

Seed
GLOBAL HEALTH

INSULIN & LOGS

Registrar Education Series

Updated 10/2022

[ADA](#)

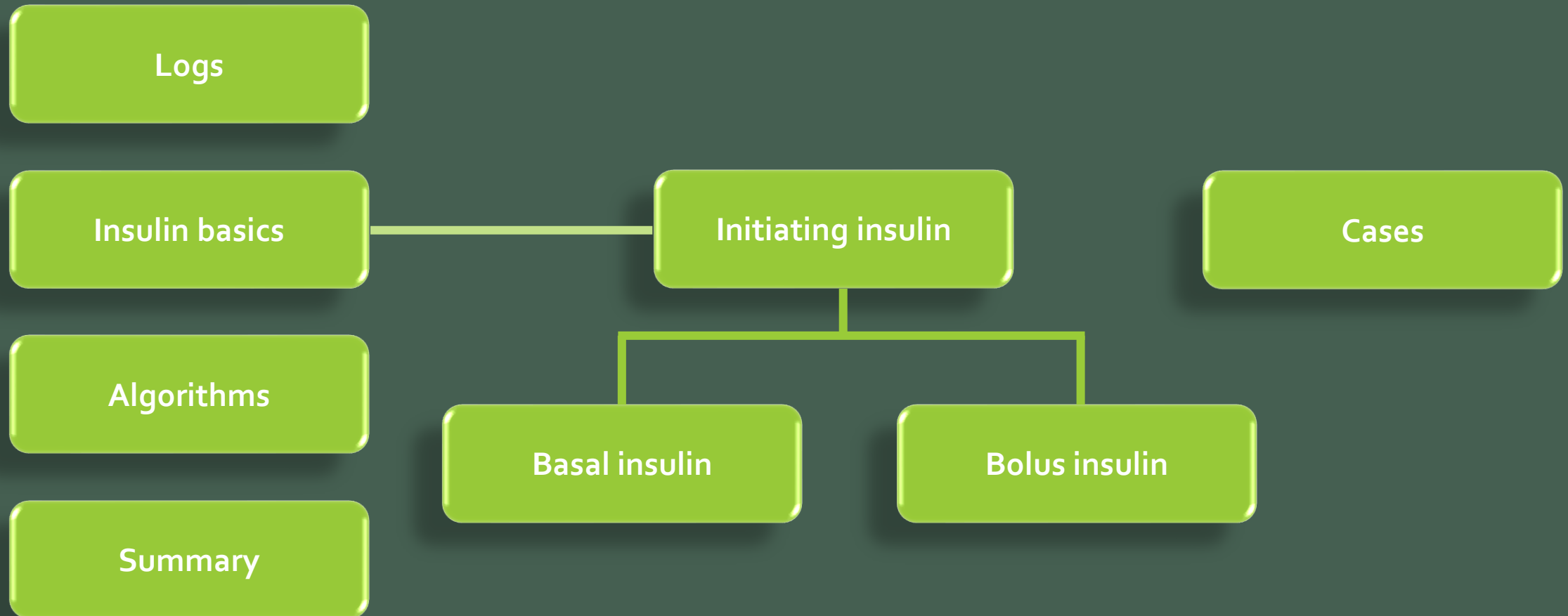
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INSULIN AND LOGS



GLUCOSE LOGS



- Need A1c goal
 - Instruct on finger stick goals
- Factors to consider when determining a goal A1c:
 - risks of hypoglycemia
 - duration of disease
 - Age
 - important comorbidities
 - vascular complications
 - attitude
 - compliance
 - resources and support
- Only check sugars if hypoglycemia is possible

A1c	Average glucose	Fasting goal	Pre dinner	Post prandial
6	6.3			
7	8.2	4.4 - 7.2	* < 8.3	< 10
7.5		5.0 - 7.2	* < 8.3	< 10
8	10	5.0 - 8.3	* < 10	< 10
8.5		5.6 - 10	* < 10	< 10
9	11.9			
10	13.7			
11	15.6			
12	17.4			
kids		5.0 - 7.2		< 10

BASAL INSULIN LOG



	Wake up	Before supper	After supper
1/11			
2/11			
3/11			
4/11			
5/11			
6/11			
7/11			
8/11			
9/11			
10/11			
11/11			
12/11			
13/11			
14/11			
15/11			
16/11			
17/11			
18/11			
19/11			
20/11			
21/11			
22/11			
23/11	Clinic	OPD	

