Together 2 Goal®

AMGA Foundation
National Diabetes Campaign

Monthly Campaign Webinar

June 18, 2020

Today's Webinar

- Together 2 Goal® Updates
  - Webinar Reminders
  - Project ECHO Webinar
  - ADA COVID-19 Resources
- Cardiovascular Benefit of New Diabetes Medications
  - Gretchen Shull, M.D. of Mercy
- Q&A
  - Use Q&A or chat feature

Webinar Reminders

- Webinar will be recorded today and available the week of June 22nd
  - www.Together2Goal.org
- Participants are encouraged to ask questions using the “Chat” and “Q&A” functions on the right side of your screen

Project ECHO Webinar

- **Topic**: Identifying High-Risk Diabetes Patients for COVID-19 Triage
- **Date/Time**: June 24, 2020 from 12:00 – 1:15 pm EST
- **Presenter**: John Kennedy, M.D.

https://med.stanford.edu/cme/diabetescovid.html

American Diabetes Association COVID-19 Resources

- ADA COVID-19 Webinar Series
- Live Virtual Events*
- COVID-19 and Diabetes Discussion Forum*
- Special Podcast Series: COVID-19 & Diabetes

https://professional.diabetes.org/content-page/covid-19

*ADA membership may be required to gain full access to certain live events and/or discussion boards

Today's Featured Presenter

Gretchen Shull, M.D.

Physician Lead
Endocrinology Specialty Council
Vice President of Diabetes Care
Mercy Clinic Endocrinology - Joplin

Diabetes Treatment

Cardiovascular Considerations

Dr. Gretchen Shull, MD
vice president of diabetes care
Mercy

18 June 2020

Mercy | *Your life is our life's work.*

No disclosures

Objectives:

- Recognize CVD as closely connected to DM2
- Revisit the evolution of treating DM2 and CVD
- Highlight current guidelines and medications
- Think about strategies to use current/relevant medications

Mercy

The Growing Facts

- > 12% of the population has DM
- 9.5% of that is DM type 2
- Treatment and science of DM is constantly changing
  - 1 endocrinologist per 5200 patients
  - ½ my personal practice = DM per monthly referrals
  - Cannot simply refer
- 14 + different drug classes approved for glucose control

DM type 2 and CVD

- CVD = #1 cause of morbidity and mortality
- Complications attributed to CVD = costs
- Increase financial and physical burdens on patients and caregivers.

Older Studies

Intensive vs Less Intensive Rx

UKPDS (2000)

- Reduced microvascular complications
- No difference in CV mortality/ MACE

ADVANCE (2008)

- Reduced microvascular risks
- No diff in CV mortality if A1c $\leq$ 6.5%

VADT (2009)

- No diff in CV mortality if A1c $\leq$ 6.5% but fewer CV events

ACCORD (2008)

- Stat. sig $\uparrow$ in CV mortality and all cause mortality if A1c < 6%
- No sig reduction in events

2006-2009 – Conclusions

- Individualized glycemic goals are the answer
- Intense glycemic control is not enough to improve CV outcomes
- Statin > glucose medications
- 2008 – CV outcomes trials (CVOTs) were mandated by FDA
  - These are conducted to rule out an unacceptable increase in CV risk for a new treatment
    - Event driven with MACE as a primary endpoint
  - DPP-4 inhibitors
  - GLP-1 agonists
  - SGLT-2 inhibitors

Cardiology vs. Diabetes CVOTs

CARDIOLOGY CVOTs

Aim: Demonstrate CV benefit

Initiation of treatment vs. active comparator

↓ **No treatment adjustment**

Difference between treatment arms

↓

Significant reduction in CV outcomes vs. active comparator

Lower CV risk vs. placebo/active comparator

DIABETES CVOTs

Aim: Demonstrate CV safety

Initiation of blinded treatment/placebo

Maintain similar HbA1c levels in treatment arms ↓ **Treatment adjustment**

Small/no difference in HbA1c observed between treatment arms

↓

Noninferiority vs. placebo

No unacceptable increase in CV risk vs. placebo as part of standard care

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Cardiovascular Outcomes Trials

Efficacy vs. safety; superiority vs. noninferiority

EFFICACY TRIALS

Aim: Demonstrate CV benefit

Initiation of treatment vs. comparator

↓

No treatment adjustment

Difference between treatment arms
(e.g., biomarkers such as HbA1c or lipids)

↓

Significant reduction in CV outcomes
vs. active comparator

Lower CV risk vs. placebo/active comparator

SAFETY TRIALS

Aim: Demonstrate CV safety

Initiation of blinded treatment/placebo

Maintain similar HbA1c levels in treatment arms

↓

Treatment adjustment (standard of care)

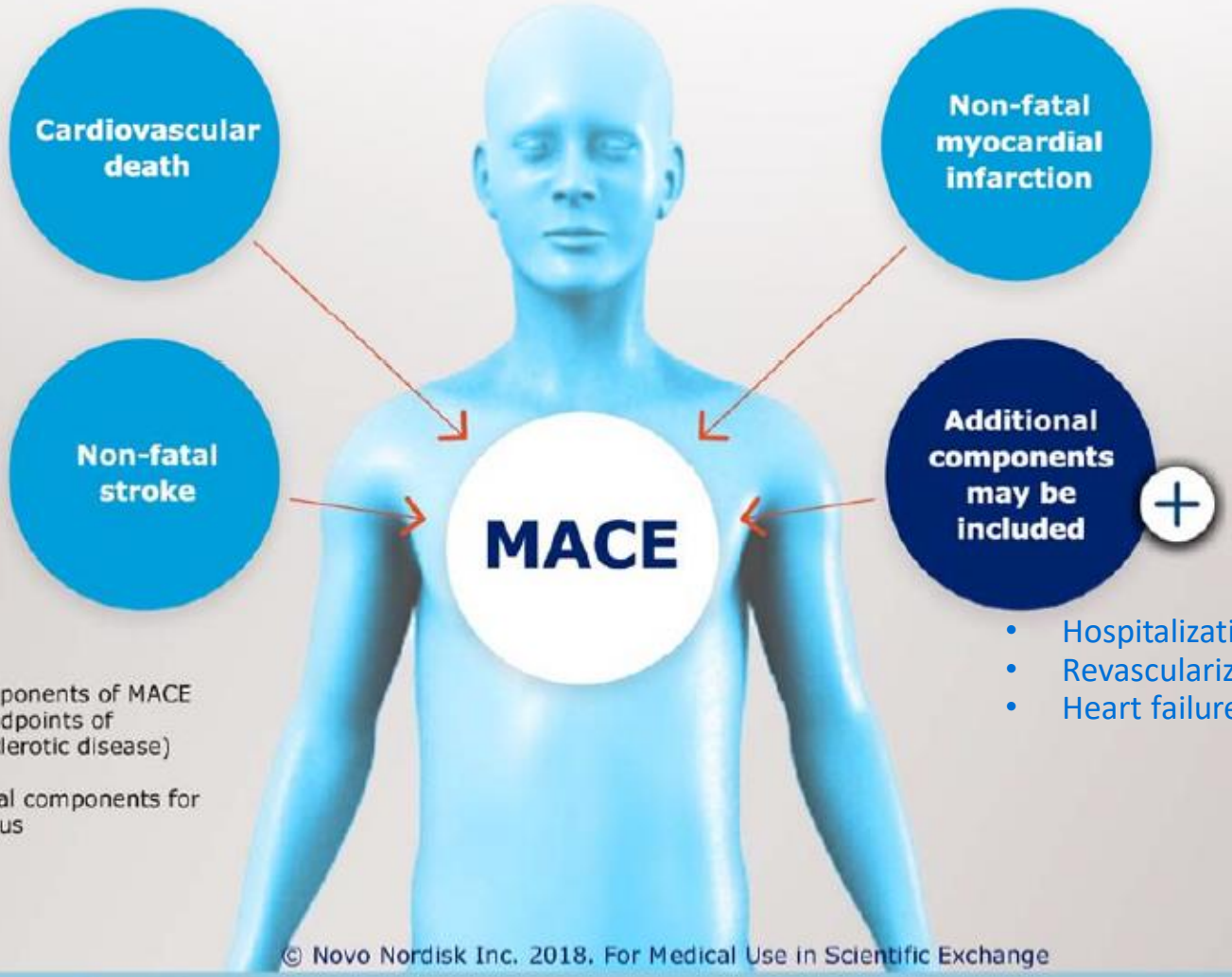
Small/no difference in biomarkers
(e.g., HbA1c observed between treatment arms)

↓

Noninferiority vs. placebo

No unacceptable increase in CV risk vs. placebo as part of standard care

Cardiovascular Outcomes: Major Adverse Cardiovascular Events (MACEs*)



- Hospitalization related to CV
- Revascularization procedures
- Heart failure

*Cross trial comparisons should be undertaken with caution; direct comparison is difficult because MACE components being distinct from one

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Evidence – Multifactorial Interventions

