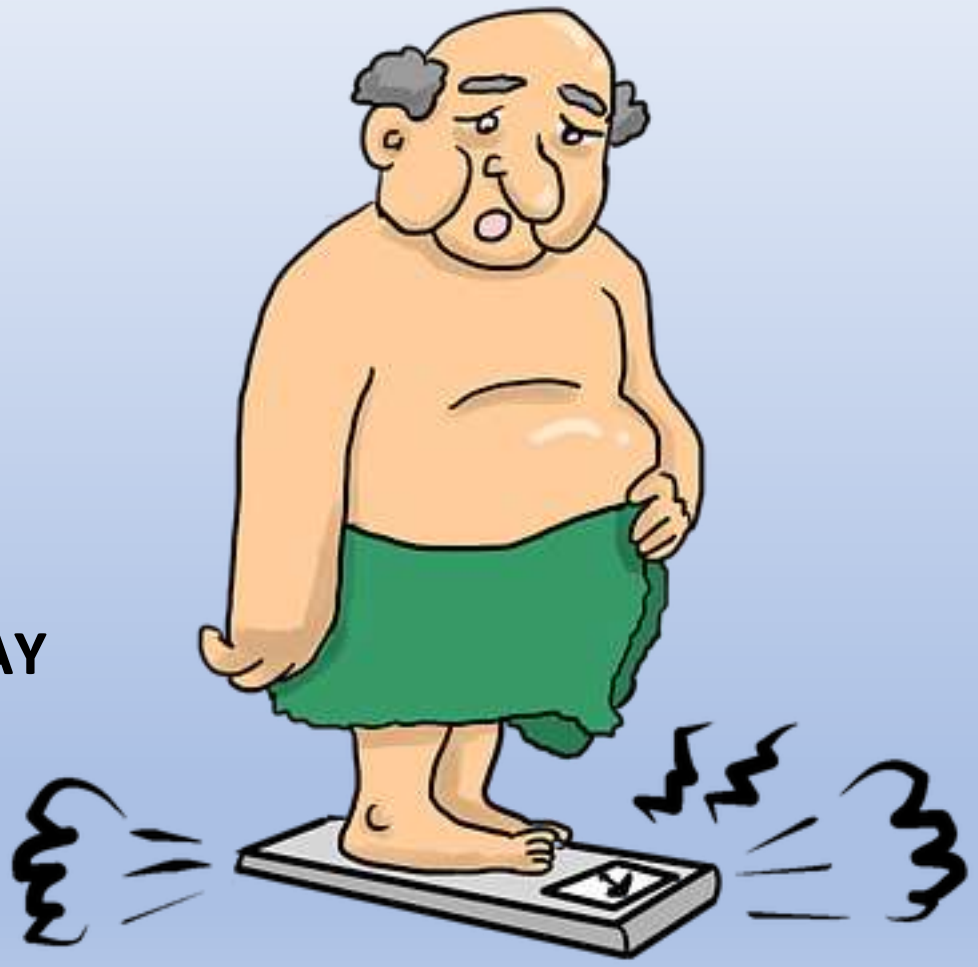
CURRENT REGIME

HUMALOG 60- 90 UNITS 4 TIMES A DAY

AVAPRO 300 MG PO QD

LIPITOR 30 MG PO QD

CABG 10 YEARS AGO



EXAM

BP 140/90

NO RETINOPATHY

MONOFILAMENT DECREASED

REST OF EXAM NORMAL

BMI 35

LABS

A1C 0.074

FASTING SUGAR 7.9

LDL 1.8

MICROALBUMIN/CR NORMAL

WHAT NEXT

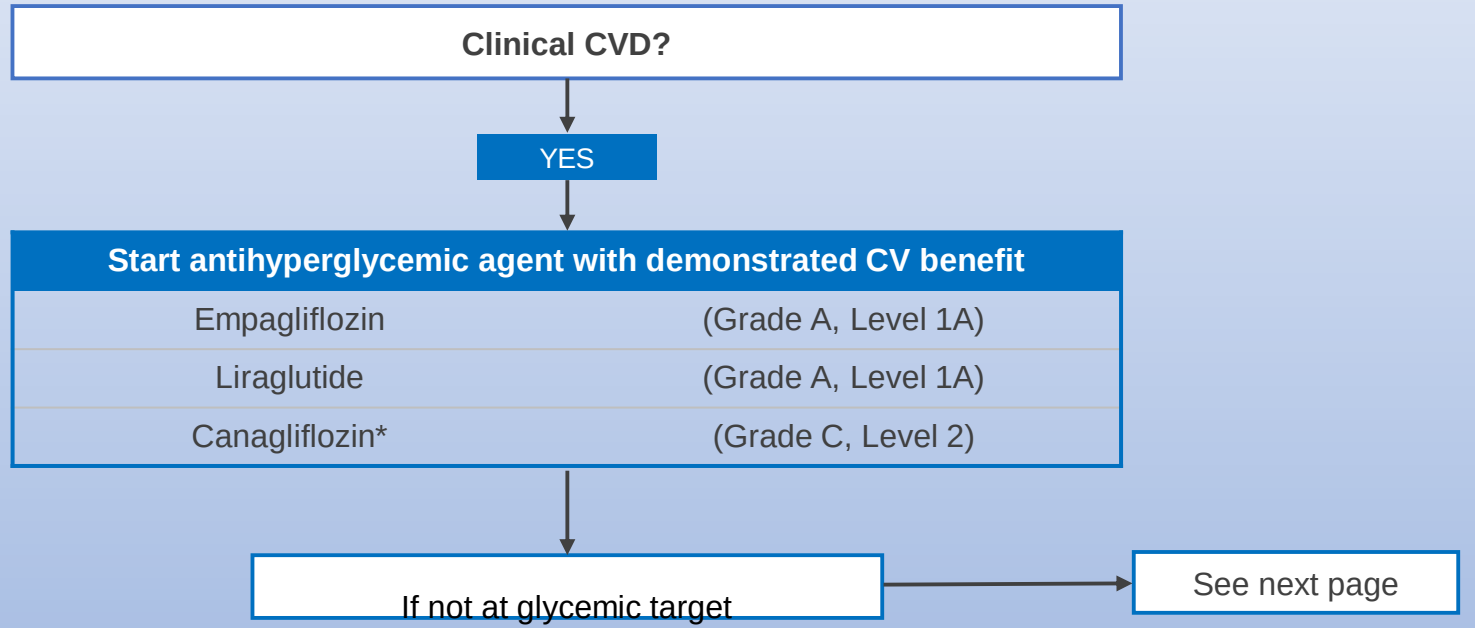
HE SAW ONE OF MY YOUNGER COLLEAGUES WHO TOLD HIM

TO START LANTUS; JARDIANCE AND VICTOZA; AND REDUCE HUMALOG

HE WAS PANICKED AND DECIDED TO SEEK ADVISE FROM A MORE AGED PHYSICIAN

2018

Diabetes Canada Recommendations



* Avoid in people with prior lower extremity amputation

Lipscombe L et al. *Can J Diabetes* 2018;42;S88–S103.