PRACTICE TIPS

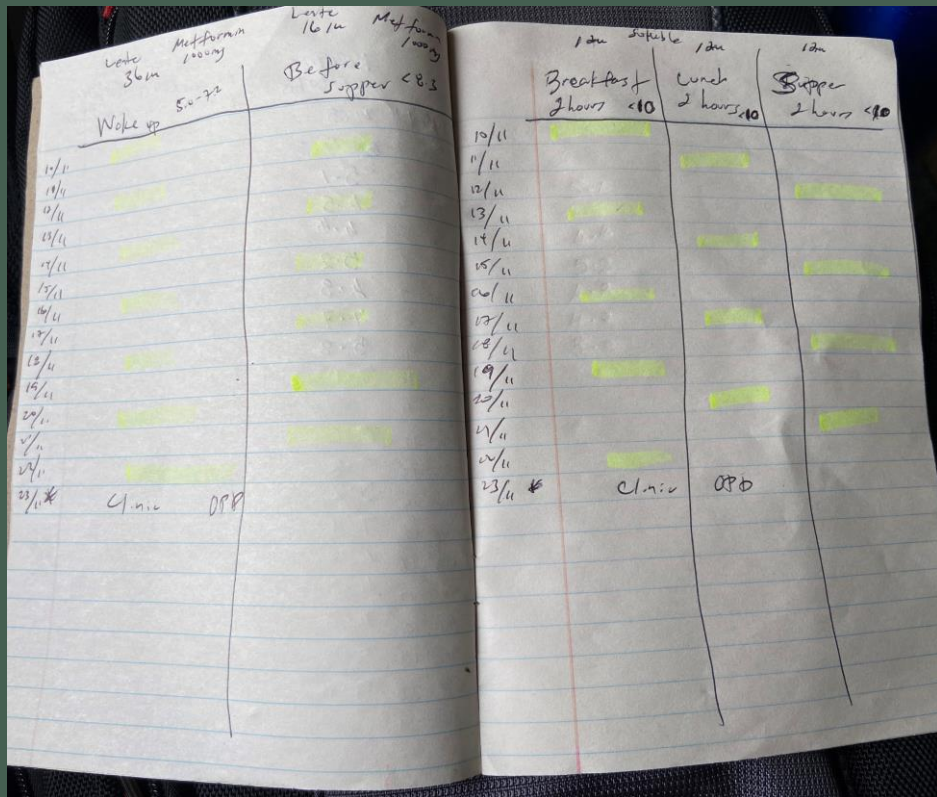
- Only check fasting sugar if they are on long acting insulin (once a day)
- Only check fasting and pre-dinner if on intermediate
- ***Highlight the column***
 - Avoids confusion
 - Increases compliance
- Add the goal to the log as a reminder for the patient
- Reconnect with the patient every 1-2 weeks if they are titrating (in-person, virtual, email, telephone)

BOLUS(PRANDIAL) INSULIN LOG



PRACTICE TIPS

- Check a max of twice a day
- Clearly label that it is 2 hours after eating
- ***Highlight the columns to avoid confusion and increase compliance***
- Add the goal to the log
- Only self-titrate one insulin at a time
- Reconnect with the patient every 1-2 weeks if they are titrating (in-person, virtual, email, telephone)
- The 50:50 basal:bolus rule applies only if they are completely insulin dependent and not on other medications that affect prandial values