Target

- Hyperglycemia
- Hypertension
- Dyslipidemia
- Obesity

Order

- Lifestyle modification
- Medications
  - A1c
  - BP
  - LDL
  - Weight
  - No harm

Look AHEAD Trial

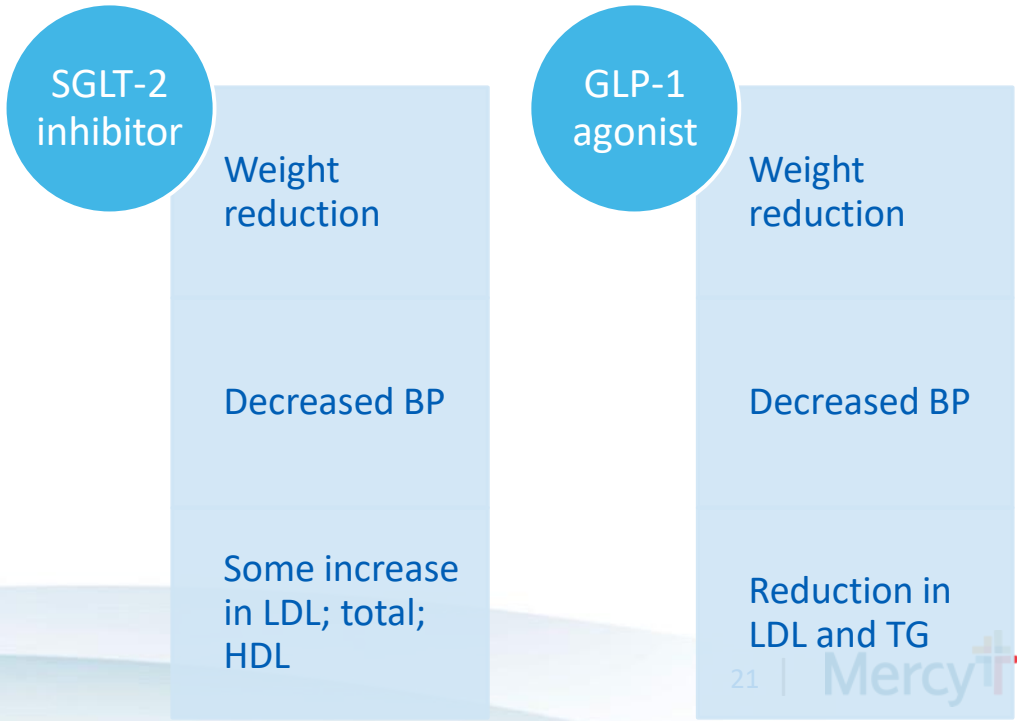
- ≥ 7% weight reduction = + impact on all CV risks
- ≥ 10% weight reduction = 21% decline in CV events

Hypoglycemia

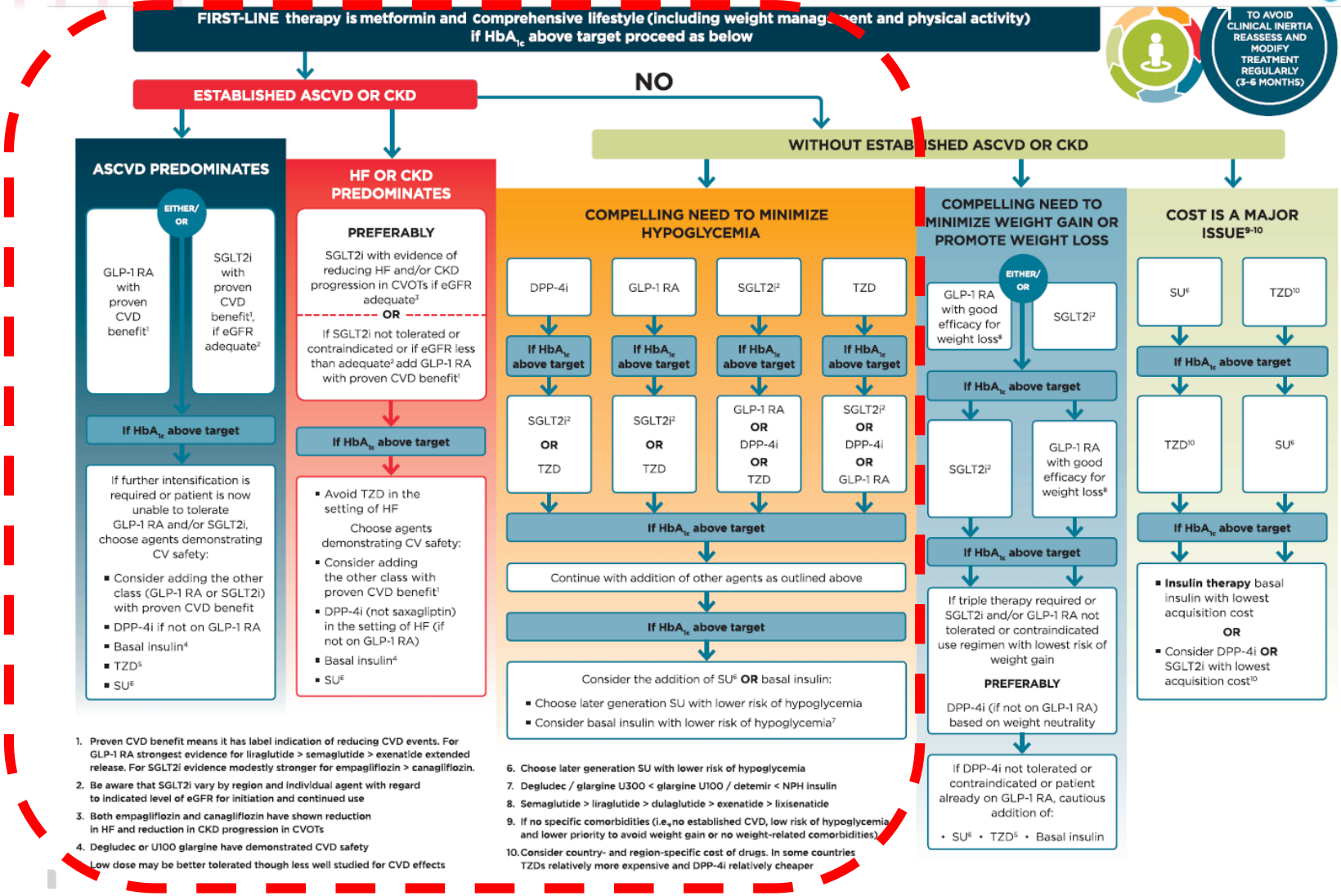
- ACCORD & VADT
  - Severe hypoglycemia may increase risk of CVD events
  - If DM type 2 and CVD, may increase risk of death if have severe hypoglycemia
- Other studies
  - DM type 2 with CVD
    - More hypoglycemia = more arrhythmias

Beyond Glycemic Effects

- Lifestyle management as foundation
- Newer Agents
  - Low risk of hypoglycemia
  - Neutral / beneficial effect on weight



2019



1. Proven CVD benefit means it has label indication of reducing CVD events. For GLP-1 RA strongest evidence for liraglutide > semaglutide > exenatide extended release. For SGLT2i evidence modestly stronger for empagliflozin > canagliflozin.
2. Be aware that SGLT2i vary by region and individual agent with regard to indicated level of eGFR for initiation and continued use
3. Both empagliflozin and canagliflozin have shown reduction in HF and reduction in CKD progression in CVOTs
4. Degludec or U100 glargine have demonstrated CVD safety
   Low dose may be better tolerated though less well studied for CVD effects
6. Choose later generation SU with lower risk of hypoglycemia
7. Degludec / glargine U300 < glargine U100 / detemir < NPH insulin
8. Semaglutide > liraglutide > dulaglutide > exenatide > lixisenatide
9. If no specific comorbidities (i.e., no established CVD, low risk of hypoglycemia and lower priority to avoid weight gain or no weight-related comorbidities)
10. Consider country- and region-specific cost of drugs. In some countries TZDs relatively more expensive and DPP-4i relatively cheaper

GLYCEMIC CONTROL ALGORITHM

INDIVIDUALIZE GOALS

A1C ≤6.5% For patients without concurrent serious illness and at low hypoglycemic risk

A1C >6.5% For patients with concurrent serious illness and at risk for hypoglycemia

LIFESTYLE THERAPY (Including Medically Assisted Weight Loss)

Entry A1C <7.5%

MONOTHERAPY[1]

- ✓ Metformin
- ✓ GLP1-RA [2,3]
- ✓ SGLT2i [2,3]
- ✓ DPP4i
- ⚠ TZD
- ✓ AGi
- ⚠ SU/GLN

If not at goal in 3 months proceed to Dual Therapy

Entry A1C ≥7.5%

DUAL THERAPY[1]

MET or other 1st-line agent +

- ✓ GLP1-RA [2,3]
- ✓ SGLT2i [2,3]
- ✓ DPP4i
- ⚠ TZD
- ⚠ Basal Insulin
- ✓ Colesevelam
- ✓ Bromocriptine QR
- ✓ AGi
- ⚠ SU/GLN