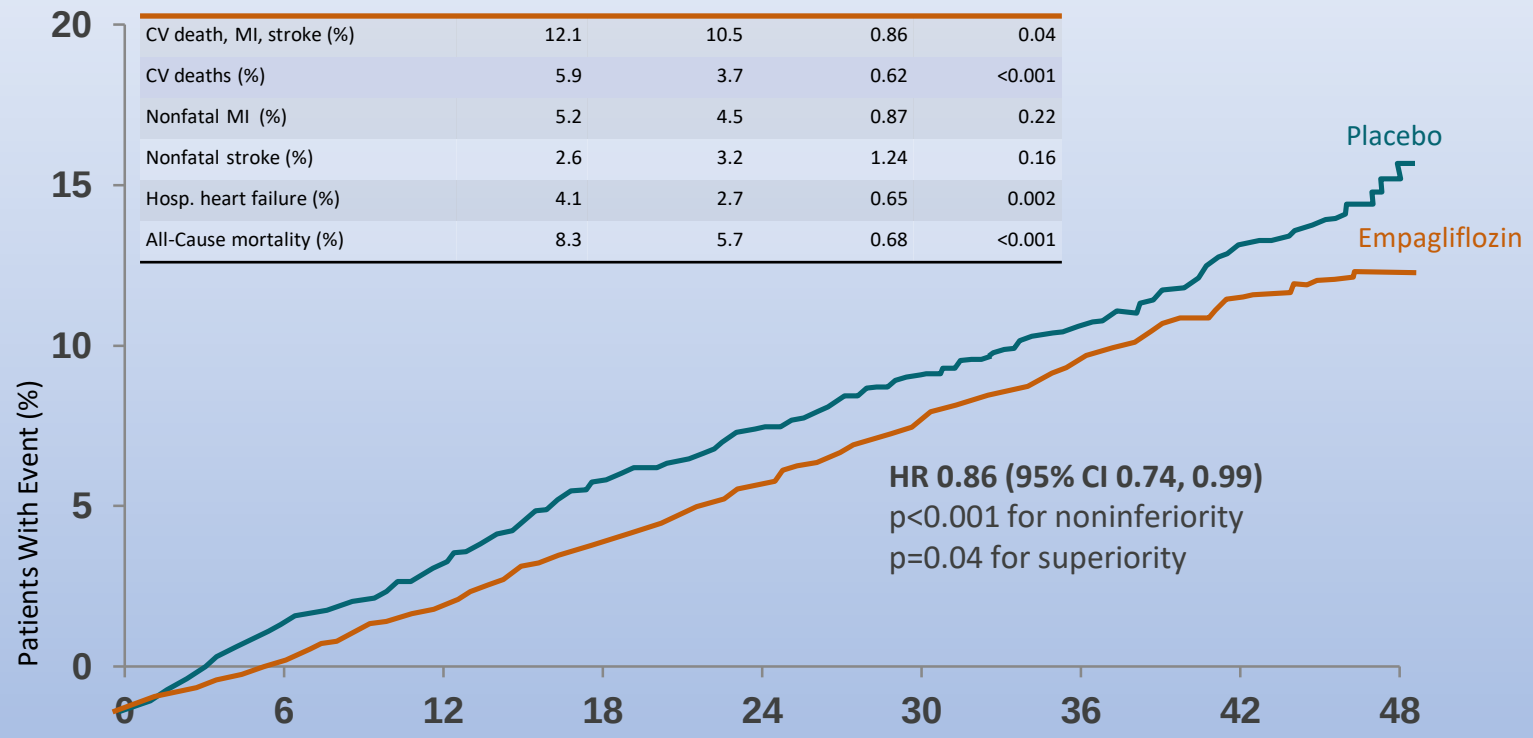

trulicity
trulicity


VICTOZA


OZEMPIC
(semaglutide) injection
For Single Patient Use Only

EMPA-REG Outcome: Primary Composite Endpoint CV Death, MI, or Stroke

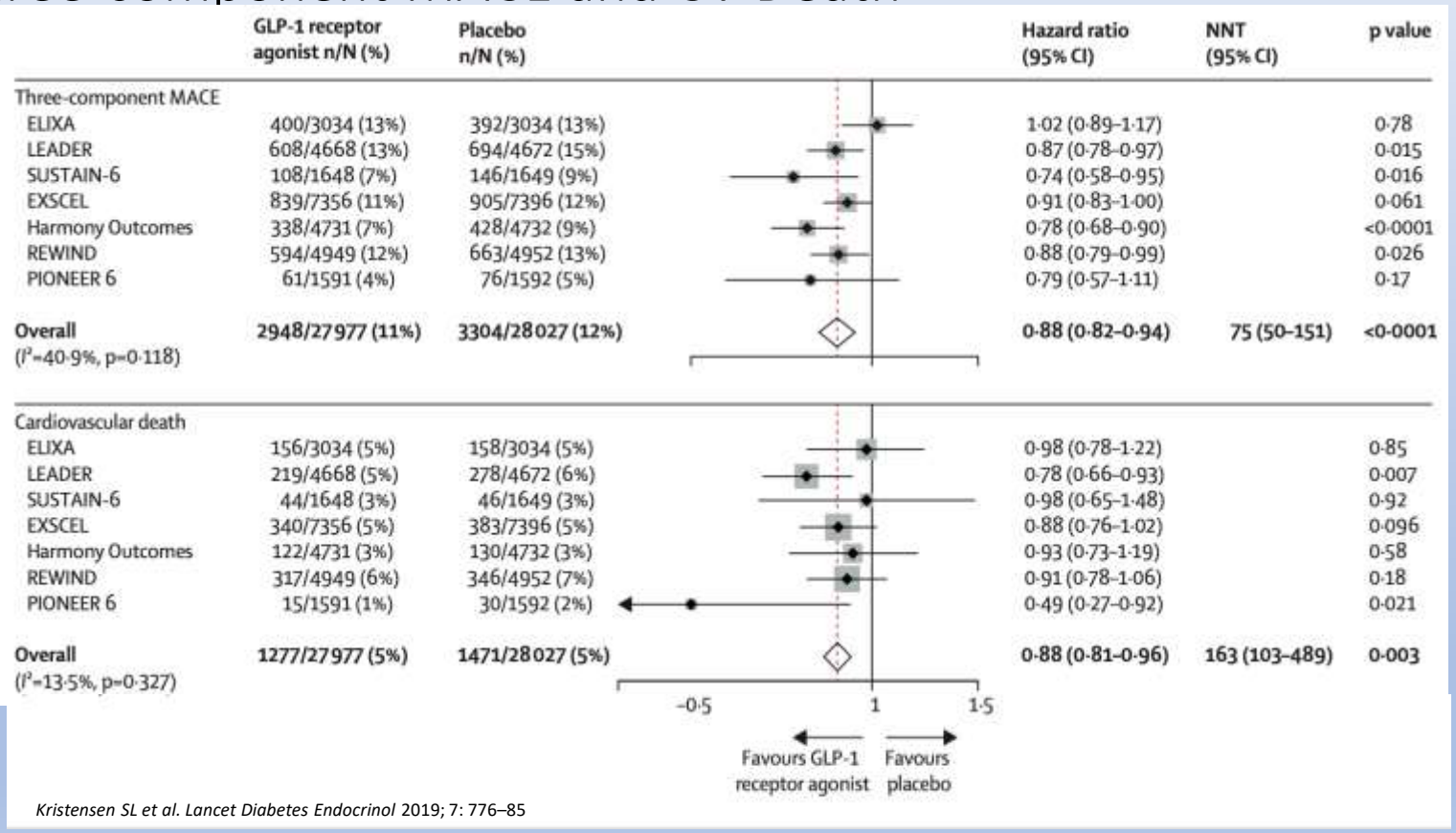
	PBO	EMPA	HR	p value
CV death, MI, stroke (%)	12.1	10.5	0.86	0.04
CV deaths (%)	5.9	3.7	0.62	<0.001
Nonfatal MI (%)	5.2	4.5	0.87	0.22
Nonfatal stroke (%)	2.6	3.2	1.24	0.16
Hosp. heart failure (%)	4.1	2.7	0.65	0.002
All-Cause mortality (%)	8.3	5.7	0.68	<0.001