INSULIN BASICS



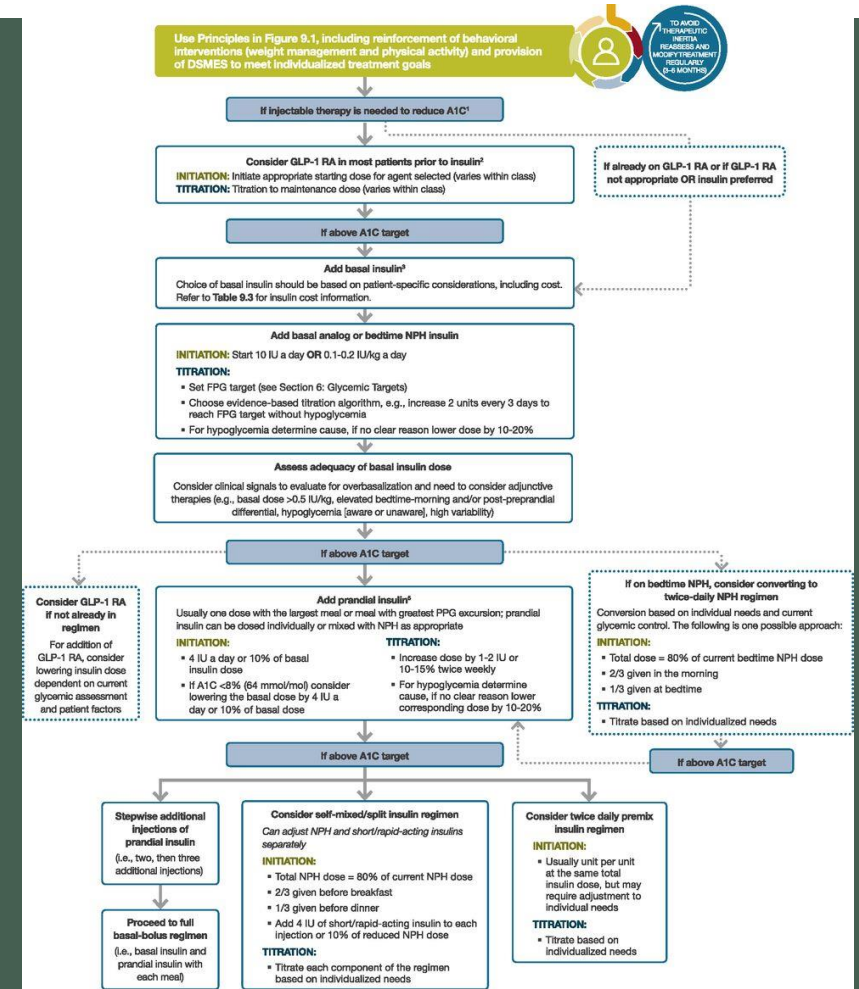
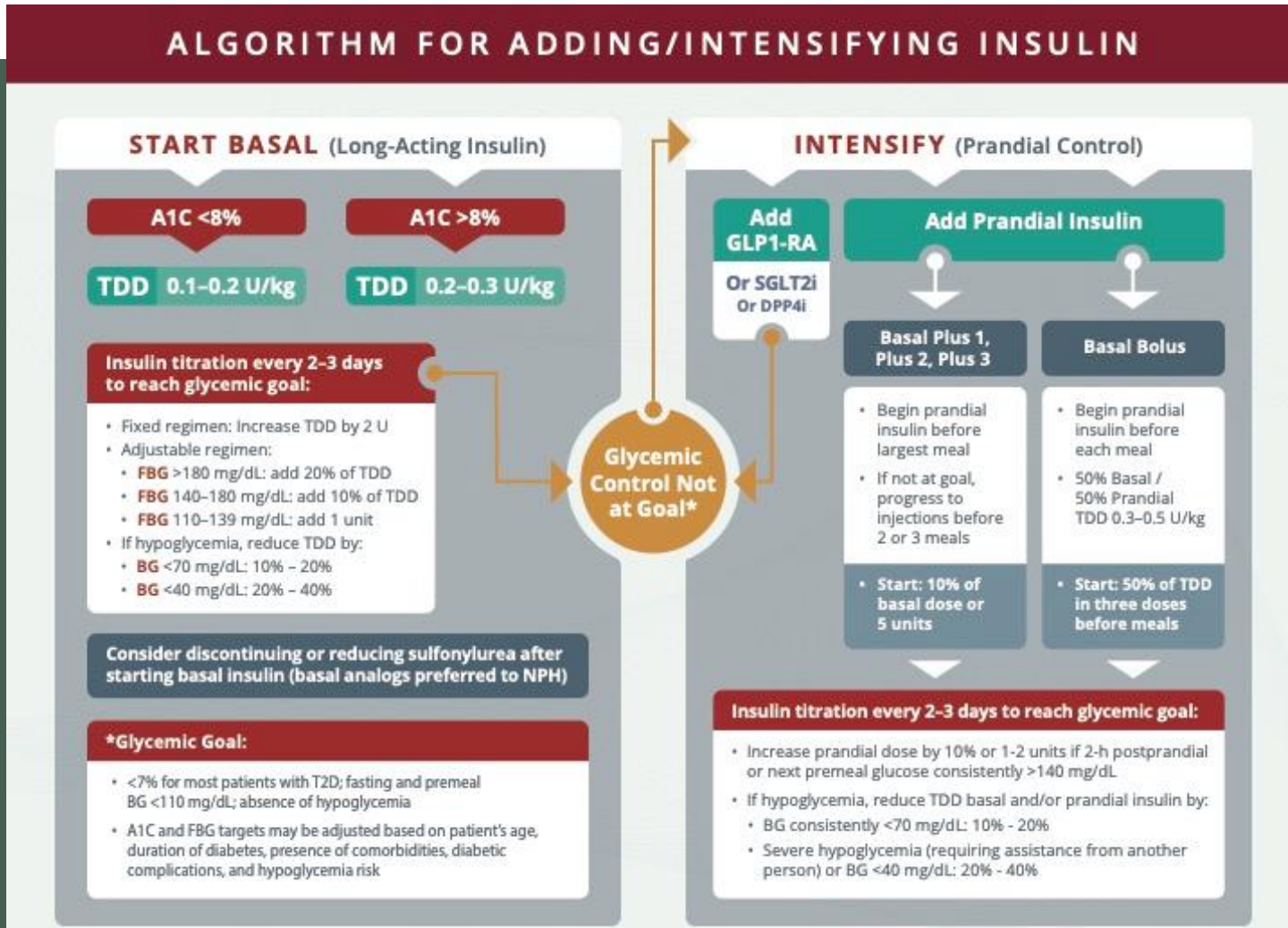
- Only refrigerate if it has not been opened
- Do not expose to heat
- Place in a convenient place for compliance
- Insert the needle straight, not at an angle
- Preferred location is abdomen
- Rotate injection site each time to avoid pain/bruising/complications
- Prescribe pens instead of vials (if available)
- Use even numbers when dosing as the pens are labeled with even numbers
- Keep the needle in and the dial depressed for a count of 10 if using a pen