If not at goal in 3 months proceed to Triple Therapy

TRIPLE THERAPY[1]

MET or other 1st-line agent + 2nd-line agent +

- ✓ GLP1-RA [2,3]
- ✓ SGLT2i [2,3]
- ⚠ TZD
- ⚠ Basal Insulin
- ✓ DPP4i
- ✓ Colesevelam
- ✓ Bromocriptine QR
- ✓ AGi
- ⚠ SU/GLN

If not at goal in 3 months proceed to or intensify insulin therapy

Entry A1C >9.0%

SYMPTOMS

NO	YES
DUAL Therapy OR TRIPLE Therapy	INSULIN ± Other Agents

ADD OR INTENSIFY INSULIN

Refer to Insulin Algorithm

LEGEND

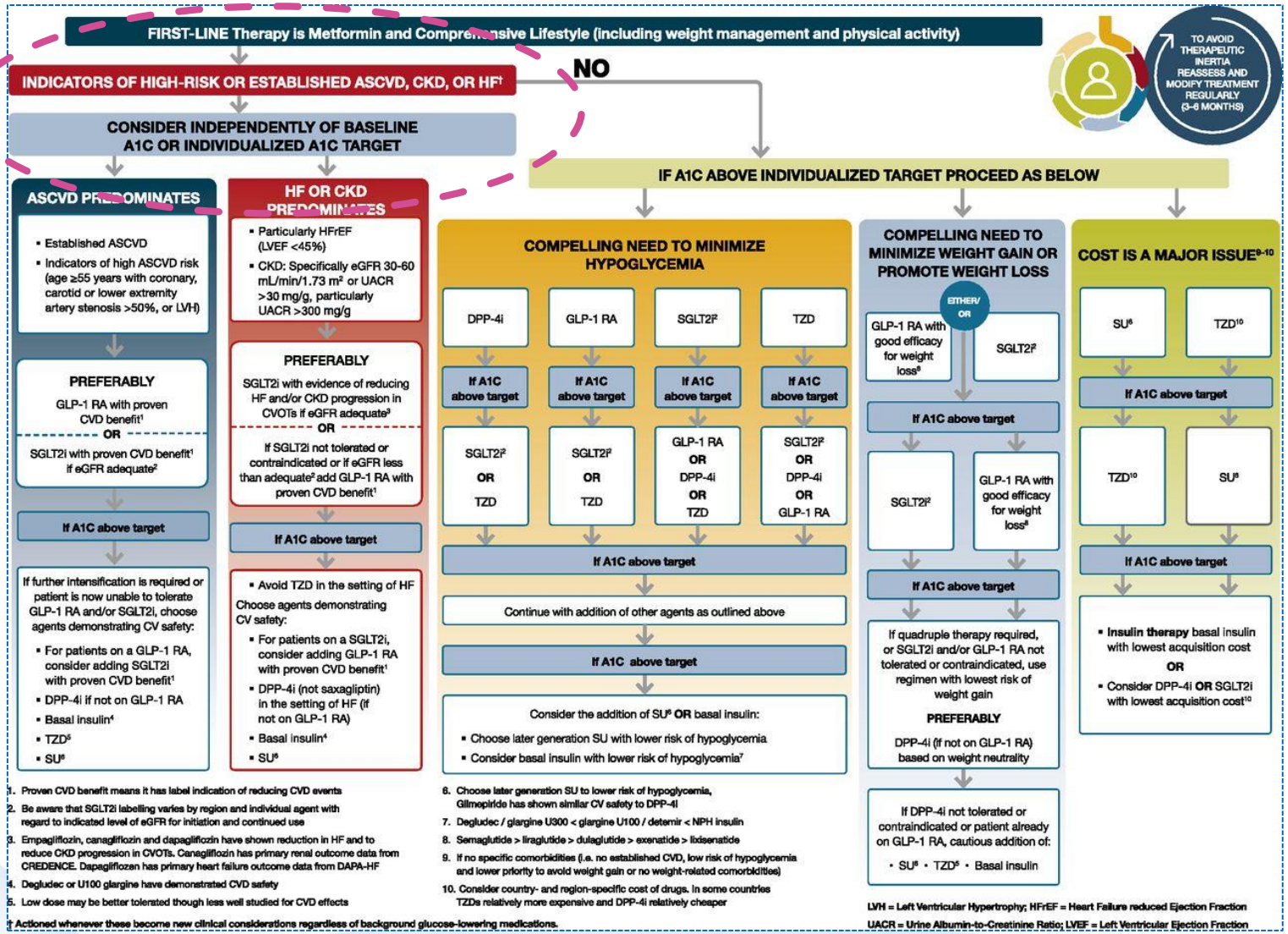
- ✓ Few adverse events and/or possible benefits
- ⚠ Use with caution

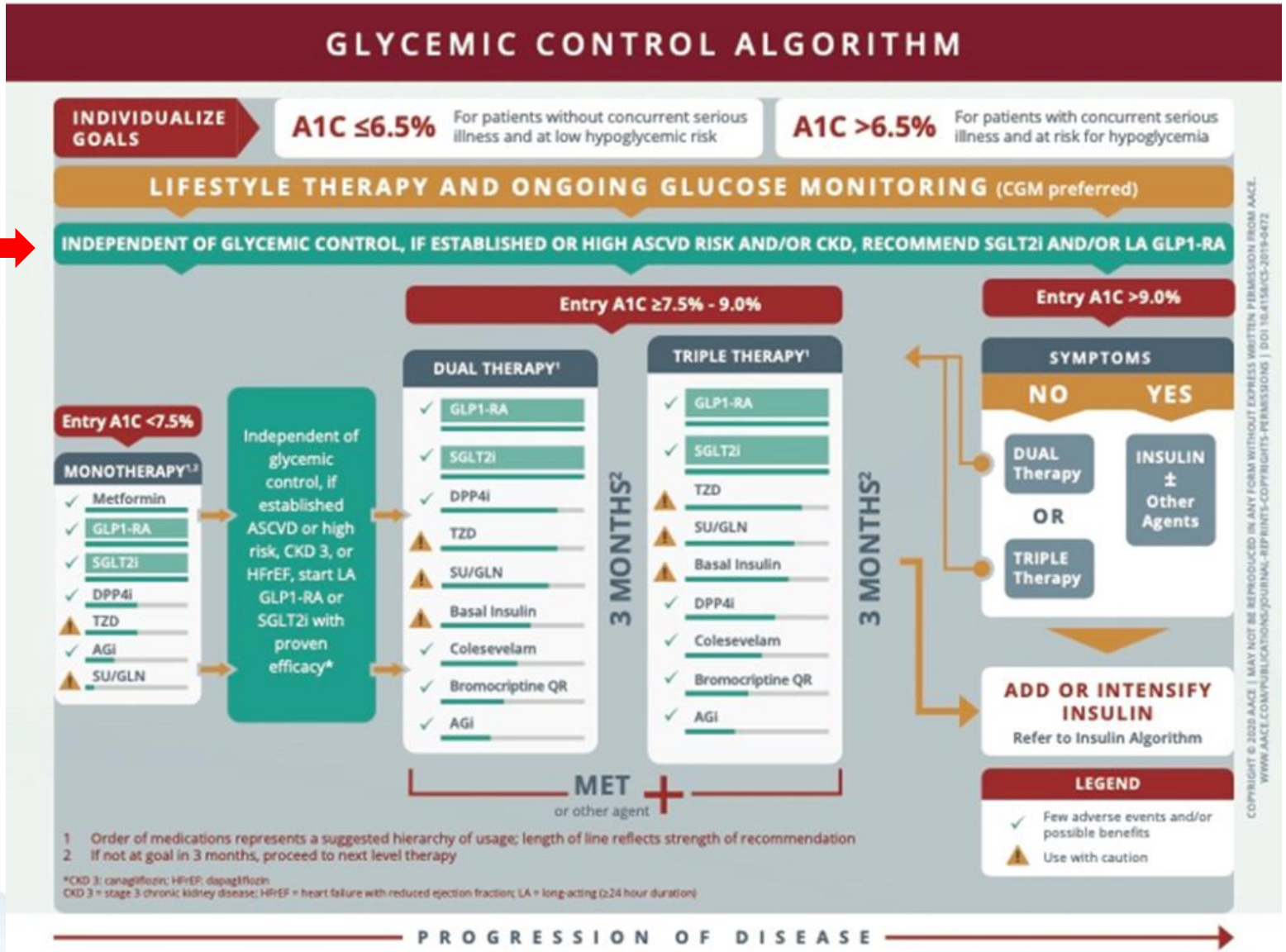
1. Order of medications represents a suggested hierarchy of usage; length of line reflects strength of recommendation
2. Certain GLP1-RAs and SGLT2is have shown CVD and CKD benefits—preferred in patients with those complications
3. Include one of these medications if CHD present