No. of patients									
Empagliflozin	4687	4580	4455	4328	3851	2821	2359	1534	370
Placebo	2333	2256	2194	2112	875	1380	1161	741	166

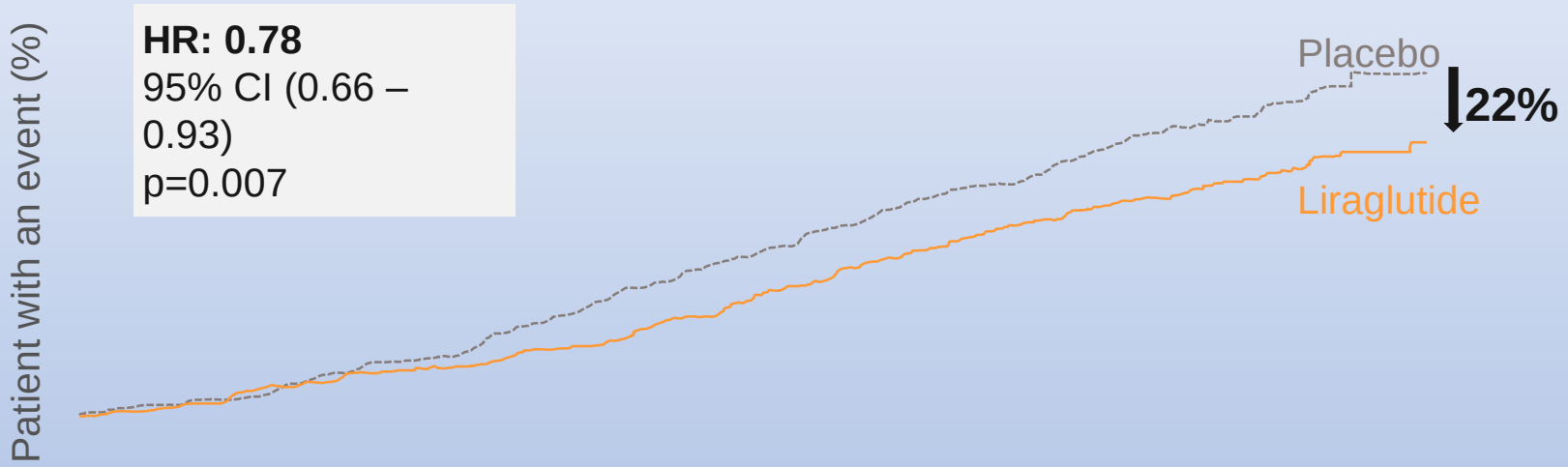
EMPA-REG Outcome: n=7020 patients (mean age 63 years) with type 2 diabetes and established CVD.
Median duration of follow-up: 3.1 years. Mean diff in A1C: 0.4% at wk 94. Mean diff in SBP 4 mm Hg.
CI: confidence interval; CV: cardiovascular; EMPA: empagliflozin; HR: hazard ratio; MI: myocardial infarction; PBO: placebo.
1. Zinman B et al. N Engl J Med. 2015;373:2117-28.

GLP-1 Receptor Agonists Meta-analysis in Patients with T2D: Three-component MACE and CV Death



Kristensen SL et al. Lancet Diabetes Endocrinol 2019; 7: 776–85

CV death



Patients at risk

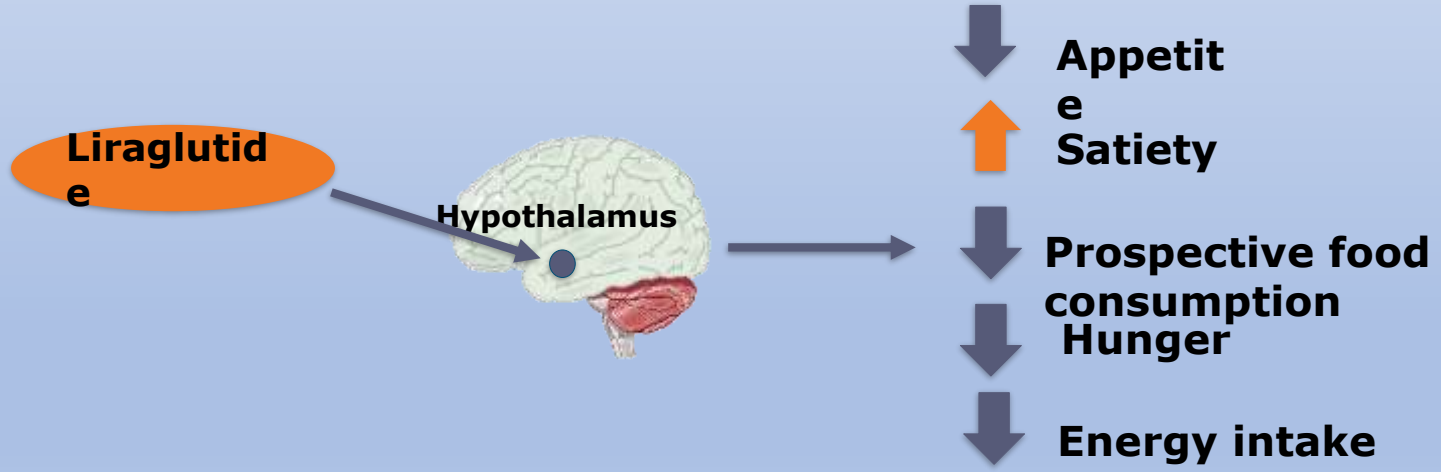
Liraglutide	4668	4641	4599	4558	4505	4445	4382	4322	1723	484
Placebo	4672	4648	4601	4546	4479	4407	4338	4267	1709	465

The cumulative incidences were estimated with the use of the Kaplan–Meier method, and the hazard ratios with the use of the Cox proportional-hazard regression model. The data analyses are truncated at 54 months, because less than 10% of the patients had an observation time beyond 54 months. CI: confidence interval; CV: cardiovascular; HR: hazard ratio.

- Marso SP et al. *NEJM* 2016;DOII:10.1056/NEJMoa1603827. Presented at the American Diabetes Association 76th Scientific Sessions, Session 3-CT-SY24. June 13 2016, New Orleans, LA, USA.