INITIATING INSULIN



- Initiate insulin if:
 - The patient is above goal on orals
 - The initial A_{1c} is too high for orals to get them to goal
 - They develop a DM complication and need to get their sugars down rapidly
- There are a number of ways to start and titrate insulin based on A_{1c} or body weight
 - The safest method is to start 10u of basal insulin at night
 - Titrate 2u every 2-3 days until the fasting sugar is at goal OR they max at 0.3-0.4u/kg. At this point they need prandial coverage as well.
- NEVER USE SLIDING SCALES

INITIATION OF INSULIN



BASAL INSULIN PEARLS



- If a patient is on 24u of basal insulin they will get 1u per hour
- There is no peak
- Typically given at night and titrated based on morning glucose value
- NPH/Lente also given in the morning and titrated based on pre-dinner value
- Usually is given 2/3 total dose in AM and 1/3 total dose in PM
- Does not need to be stored in fridge if already opened
- ***Go with pens and choose a pen needle 4mm-6mm in length***
 - Pen needles are universal
- Can inject 0.8mL at a time
 - With the concentrated formulations this can be as much as 160 u per injection

INITIATING BOLUS (PRANDIAL)

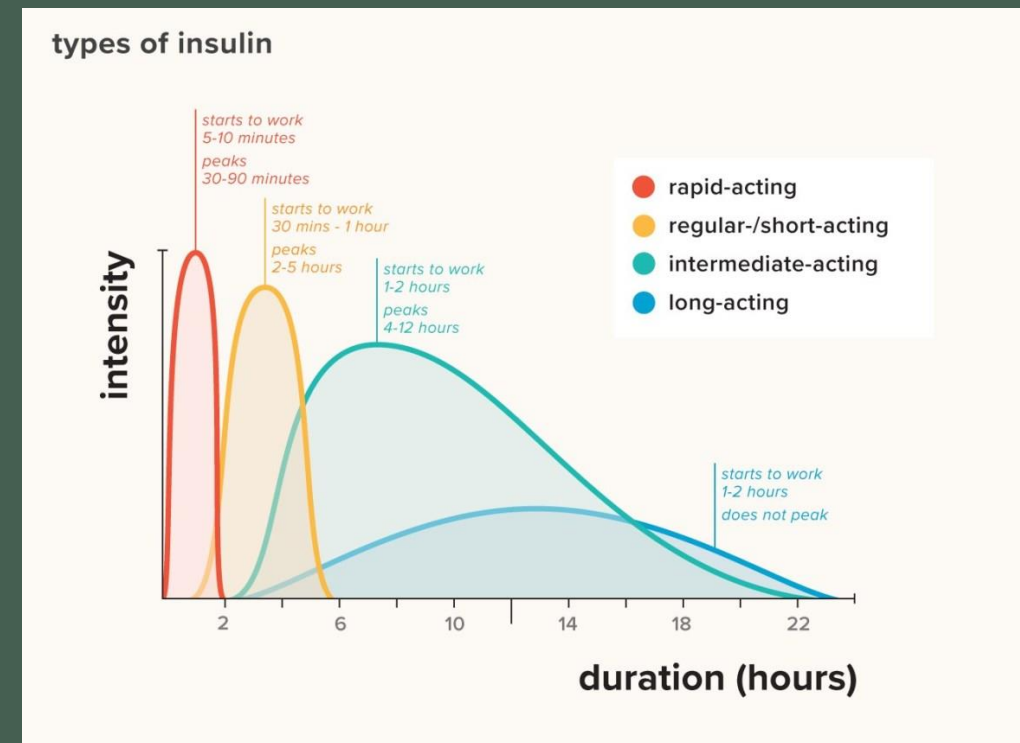


Initiate mealtime insulin when:

- the A_{1c}/post prandial values are not controlled despite controlled fasting values
- they have reached 0.3-0.4u/kg of basal insulin and fastings are still not controlled
- Addition of GLP₁/DPP₄/SGLT₂ have failed to control post prandial values

Start 4u with meal

- Can start with largest meal or multiple meals



BOLUS INSULIN PEARLS



- Starts acting within 30 minutes
 - Inject regular insulin when they are ready to eat to avoid unintended hypoglycemia
- Peaks within 2 hours
- Check glucose 2 hours after starting to eat the meal
- Can start with the largest meal of the day or all 3 meals depending on levels and comfort
- ***Use pens and prescribe needles that are 4-6mm in length***
- Pens can travel in purses/bags/pockets/etc for work/fun/other
- NEVER USE A SLIDING SCALE
- If lunch time insulin is needed can use split NPH and Regular
- NPH and Regular can be combined in the same syringe when given

SUMMARY



Type	Onset/peak/duration	When to inject	When to check glucose	Starting dose	Max units per injection	Max prior to other changes
Intermediate	1-2 hours 4-6 hours Duration ~12 hours	Morning and night	Fasting and predinner	6u AM 4u PM	0.8mL	0.3-0.4u/kg total daily dose prior to adding prandial coverage
Regular	Within 30 minutes Within 2 hours 4-6 hours	At the start of the meal	2 hours after eating	4u or 6u	0.4-0.6mL (40-60 u)	Depends on individual patients
Basal	1-2 hours No peak	Night	fasting	10u	0.8mL (80 or 160 u)	0.3-0.4u/kg prior to adding prandial coverage
Rapid	Within 15 minutes Within 2 hours	At the start of the meal	2 hours after eating	4u or 6u	0.4-0.6mL (40-60 u)	Depends on individual patients

Never use sliding scale

SUMMARY



- Initiate and titrate insulin safely
 - not necessarily slow or fast
- Teach patients how to check their sugars correctly so it is not painful and compliance will increase
- Do not have patients check numbers that do not matter i.e.:
 - Not on insulin
 - Pre lunch
 - Post meal if not taking prandial/bolus insulin
- Try to avoid having patients check their sugar more than twice a day if on basal/bolus
- Never wait 3 months for visits if a change has been made to insulin

CASES



- 1. 54yo M on metformin, DPP₄ and SGLT₂ whose A_{1c} is 9.6.
- 2. 47yo F who weighs 75kg with an A_{1c} of 8.5 on metformin-SGLT₂ combo and basal insulin-GLP₁ combo 30u.
- 3. 68yoF with a PMH of MI and CHF on metformin, basal insulin 24u and rapid acting insulin 4u/meal with an A_{1c} of 6.3.

POSSIBLE TREATMENT OPTIONS



- 1. Start basal insulin at 10u and have him self titrate 2u every other day with follow up in 10 days
- 2. Start meal time insulin with 4u at the largest meal or 4u at every meal adding a rotating post prandial glucose check daily.
- 3. Stop the rapid acting insulin. Start an SGLT2 and add a GLP1 to the basal insulin starting at 10u and self titrating to goal with follow up in 10 days.