PROGRESSION OF DISEASE

 DOI 10.4158/CS-2018-0535

2020


FIRST-LINE Therapy is Metformin and Comprehensive Lifestyle (including weight management and physical activity)
INDICATORS OF HIGH-RISK OR ESTABLISHED ASCVD, CKD, OR HF[1]
NO
TO AVOID THERAPEUTIC INERTIA REASSESS AND MODIFY TREATMENT REGULARLY (3–6 MONTHS)
CONSIDER INDEPENDENTLY OF BASELINE A1C OR INDIVIDUALIZED A1C TARGET
IF A1C ABOVE INDIVIDUALIZED TARGET PROCEED AS BELOW
ASCVD PREDOMINATES
Established ASCVD
Indicators of high ASCVD risk (age ≥55 years with coronary, carotid or lower extremity artery stenosis >50%, or LVH)
PREFERABLY
GLP-1 RA with proven CVD benefit[1]
OR
SGLT2i with proven CVD benefit[1] if eGFR adequate[2]
If A1C above target
If further intensification is required or patient is now unable to tolerate GLP-1 RA and/or SGLT2i, choose agents demonstrating CV safety:
For patients on a GLP-1 RA, consider adding SGLT2i with proven CVD benefit[1]
DPP-4i if not on GLP-1 RA
Basal insulin[4]
TZD[5]
SU[6]
HF OR CKD PREDOMINATES
Particularly HFrEF (LVEF <45%)
CKD: Specifically eGFR 30-60 mL/min/1.73 m² or UACR >30 mg/g, particularly UACR >300 mg/g
PREFERABLY
SGLT2i with evidence of reducing HF and/or CKD progression in CVOTs if eGFR adequate[2]
OR
If SGLT2i not tolerated or contraindicated or if eGFR less than adequate[2] add GLP-1 RA with proven CVD benefit[1]
If A1C above target
Avoid TZD in the setting of HF
Choose agents demonstrating CV safety:
For patients on a SGLT2i, consider adding GLP-1 RA with proven CVD benefit[1]
DPP-4i (not saxagliptin) in the setting of HF (if not on GLP-1 RA)
Basal insulin[4]
SU[6]
COMPELLING NEED TO MINIMIZE HYPOGLYCEMIA
DPP-4i
GLP-1 RA
SGLT2i[2]
TZD
If A1C above target
SGLT2i[2] OR TZD
SGLT2i[2] OR TZD
GLP-1 RA OR DPP-4i OR TZD
SGLT2i[2] OR DPP-4i OR GLP-1 RA
If A1C above target
Continue with addition of other agents as outlined above
If A1C above target
Consider the addition of SU[6] OR basal insulin:
Choose later generation SU with lower risk of hypoglycemia
Consider basal insulin with lower risk of hypoglycemia[7]
COMPELLING NEED TO MINIMIZE WEIGHT GAIN OR PROMOTE WEIGHT LOSS
EITHER/ OR
GLP-1 RA with good efficacy for weight loss[8]
SGLT2i[2]
If A1C above target
SGLT2i[2]
GLP-1 RA with good efficacy for weight loss[8]
If A1C above target
If quadruple therapy required, or SGLT2i and/or GLP-1 RA not tolerated or contraindicated, use regimen with lowest risk of weight gain
PREFERABLY
DPP-4i (if not on GLP-1 RA) based on weight neutrality
If DPP-4i not tolerated or contraindicated or patient already on GLP-1 RA, cautious addition of:
SU[6] • TZD[5] • Basal insulin
COST IS A MAJOR ISSUE[9-10]
SU[6]
TZD[10]
If A1C above target
TZD[10]
SU[6]
If A1C above target
Insulin therapy basal insulin with lowest acquisition cost
OR
Consider DPP-4i OR SGLT2i with lowest acquisition cost[10]
1. Proven CVD benefit means it has label indication of reducing CVD events
2. Be aware that SGLT2i labelling varies by region and individual agent with regard to indicated level of eGFR for initiation and continued use
3. Empagliflozin, canagliflozin and dapagliflozin have shown reduction in HF and to reduce CKD progression in CVOTs. Canagliflozin has primary renal outcome data from CREDENCE. Dapagliflozan has primary heart failure outcome data from DAPA-HF
4. Degludec or U100 glargine have demonstrated CVD safety
5. Low dose may be better tolerated though less well studied for CVD effects
6. Choose later generation SU to lower risk of hypoglycemia, Glimepiride has shown similar CV safety to DPP-4i
7. Degludec / glargine U300 < glargine U100 / detemir < NPH insulin
8. Semaglutide > liraglutide > dulaglutide > exenatide > lixisenatide
9. If no specific comorbidities (i.e. no established CVD, low risk of hypoglycemia and lower priority to avoid weight gain or no weight-related comorbidities)
10. Consider country- and region-specific cost of drugs. In some countries TZDs relatively more expensive and DPP-4i relatively cheaper
† Actioned whenever these become new clinical considerations regardless of background glucose-lowering medications.
LVH = Left Ventricular Hypertrophy; HFrEF = Heart Failure reduced Ejection Fraction
UACR = Urine Albumin-to-Creatinine Ratio; LVEF = Left Ventricular Ejection Fraction


GLYCEMIC CONTROL ALGORITHM
INDIVIDUALIZE GOALS
A1C ≤6.5%
For patients without concurrent serious illness and at low hypoglycemic risk
A1C >6.5%
For patients with concurrent serious illness and at risk for hypoglycemia
LIFESTYLE THERAPY AND ONGOING GLUCOSE MONITORING (CGM preferred)
INDEPENDENT OF GLYCEMIC CONTROL, IF ESTABLISHED OR HIGH ASCVD RISK AND/OR CKD, RECOMMEND SGLT2i AND/OR LA GLP1-RA
Entry A1C <7.5%
MONOTHERAPY[1,2]
Metformin
GLP1-RA
SGLT2i
DPP4i
TZD
AGi
SU/GLN
Independent of glycemic control, if established ASCVD or high risk, CKD 3, or HFrEF, start LA GLP1-RA or SGLT2i with proven efficacy*
Entry A1C ≥7.5% - 9.0%
DUAL THERAPY[1]
GLP1-RA
SGLT2i
DPP4i
TZD
SU/GLN
Basal Insulin
Colesevelam
Bromocriptine QR
AGi
3 MONTHS[2]
TRIPLE THERAPY[1]
GLP1-RA
SGLT2i
TZD
SU/GLN
Basal Insulin
DPP4i
Colesevelam
Bromocriptine QR
AGi
3 MONTHS[2]
MET + other agent
Entry A1C >9.0%
SYMPTOMS
NO
YES
DUAL Therapy
OR
TRIPLE Therapy
INSULIN ± Other Agents
ADD OR INTENSIFY INSULIN
Refer to Insulin Algorithm
LEGEND
Few adverse events and/or possible benefits
Use with caution
1 Order of medications represents a suggested hierarchy of usage; length of line reflects strength of recommendation
2 If not at goal in 3 months, proceed to next level therapy
*CKD 3: canagliflozin; HFrEF: dapagliflozin
CKD 3 = stage 3 chronic kidney disease; HFrEF = heart failure with reduced ejection fraction; LA = long-acting (≥24 hour duration)
PROGRESSION OF DISEASE
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PROFILES OF ANTIHYPERGLYCEMIC MEDICATIONS

	MET	GLP1-RA	SGLT2i	DPP4i	AGi	TZD (moderate dose)	SU / GLN	COLSVL	BCR-QR	INSULIN	PRAML
HYPO	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate/Severe / Mild	Neutral	Neutral	Moderate to Severe	Neutral
WEIGHT	Slight Loss	Loss	Loss	Neutral	Neutral	Gain	Gain	Neutral	Neutral	Gain	Loss
RENAL / GU	Contra-indicated if eGFR <30 mL/min/ 1.73 m²	Exenatide Not Indicated CrCl <30 Potential Benefit of LA GLP1-RA	Not Indicated for eGFR <45 mL/ min/1.73 m² See #1 Genital Mycotic Infections Potential CKD Benefit; See #1	Dose Adjustment Necessary (Except Linagliptin) Effective in Reducing Albuminuria	Neutral	Neutral	More Hypo Risk	Neutral	Neutral	More Hypo Risk	Neutral
GI Sx	Moderate	Moderate	Neutral	Neutral	Moderate	Neutral	Neutral	Mild	Moderate	Neutral	Moderate
CHF	Neutral	Neutral	Prevent HF Hospitalization Manage HFrEF; See #2	See #4	Neutral	Moderate	Neutral	Neutral	Neutral	CHF Risk	Neutral
CARDIAC ASCVD		Potential Benefit of LA GLP1-RA	See #3			May Reduce Stroke Risk	Possible ASCVD Risk	Lowers LDL-C	Safe	Neutral	
BONE	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate Fracture Risk	Neutral	Neutral	Neutral	Neutral	Neutral
KETOACIDOSIS	Neutral	Neutral	DKA Can Occur in Various Stress Settings	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral