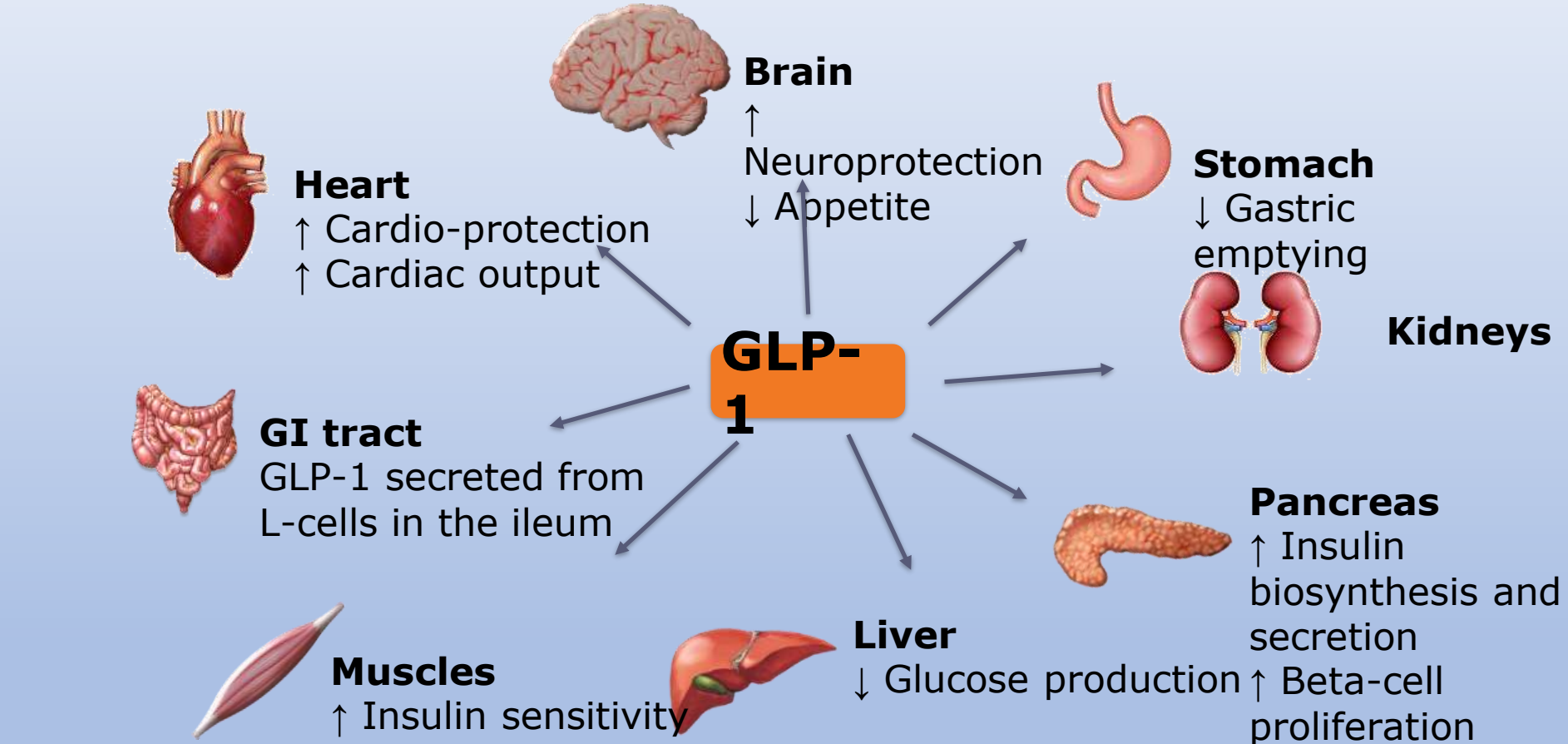
Liraglutide mechanism of action

- Glucagon-like peptide-1 (GLP-1) is a physiological regulator of appetite and food intake
  - GLP-1 receptors are present in several areas of the brain involved in appetite regulation
- Liraglutide is a human GLP-1 agonist with 97% homology to endogenous human GLP-1
  - Liraglutide signal is highly localized–accesses the hypothalamus directly to mediate satiety and fullness



1. Saxenda® (liraglutide), Product Monograph, Novo Nordisk Canada Inc, June 2015. 2. Secher A et al., *J. Clin. Invest.* 2014;24(10):4473-88

Physiological GLP-1 exerts many effects in the body



Cho et al., *Ann Rev Physiol*. 2014. 76:535-59. Seufert J and Gallwitz B. *Diabetes Obes Metab*.2014. 16:673-88.

Equivalent of 476 kcal?

or

Equivalent physical activity for a 200-lb. person

Walking (3 km/hr) for 1.9 hours

9 cookies

43 sugar packs

www.calorieking.com

SGLT2 Inhibitors : Dosage and administration

Canagliflozin

Starting dose
100 mg

Dose could be increase if well tolerated to **300 mg** and require additional glycemic control.

Dapagliflozin

Starting dose
5 mg

Dose could be increased if well tolerated to **10 mg.**

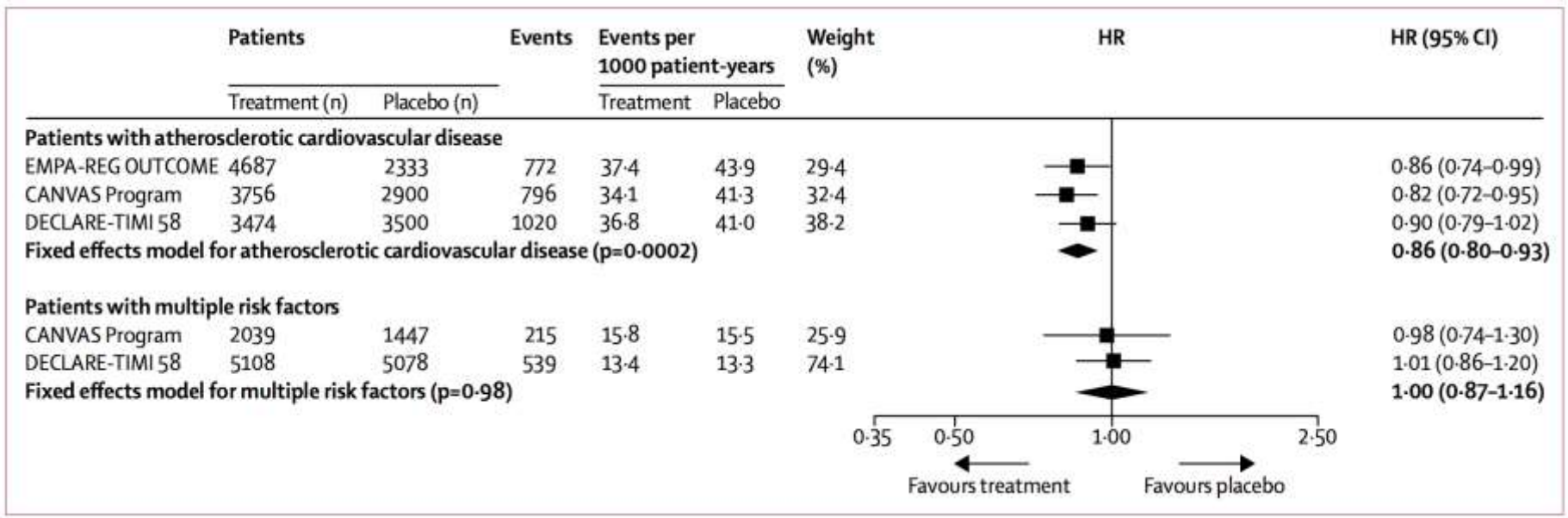
Empagliflozin

Starting dose
10 mg

Dose could be increase if well tolerated to **25 mg and** require additional glycemic control.