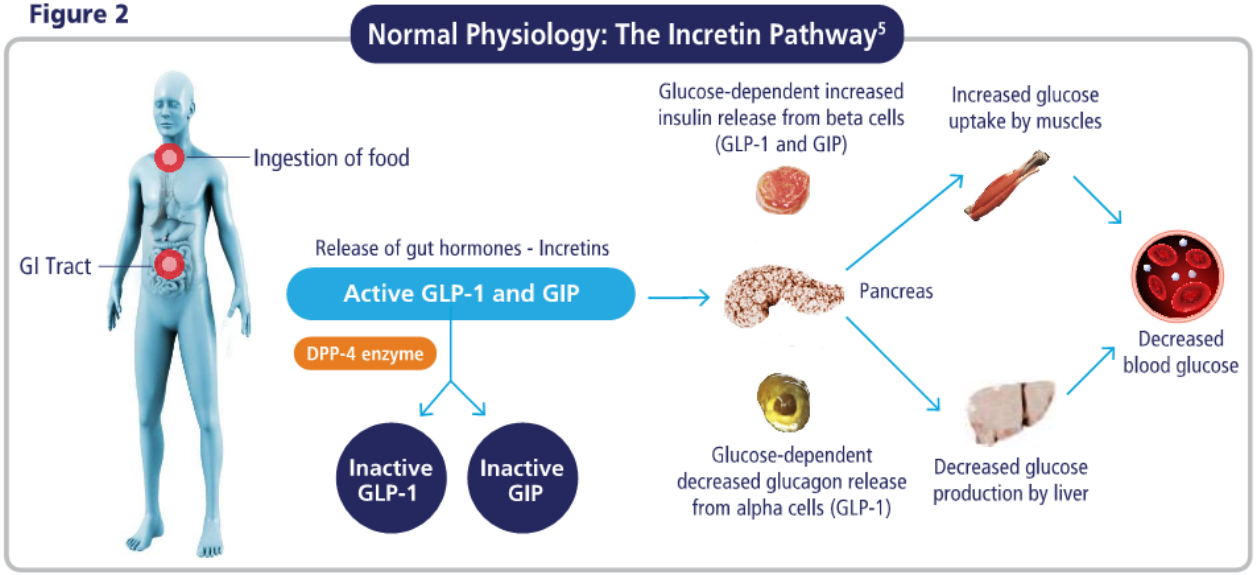
- Few adverse events or possible benefits
- Use with caution
- Likelihood of adverse effects

1. Canagliflozin indicated for eGFR ≥30 mL/min/1.73 m² in patients with CKD 3 + albuminuria.
2. Dapagliflozin—potential primary prevention of HF hospitalization & demonstrated efficacy in HFrEF.
3. Empagliflozin—FDA approved to reduce CV mortality. Canagliflozin—FDA approved to reduce MACE events.
4. Possible increased hospitalizations for heart failure with alogliptin and saxagliptin.

TABLE 9.1 Drug-specific and patient factors to consider when selecting antihyperglycemic treatment in adults with type 2 diabetes

	Efficacy	Hypoglycemia	Weight change	CV effects		Cost	Oral/SQ	Renal effects		Additional considerations
				ASCVD	HF			Progression of DKD	Dosing/use considerations*	
Metformin	High	No	Neutral (potential for modest loss)	Potential benefit	Neutral	Low	Oral	Neutral	• Contraindicated with eGFR <30 mL/min/1.73 m²	• Gastrointestinal side effects common (diarrhea, nausea) • Potential for B12 deficiency
SGLT-2 inhibitors	Intermediate	No	Loss	Benefit: empagliflozin†, canagliflozin	Benefit: empagliflozin†, canagliflozin, dapagliflozin‡	High	Oral	Benefit: canagliflozin§, empagliflozin, dapagliflozin	• Renal dose adjustment required (canagliflozin, dapagliflozin, empagliflozin, ertugliflozin)	• **FDA Black Box:** Risk of amputation (**canagliflozin**) • Risk of bone fractures (canagliflozin) • DKA risk (all agents, rare in T2DM) • Genitourinary infections • Risk of volume depletion, hypotension • ↑LDL cholesterol • Risk of Fournier's gangrene
GLP-1 RAs	High	No	Loss	Neutral: lixisenatide Benefit: See label indication of reducing CVD events	Neutral	High	SQ; oral (semaglutide)	Benefit: liraglutide	• Renal dose adjustment required (exenatide, lixisenatide) • Caution when initiating or increasing dose due to potential risk of acute kidney injury	• **FDA Black Box:** Risk of thyroid C-cell tumors (**liraglutide, albiglutide, dulaglutide, exenatide extended release**) • Gastrointestinal side effects common (nausea, vomiting, diarrhea) • Injection site reactions • ?Acute pancreatitis risk
DPP-4 inhibitors	Intermediate	No	Neutral	Neutral	Potential risk: saxagliptin	High	Oral	Neutral	• Renal dose adjustment required (sitagliptin, saxagliptin, alogliptin); can be used in renal impairment • No dose adjustment required for linagliptin	• Potential risk of acute pancreatitis • Joint pain
Thiazolidinediones	High	No	Gain	Potential benefit: pioglitazone	Increased risk	Low	Oral	Neutral	• No dose adjustment required • Generally not recommended in renal impairment due to potential for fluid retention	• **FDA Black Box:** Congestive heart failure [**pioglitazone, rosiglitazone**] • Fluid retention (edema; heart failure) • Benefit in NASH • Risk of bone fractures • Bladder cancer (pioglitazone) • ↑LDL cholesterol (rosiglitazone)
Sulfonylureas (2nd generation)	High	Yes	Gain	Neutral	Neutral	Low	Oral	Neutral	• Glyburide: not recommended • Glipizide and glimepiride: initiate conservatively to avoid hypoglycemia	• FDA Special Warning on increased risk of cardiovascular mortality based on studies of an older sulfonylurea (tolbutamide)
Insulin — **Human insulin**	Highest	Yes	Gain	Neutral	Neutral	Low	SQ; inhaled	Neutral	• Lower insulin doses required with a decrease in eGFR; titrate per clinical response	• Injection site reactions • Higher risk of hypoglycemia with human insulin (NPH or premixed formulations) vs. analogs
Insulin — **Analogs**						High	SQ			

Figure 2



Abbreviations: DPP-4: dipeptidyl peptidase-4; GI: gastrointestinal; GIP: glucose-dependent insulinotropic polypeptide; GLP-1: glucagon-like peptide-1

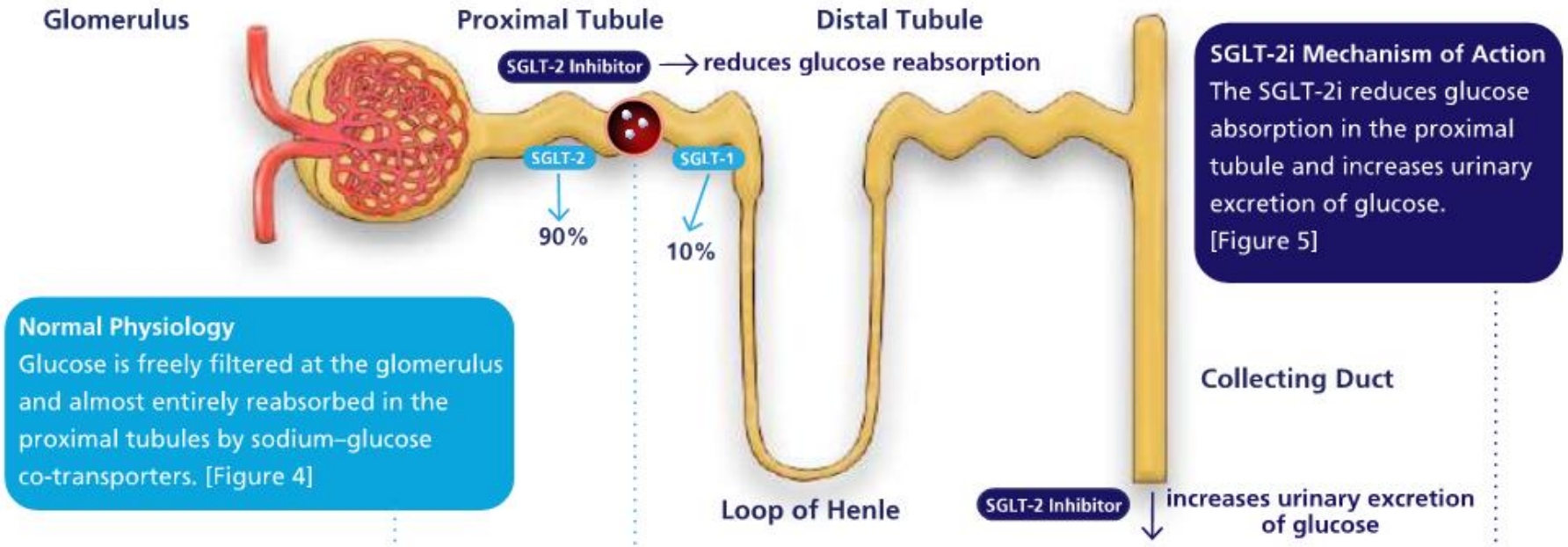
Glucagon-like peptide-1 (GLP-1) Receptor Agonists

In the presence of elevated blood glucose[5]:

- Activate GLP-1 receptors in the pancreas to increase insulin secretion
- Activate the GLP-1 receptors in the pancreas to reduce glucagon secretion, thereby reducing hepatic glucose output
- Delay gastric emptying

Pathway of Renal Glucose Reabsorption[6,7]

Figure 3



SGLT-2i Mechanism of Action
The SGLT-2i reduces glucose absorption in the proximal tubule and increases urinary excretion of glucose. [Figure 5]

Normal Physiology
Glucose is freely filtered at the glomerulus and almost entirely reabsorbed in the proximal tubules by sodium–glucose co-transporters. [Figure 4]

Figure 4
Normal Physiology

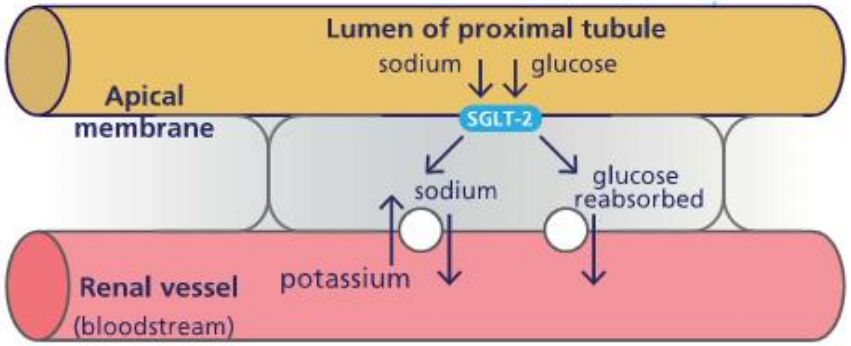
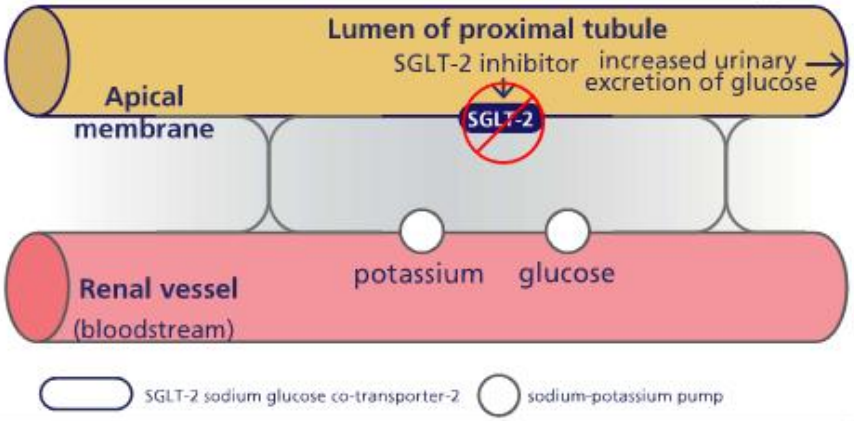


Figure 5
SGLT-2i Mechanism of Action



Properties of anti-hyperglycemic agents

Class/therapies in class	Primary physiological actions	Advantages	Disadvantages/adverse effects	Efficacy
Sulfonylureas • Glibenclamide/ glyburide • Glipizide • Gliclazide* • Glimepiride	• ↑ Insulin secretion	• Extensive experience • ↓ Microvascular risk (UKPDS) • Inexpensive	• Hypoglycemia • ↑ Weight • Uncertain CV safety • Dose adjustment/avoidance for renal disease • High rate of secondary failure	High
TZDs • Pioglitazone • Rosiglitazone†	• ↑ Insulin sensitivity	• Low risk for hypoglycemia • Durability • ↑ HDL-C • ↓ Triacylglycerols (pioglitazone) • ↓ ASCVD events (pioglitazone: in a post-stroke insulin-resistant population and as secondary end point in a high-risk-of-CVD diabetes population)	• ↑ Weight • Edema/heart failure • Bone loss • ↑ Bone fractures • ↑ LDL-C (rosiglitazone) • ? Bladder cancer • ? Macular edema	High
Meglitinides (Glinides) • Repaglinide • Nateglinide	• ↑ Insulin secretion	• ↓ Postprandial glucose excursions • Dosing flexibility • Safe in advanced renal disease with cautious dosing (especially repaglinide) • Lower cost	• Hypoglycemia • ↑ Weight • Uncertain CV safety • Frequent dosing schedule	Intermediate–high

*Not licensed in the U.S. for T2D, †Not licensed in Europe for T2D.
ASCVD, atherosclerotic cardiovascular disease; CV, cardiovascular; CVD, cardiovascular disease; HDL-C, High-density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; UKPDS, United Kingdom Prospective Diabetes Study.

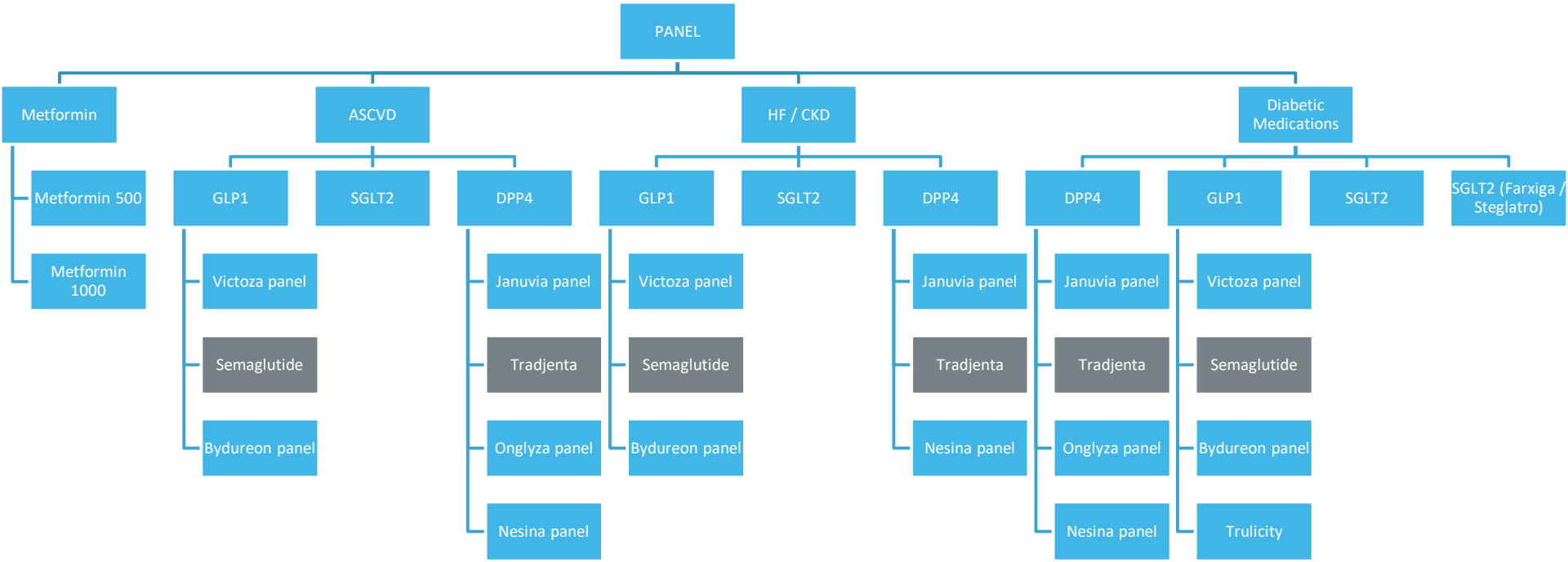
Modified from 2018 ADA EASD Type 2 Diabetes Guidelines. *Diabetes Care*. 2018 Oct 4. [Epub ahead of print] https://doi.org/10.2337/dci18-0033

Incorporating into Practice

Decision-making tool

- Help clinicians stay current with latest recommendations in diabetic management
- Only display appropriate medications based on the unique parameters of each patient
- Reduce errors by pre-filtering based on GFR and common contraindications
- Reduce clicks by providing simplistic interface
- Phase 1