Monographie d'INVOKANA. Janssen Inc., novembre 2014.
Monographie de FORXIGA. AstraZeneca, décembre 2014.
Monographie de JARDIANCE, Boehringer Ingelheim (Canada) Ltée, juillet 2015

SGLT2i Trials on the Composite of MI, Stroke, and CV Death Stratified by the Presence of Established Atherosclerotic Cardiovascular Disease



Zelniker T, et al. *Lancet* .2018; Published Online November 10, 2018; http://dx.doi.org/10.1016/S0140-6736(18)32590-X

Practical Considerations

SGLT-2i

eGFR > 60

- eGFR > 30 canagliflozin*/empagliflozin

Insulin or secretagogues

- Consider ↓ dose or discontinuation if near normal glycemic control

Antihypertensives

- Consider ↓ dose or discontinuation if normal BP

Genital mycotic infections

- Counsel proactively, optional antifungal prescription prn

GLP-1RA

Practical advice for reducing nausea

- Inform
- Gradual dosage adjustment
- Temporary reduction
- Counseling re meals

eGFR: estimated glomerular filtration rate; PRN: as needed; BP: blood pressure.
*In adults with T2DM and clinical CVD not at glycemic targets with the current antihyperglycemic medication.
Reid T. *Clinical Diabetes* 2013;31:148-57.

Counsel all Patients About

Sick Day Medication List

Visit guidelines.diabetes.ca for patient handout

Instructions for Healthcare Professionals:
If patients become ill and are unable to maintain adequate fluid intake, or have an acute decline in renal function (e.g. due to gastrointestinal upset or dehydration), they should be instructed to hold medications which will:

A) Increase risk for a decline in kidney function:
- Angiotensin-converting enzyme inhibitor
- Angiotensin receptor blockers
- Direct renin inhibitors
- Non-steroidal anti-inflammatory drugs
- Diuretics
- SGLT2 inhibitors

B) Have reduced clearance and increase risk for adverse effects:
- Metformin
- Sulfonylureas (gliclazide, glimepiride, glyburide)

S sulfonylureas
A ACE-inhibitors
D diuretics, direct renin inhibitors

M metformin
A angiotensin receptor blockers
N non-steroidal anti-inflammatory
S SGLT2 inhibitors

Please complete the following card and give it to your patient.

Patients should be instructed that increased frequency of self blood glucose monitoring will be required and adjustments to their doses of insulin or oral antihyperglycemic agents may be necessary.

Instructions for Patients
When you are ill, particularly if you become dehydrated (e.g. vomiting or diarrhea), some medicines could cause your kidney function to worsen or result in side effects.

If you become sick and are unable to drink enough fluid to keep hydrated, you should **STOP** the following medications:

- Blood pressure pills
- Water pills
- Metformin
- Diabetes pills
- Pain medications
- Non-steroidal anti-inflammatory drugs (see below)

_____

_____

_____

_____

_____

Please be careful not to take non-steroidal anti-inflammatory drugs (which are commonly found in pain medications (e.g. Advil) and cold remedies).

Please check with your pharmacist before using over-the-counter medications and discuss all changes in medication with your healthcare professional.

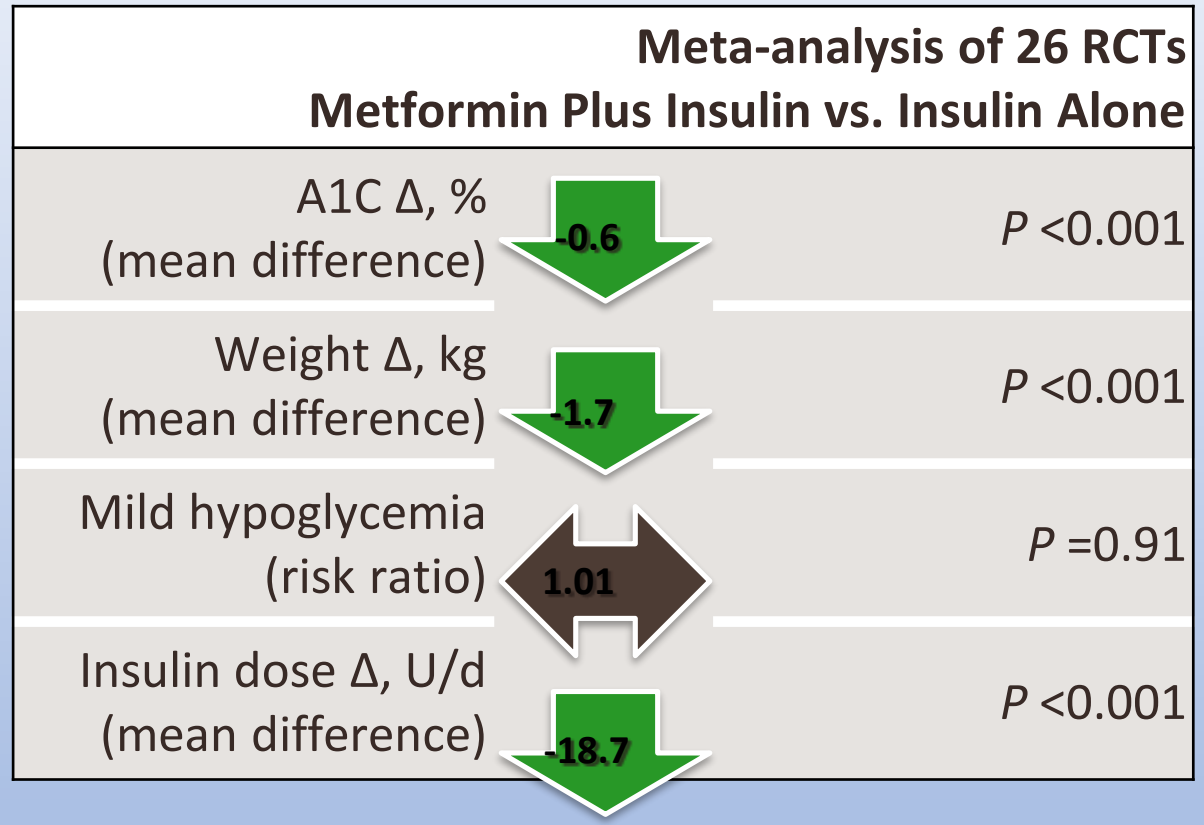
Please increase the number of times you check your blood glucose levels. If they run too high or too low, contact your healthcare professional.