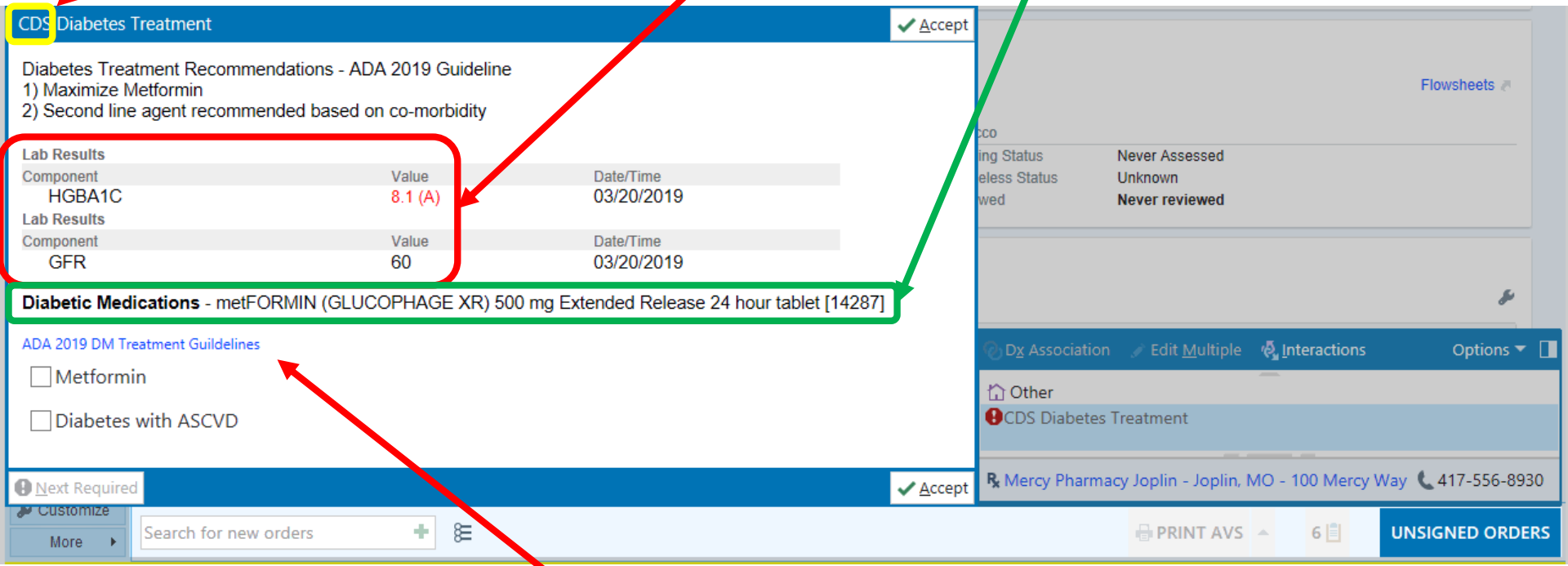
Panel Layout



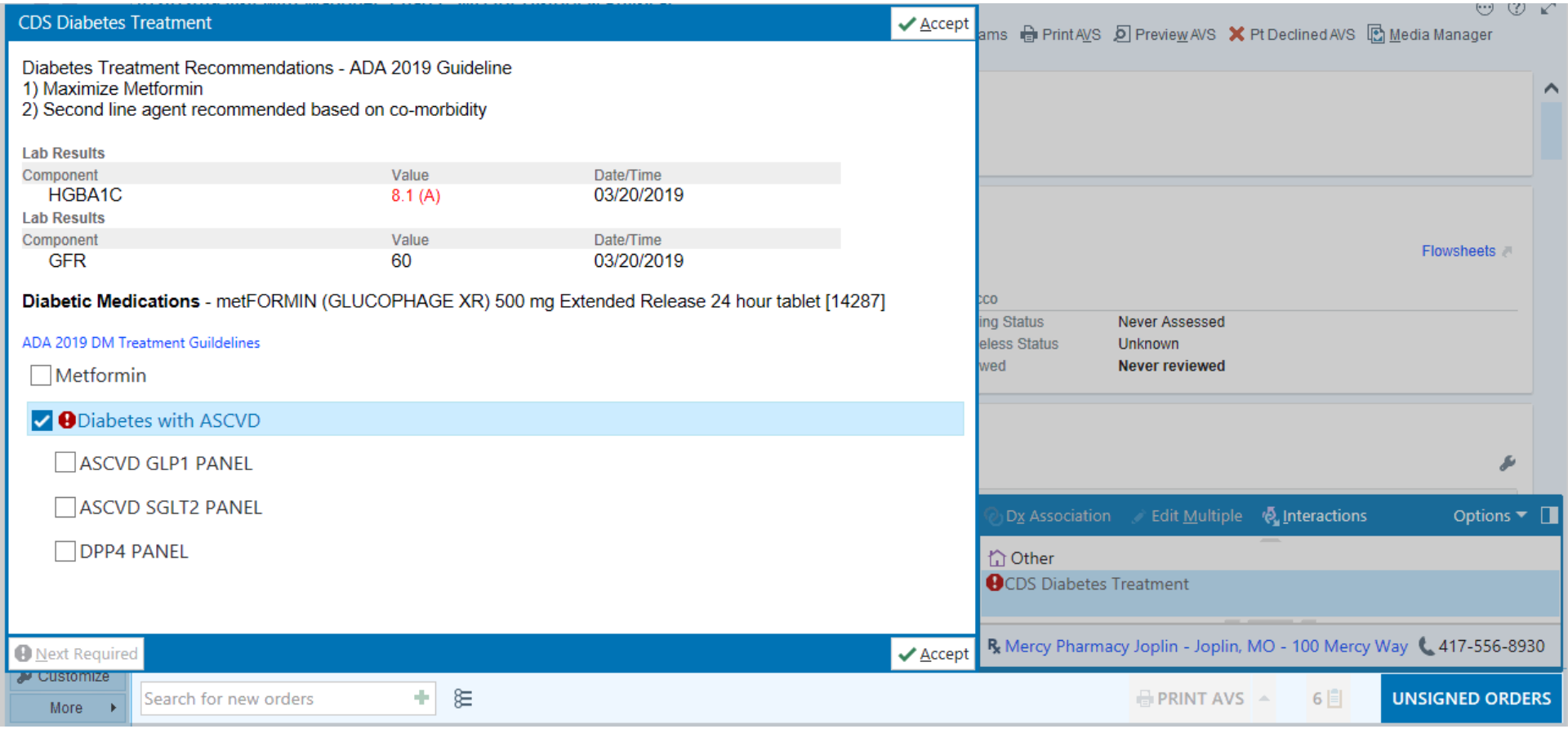
CDS prefixing to help with finding it

Relevant Labs

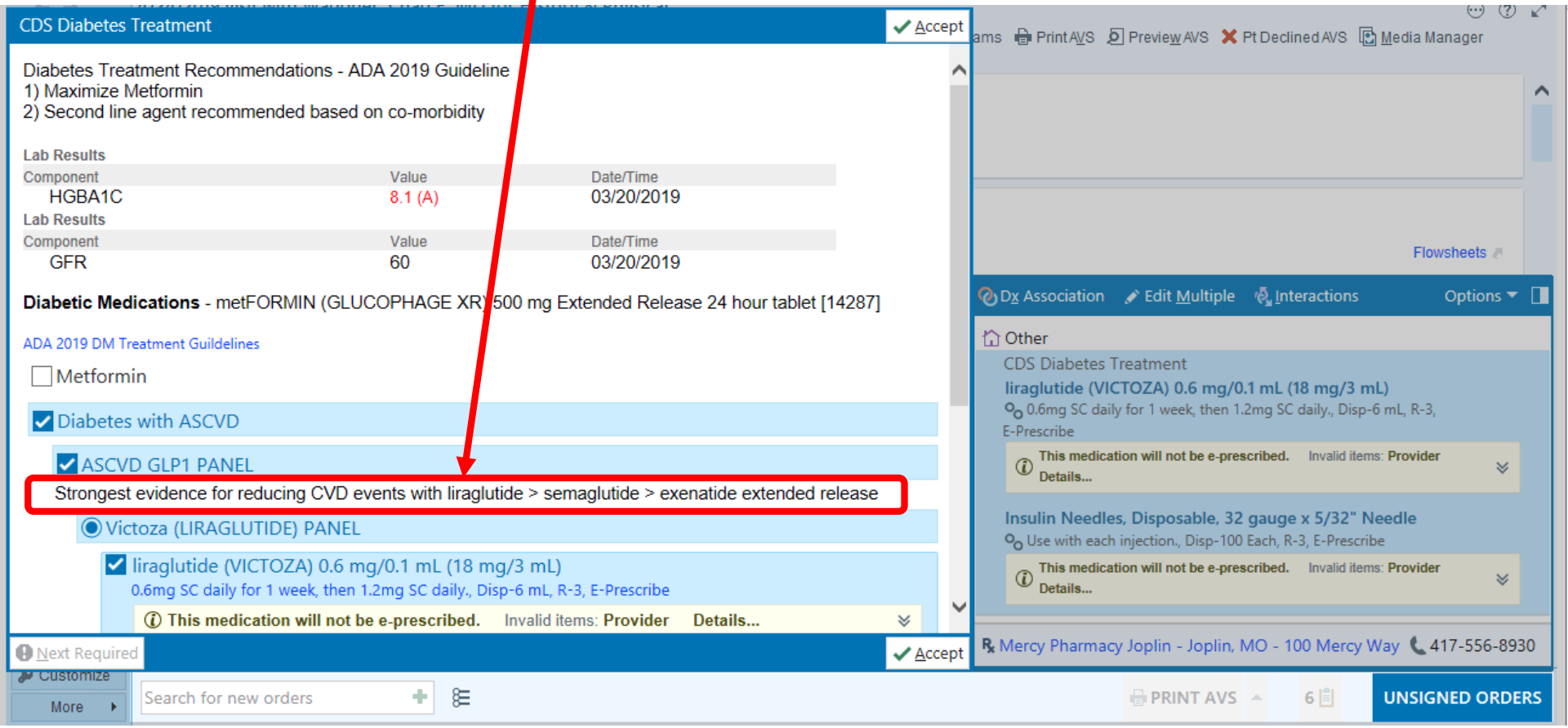
Current Related Medications

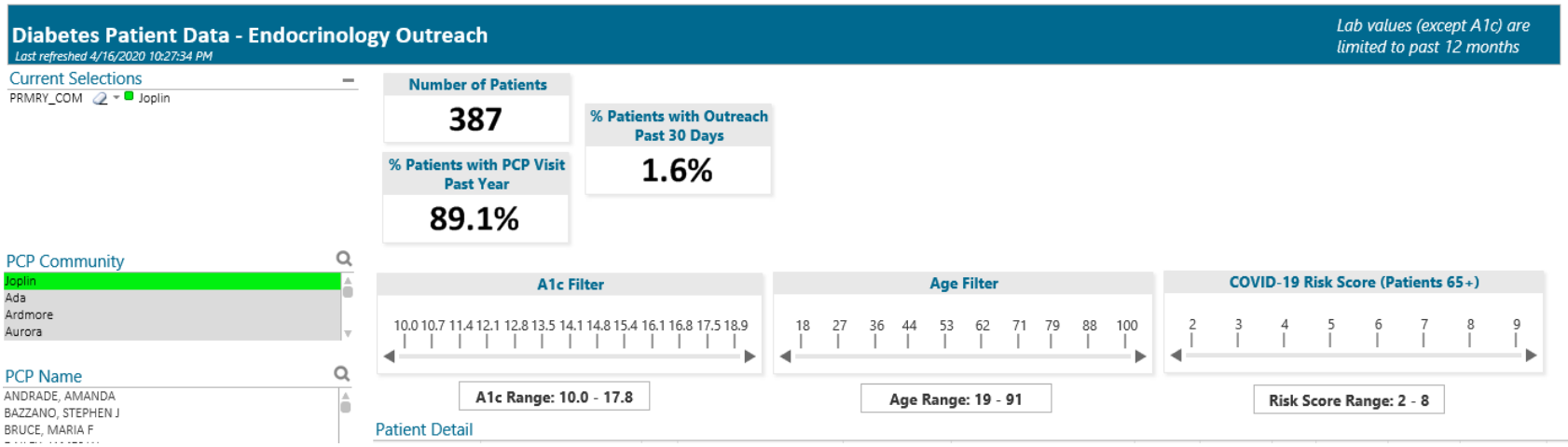


Link to Current Literature



Additional instructions to guide treatment choice

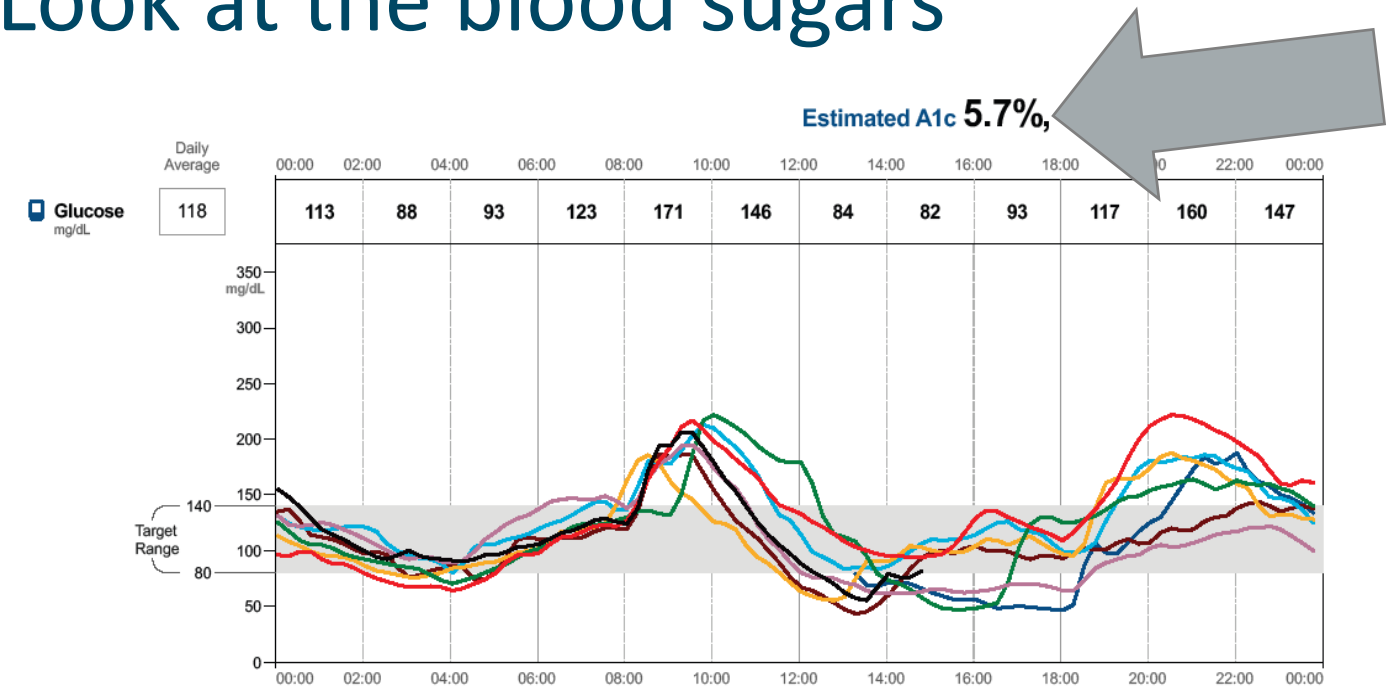




When in Doubt

Go to the sugars

Look at the blood sugars



- Metformin
- Glyburide 10 mg at 7:30 and 9 pm
- Breakfast = instant oatmeal
- Lunch and supper = mixed meals

AGP Report

Name

MRN

GLUCOSE STATISTICS AND TARGETS

26 Feb 2019–10 Mar 2019	**13 days**
% Time CGM is Active	**99.9%**

Glucose Ranges	**Targets** [% of Readings (Time/Day)]
Target Range 70–180 mg/dL	Greater than 70% (16h 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 180 mg/dL	Less than 25% (6h)
Above 250 mg/dL	Less than 5% (1h 12min)

Each 5% increase in time in range (70–180 mg/dL) is clinically beneficial.

Average Glucose	**173 mg/dL**
Glucose Management Indicator (GMI)	**7.6%**
Glucose Variability	**49.5%**

Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

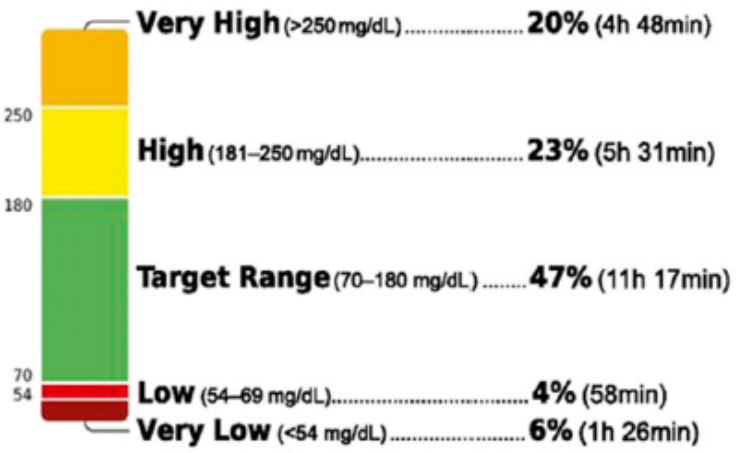


FIGURE 6.1 Sample AGP report. Adapted from Battelino T, Danne T, Bergenstal RM, et al. Diabetes Care 2019;42:1593–1603.

Keep in mind

- Time-in-range matters
- $
- Patient adherence leads to successful glucose control
  - Don’t choose medications they will not take
- Step-wise addition of glucose lowering meds generally remains preferred to initial combination therapy
  - Insufficient evidence to suggest first-line combination is superior
  - But those needing > 1.5% A1c reduction will likely need combination
- It still takes a team to treat diabetes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July Webinar

- **Date/Time**: July 16, 2020 from 2-3pm Eastern
- **Topic**: Prediabetes Predictive Model – Delivering Patient-specific Risk Estimates at the Point-of-Care
- **Presenter**: AMGA Analytics

Questions