If you have any problems, you can call:

_____

Metformin plus Insulin vs. Insulin Alone:

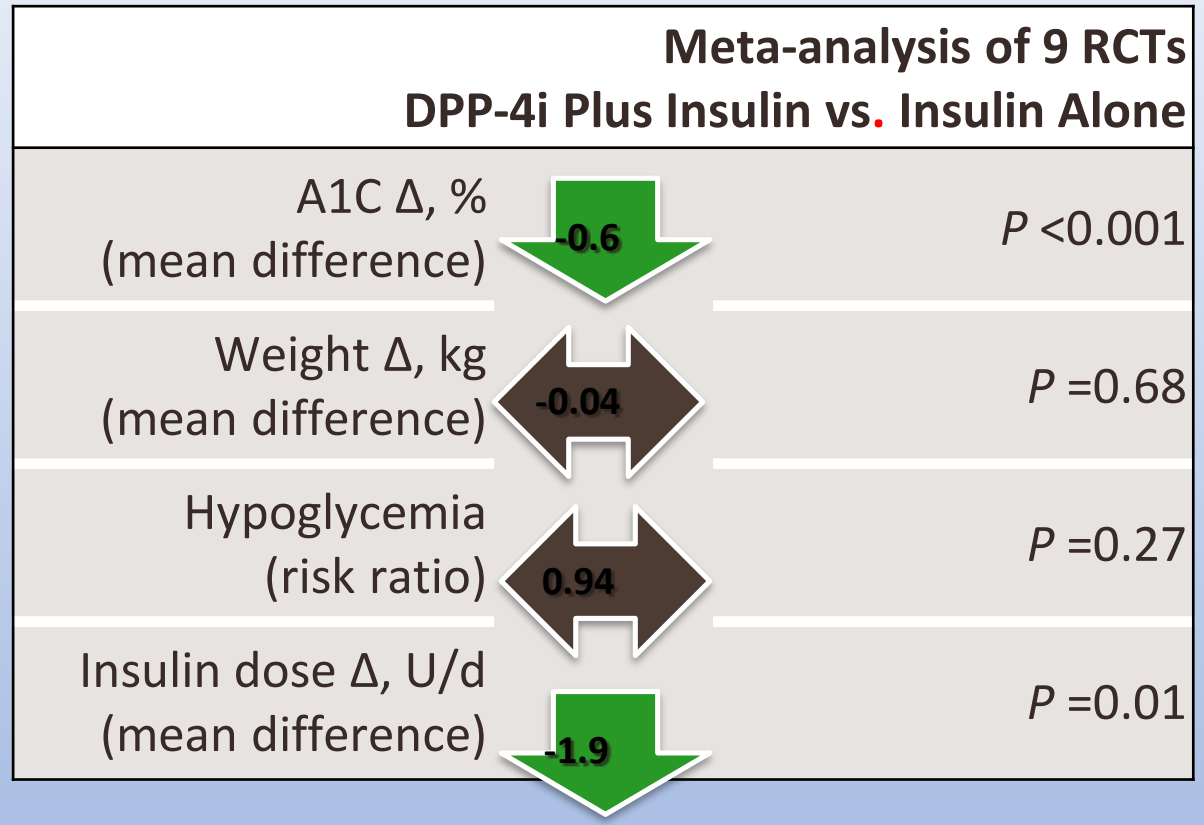
Meta-analysis of Randomized Clinical Trials



Hemmingsen B *et al. BMJ* 2012;344:e1771.

DPP-4i plus Insulin vs. Insulin Alone:

Meta-analysis of Randomized Clinical Trials



Kim YG *et al*. *Diab Res Clin Pract* 2016;116:86-95.

GLP-1RA plus Insulin vs. Insulin Alone:

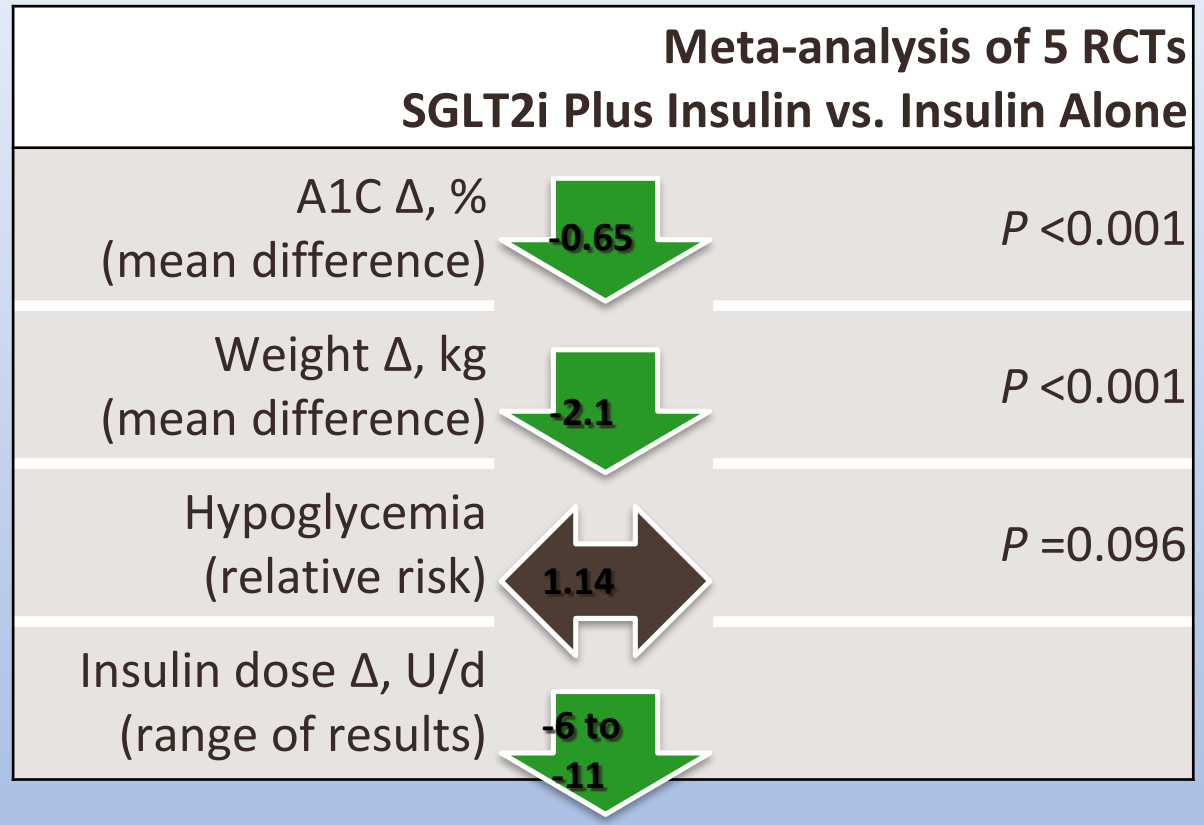
Meta-analysis of Randomized Clinical Trials

		Meta-analysis of 15 RCTs GLP-1RA Plus Basal Insulin vs. Basal, Basal-Plus or Basal-Bolus
A1C Δ, % (mean difference)	-0.44	95% CI:-0.60, -0.29
Weight Δ, kg (mean difference)	-3.2	95% CI:-4.9, -1.5
Hypoglycemia (relative risk)	0.99	95% CI:0.76, 1.29
Insulin dose Δ, U/d (range of results)	-1 to -75	

Eng C *et al. Lancet* 2014;384:2228-34.
Marso S *et al*. *N Eng J Med* 2016; DOI: 10.1056/NEJMoa1603827.

SGLT2i plus Insulin vs. Insulin Alone:

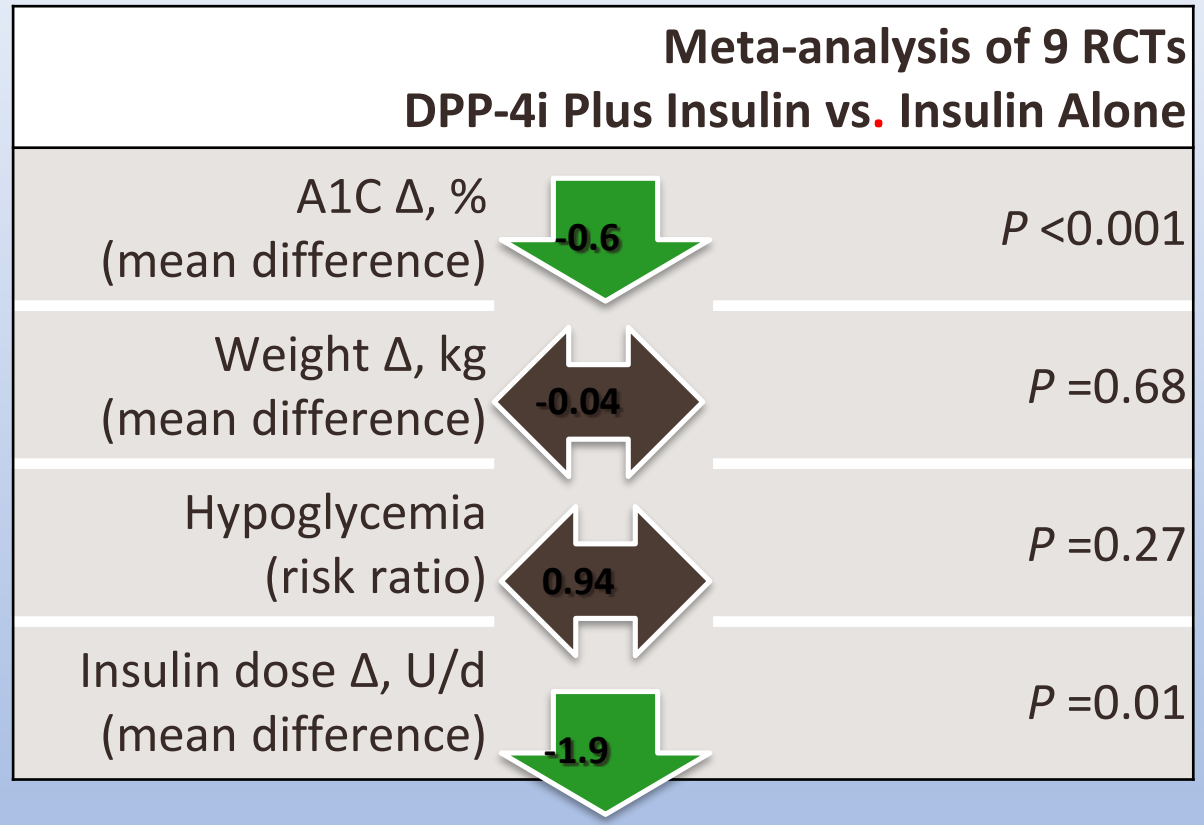
Meta-analysis of Randomized Clinical Trials



Min SH *et al. Diabetes Metab Res Rev* 2016; doi: 10.1002/dmrr.2818. [Epub ahead of print].
Zinman B *et al. N Engl J Med* 2015;373:2117-28.

DPP-4i plus Insulin vs. Insulin Alone:

Meta-analysis of Randomized Clinical Trials



Kim YG *et al*. *Diab Res Clin Pract* 2016;116:86-95.

Cardiovascular Studies

	Canagliflozin 100 or 300 mg OD	Empagliflozin 10 or 25 mg OD	Liraglutide 1.8 mg* OD	Semaglutide 0.5 or 1.0 mg QW
Class	SGLT-2i	SGLT-2i	GLP-1RA	GLP-1RA
Study	CANVAS	EMPA-REG	LEADER	SUSTAIN-6
Population	n=10142 CVD 66%	n=7020 CVD 100%	n=9340 CVD 72%	n=3297 CVD 72%
Duration	2.4 years	3.1 years	3.8 years	2.1 years
MACE	↓14% P=0.02	↓14% P=0.04	↓13% P=0.01	↓26% P=0.02
Cardiovascular mortality	↓13% NSS	↓38% P<0.001	↓22% P=0.007	↓2% NSS
Non-fatal myocardial infarction	↓15% NSS	↓13% NSS	↓12% NSS	↓26% NSS
Non-fatal stroke	↓10% NSS	24% NSS	↓11% NSS	↓39% P=0.04
Total mortality	↓13% NSS	↓32% P<0.001	↓15% P=0.02	5% NSS

MACE: major adverse cardiovascular event; OD: once daily; QW: once weekly; CVD: cardiovascular disease; NSS: not statistically significant.

* Or maximum tolerated dose.

Marso SP et al. *N Engl J Med* 2016; 375:311-22. Marso SP et al. *N Engl J Med*2016; 375:1834-1844.

Zinman B et al. *N Engl J Med* 2015; 373:2117-28. Neal B et al. *N Engl J Med* 2017;

WARNING: A comparison of these trial outcomes is not possible due to differences in methodology, duration and study populations.

Add another class of agent best suited to the individual (*agents listed in alphabetical order*):

Class	Relative A1C Lowering	Hypo-glycemia	Weight	Effect in Cardiovascular Outcome Trial	Other therapeutic considerations	Cost
α-glucosidase inhibitor (acarbose)	□	Rare	Neutral to ↓		Improved postprandial control, GI side-effects	$$
DPP-4 Inhibitors	↓↓	Rare	Neutral to ↓	alo, saxa, sita: Neutral	Caution with saxagliptin in heart failure	$$$
GLP-1R agonists	↓↓ to ↓↓↓	Rare	□□	lira: Superiority in T2DM patients with clinical CVD lixi: Neutral	GI side-effects	$$$$
Insulin	□□□	Yes	□□	Neutral (glar)	No dose ceiling, flexible regimens	$-$$$$
Insulin secretagogue: Meglitinide Sulfonylurea	 ↓↓ ↓↓	 Yes Yes			Less hypoglycemia in context of missed meals but usually requires TID to QID dosing Gliclazide and glimepiride associated with less hypoglycemia than glyburide	 $$ $
SGLT2 inhibitors	↓↓ to ↓↓↓	Rare	□□	empa: Superiority in T2DM patients with clinical CVD	Genital infections, UTI, hypotension, dose-related changes in LDL-C, caution with renal dysfunction and loop diuretics, dapagliflozin not to be used if bladder cancer, rare diabetic ketoacidosis (may occur with no hyperglycemia)	$$$
Thiazolidinediones	□□	Rare	□□	Neutral	CHF, edema, fractures, rare bladder cancer (pioglitazone), cardiovascular controversy (rosiglitazone), 6-12 weeks required for maximal effect	$$
Weight loss agent (orlistat)	□	None	□		GI side effects	$$$

alo=alogliptin; glar=glargine; saxa=saxagliptin; sita=sitagliptin; lira=liraglutide; lixi=lixisenatide; empa=empagliflozin

Individualization is at the Centre of Diabetes Care

Key **patient** and **agent** characteristics to consider when selecting treatment

Patient Characteristics:
Priority:
Clinical CV disease*
Degree of hyperglycemia
Risk of hypoglycemia
Overweight or obesity
CV disease or multiple risk factors
Comorbidities (renal, CHF, hepatic)
Preferences and access to treatment

Agent Characteristics:
Relative A1C lowering
Rare hypoglycemia
Weight loss or neutral
Effect on CV outcome
Other considerations (e.g., eGFR)
Cost and access

Individualization

*Choose an agent with demonstrated CV outcome benefit for this population. CHF = congestive heart failure; CV = cardiovascular
Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. *Can J Diabetes*. 2016;40(3):193-5.

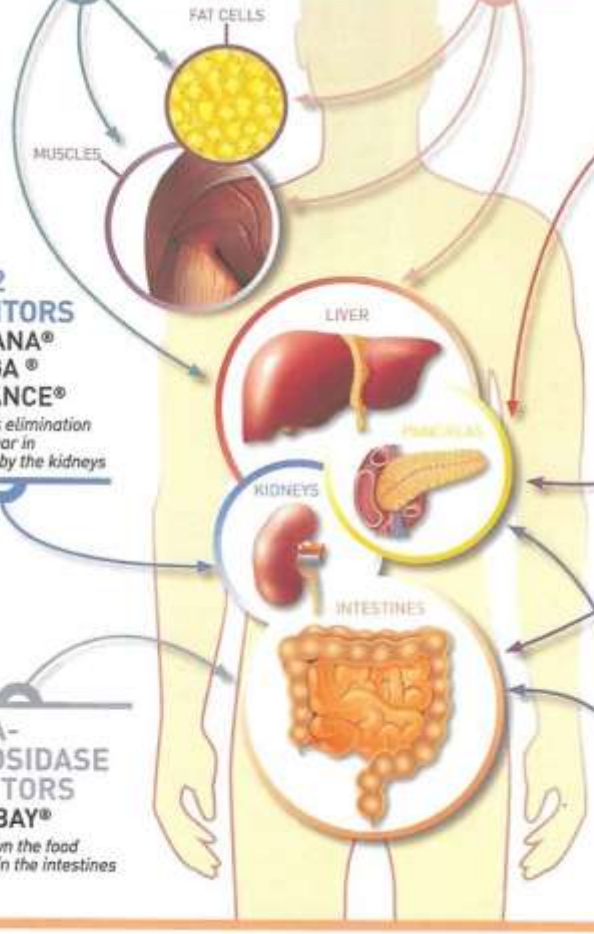
DIABETES MEDICATIONS

HOW DO MEDICATIONS WORK?

BIGUANIDE
GLUCOPHAGE® GLUMETZA®
- *Lowers the amount of sugar produced by the liver*
- *Increases the sensitivity of mucle cells to insulin*

TZD
ACTOS®
AVANDIA®
- *Improves how the body uses insulin*

INSULIN SECRETAGOGUES
DIABETA®
DIAMICRON®
AMARYL®
GLUCONORM®
- *Helps the pancreas to produce more insulin*



GLP1 AGONIST
VICTOZA®
TRULICITY®
BYDUREON®
- *Slows down the absorption of sugar*
- *Increases insulin production by the pancreas when blood sugar is high*
- *Decreases appetite*

SGLT 2 INHIBITORS
INVOKANA®
FORXIGA ®
JARDIANCE®
- *Increases elimination of the sugar in the urine by the kidneys*

DPP4 INHIBITORS
ONGLYZA®
JANUVIA®
TRAJENTA®
NESINA®
- *Increases the action of incretin produced in the intestines*
- *Incretin works on the pancreas to produce more insulin and to reduce the production of glucagon by the liver*

ALPHA-GLUCOSIDASE INHIBITORS
GLUCOBAY®
- *Slows down the food digestion in the intestines*

Reviewed: May 2017

BIGUANIDE

WHEN TO TAKE ?

SIDE EFFECTS
Diarrhea, nausea, metallic taste

GLUCOPHAGE®
Metformin

500mg 850mg

GLUMETZA®

500mg 1000mg

GLP1 AGONIST

WHEN TO TAKE ?

SIDE EFFECTS
Weight loss, nausea, vomiting

Once a day

VICTOZA®
Liraglutide

Once a week

TRULICITY®
Dulaglutide

BYDUREON®
Exenatide

INSULIN SECRETAGOGUES

WHEN TO TAKE ?

SIDE EFFECTS
Hypoglycemia, weight gain

DIABETA®
Glyburide

2.5mg 5mg

DIAMICRON®
Gliclazide

80mg Gliclazide MR 30mg Gliclazid MR 60mg

RAMQ CODE
EN 23 (if glyburide not tolerated or inefficient)
EN 24 (if kidney failure)

AMARYL®
Glimepiride

1mg 2mg 4mg

RAMQ CODE
EN23 or EN24

GLUCONORM®
Repaglinide

Repaglinide 0,5 mg Repaglinide 1mg Repaglinide 2mg

RAMQ CODE EN24 or EN25
(when SU is contraindicated, not tolerated or ineffective)

ALPHA-GLUCOSIDASE INHIBITORS

WHEN TO TAKE ?

SIDE EFFECTS
Gaz, loose stools, diarrhea

GLUCOBAY®
Acarbose

50mg 100mg

SGLT 2 INHIBITORS

WHEN TO TAKE ?

SIDE EFFECTS
Weight loss, yeast infection, urinary tract infection

INVOKANA®
Canagliflozine

100mg 300mg

FORXIGA®
Dapagliflozine

5mg 10mg

RAMQ CODE
EN148 (with metformin)
EN149 (with sulfonylurea)

JARDIANCE®
Empagliflozine

10mg 25mg

TZD

WHEN TO TAKE ?

SIDE EFFECTS
Water retention, weight gain, risk of heart failure and bladder cancer (Actos) increased

RAMQ CODE
EN117 (kidney failure)
EN118 (with metformin when SU are contraindicated)
EN119 (with SU when metformin is contraindicated)
EN120 (in combination with both metformin and SU when transition to insulin is indicated but patient is unable to receive it)
EN121 (when metformin or SU are contraindicated)

ACTOS® Pioglitazone

15mg 30mg 45mg

AVANDIA® Rosiglitazone

2 mg 4 mg 8 mg

DPP4 INHIBITORS

WHEN TO TAKE ?

SIDE EFFECTS
Similar to placebo, neutral on weight

RAMQ CODE
(FOR ALL EXCEPT TRAJENTA)
EN148 (with metformin)
EN149 (without metformin)
EN150 for : Janumet®, Komboglyze®, Jentadueto®, Kazano®

ONGLYZA®
Saxagliptin

2.5mg 5mg

JANUVIA®
Sitagliptin

50mg 100mg

TRAJENTA®
Linagliptin

5mg

NESINA®
Alogliptin

6,25mg 12,5mg 25mg

RAMQ CODE EN167
(when metformin or SU non tolerated or contraindicated)

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Revised by:
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