The Muddled Mess
Clearing the way for Diabetes Pharmacological Choices in Primary Care
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Objectives
• Discuss pharmacological treatment options for type 1 and type 2 diabetes
• Identify options to treat to glycemic goal:
  – Patient centered targets
  – Moving to combination therapy
  – Utilizing the interdisciplinary team

Disclosures
• I have no conflict of interest in the presentation material

Type 1 Diabetes
• Treatment choice is insulin
• Prandial and basal insulin, multiple daily injections (MDI) or continuous subcutaneous infusion are recommended

Insulin Options
• Rapid acting analog
• Short acting
• Intermediate
• Basal
• Premixed

Insulin Choice
• Analog insulin of choice for mealtime insulin
  – less hypoglycemia than regular
• Inhaled insulin
  – not inferior to injection
  – less hypoglycemia
  – only available in select dosing
  – cost
Amylin Analog

- Only other FDA approved treatment option
- Delays gastric emptying
- Blunts pancreatic secretion of glucagon
- Enhances satiety
- Can induce weight loss and reduce insulin use
- Increase burden of treatment plan for patient

Pancreas and Islet Transplant

- Know your resources
- Have baseline knowledge to generate a discussion

Type 1 in Primary Care

- Recommend these patient follow with specialty care if possible
  - requires intensive review of glucose data
- When to stay in primary care:
  - no access to Endocrinology
  - patient prefers to stay in primary care

Type 1 in Primary Care

- Recommend providers review glycemic data, both pre and post prandial, to fully evaluate insulin plan and make appropriate adjustments
- Appointments can be lengthy so plan ahead
- Diet recall can be helpful
- CGM data
- Use your team
- Know your limits

Type 2 Diabetes

There are 12 classes of glucose lowering agents available in the US to treat type 2 diabetes

Case Study # 1: John

- 54 year old Caucasian male
- BMI 40
- Employed as a hi-lo operator on day shift
- Married, sedentary
- On Metformin, last FBS 230, not monitoring at home
- Hba1c 10.3%
Case Study #2: Melanie

- 42 year old Hispanic female
- BMI 42
- Works part time in Salon
- Single, 2 children at home
- FBS 178
- HbA1C 7.8%
- GFR 44
- History of gestational DM 6 years ago

Case Study #3: David

- 72 year old AA male
- BMI 31
- Retired factory worker
- Married, living in apartment
- RBS 389 during ER visit for back pain
- HbA1C 12.3%
- Unknown family history
- Cardiovascular disease & Stage 2 CKD

Biguanides: Decrease hepatic glucose production by activating the AMP-kinase

- Rare hypoglycemia
- High efficacy
- Free
- Tolerability
- B12 deficiency
- Contraindicated GFR<30

Sulfonylureas: Increases insulin secretion by beta cell stimulation

- High efficacy
- Cost
- Hypoglycemia risk
- Increase weight
- Accelerates beta cell burnout

TZDs: Increase insulin sensitivity by activating one of the nuclear transcription factors

- Rare hypoglycemia
- High efficacy
- Lower CVD events
- Decrease triglycerides
- Cost
- Increase weight
- Edema/heart failure
- Increase LDL

DPP-4 inhibitors: Increase insulin secretion and decrease glucagon secretion by increasing post prandial incretin concentration

- Rare hypoglycemia
- Well tolerated
- Pancreatitis
- Dermatological effects
- Cost
SGLT2 inhibitors: Blocks glucose reabsorption by the kidney increasing glucosuria by inhibiting SGLT2 in the proximal nephron

- Rare hypoglycemia
- Decrease weight and Bp
- Empagliflozin -new cardiovascular indication
- GU infections
- Polyuria
- DKA
- Cost

GLP-1 receptor agonists: Increase insulin secretion and decrease glucagon secretion, slow gastric emptying, increase satiety by activating GLP-1 receptors

- Rare hypoglycemia
- Weight loss
- Lower PP excursions
- Lower CVD event and mortality (liraglutide)
- GI side effects
- Pancreatitis
- Medullary thyroid tumor
- Injectable/training
- Cost

Insulin: Increase glucose disposal and decrease hepatic glucose production, suppresses ketogenesis by activating insulin receptors

- Theoretically unlimited efficacy
- Decrease in microvascular risk
- *Cost
- Hypoglycemia
- Weight gain
- Injectable/training
- Patient and provider reluctance
- *Cost

Not covered in lecture due to infrequent use:

- Meglitinides
- A-glucosidase inhibitor
- Bile acid sequestrants
- Amylin mimetics
- Dopamine-2 agonists

Initial Therapy

- Metformin - unless contraindicated, start metformin on all patients with type 2 diabetes
- Start slow and titrate to maximum dose.
- If GI side effects, try an extended release form (may have higher cost)

New to Therapy General Guidelines:

- Activate the team
- Mental health screening: PHQ4
- Diabetes education annually
- A1C >9, consider dual therapy
- A1C >10 or clinical symptoms, consider combination injectable therapy
- Not achieving target A1C at 3 months, add therapy
Patient-centered Care: Target

• HbA1C
  – less than 6.5% for tight glycemic control
  – less than 7% to avoid microvascular complications
  – less than 7.5% avoiding risk of hypoglycemia
  – less than 8% in elderly with multiple co-morbidities
  – other patient goals when appropriate

Your goal= Their goal

Insulin Therapy

• Talk about insulin as a treatment option at the first appointment
• Be clear that diabetes is a progressive chronic health condition
• Bring in a vial/pen for the patient to see
• Remember: your attitude will guide the patient response

Case Study #1: John

What do we know...

• Overweight
• No complications
• A1C>10%
• Concerned about hypoglycemia because he drives machinery for job
• Currently on monotherapy

• Goal A1C= <7%
• Consider dual injection therapy if patient open to this
• Commercial insurance
• Options: can add one at a time if patient preferred
  – basal and GLP1 (new combination)
  – GLP1 and SGLT2 (cardiovascular indication)

3-month follow up

• Patient on metformin, SGLT2, GLP1
• A1C 7.3%
• FBS average 190
• Don’t wait to treat to goal
• Stop SGLT2 (reduce cost and treatment burden)
• Start basal insulin
Case Study #2: Melanie
What do we know...

- Overweight
- Stage 3 kidney disease
- HX GDM: may indicate patient has had unsuccessful lifestyle modification in the past

Case Study #2: Melanie
Goal A1C =<6.5%
Monotherapy
Start metformin (monitor)

Case Study #2: Melanie
3-month follow up

- Unable to tolerate GI side effects of therapy
- A1C now 8.2%
- Not interested in GLP1 due to possible GI side effect and cost
- Consider TZD (patient has high co-pay for prescriptions) or DPP-4 (no dose adjustment for linaglaptin)
- Avoid or reduce dose SGLT-2

Case Study #2: Melanie
6-month follow up

- On DPP4
- A1C 7.8%
- Consider TZD or basal insulin

Case Study #3: David
What to we know...

- Older
- Medicare
- Cardiovascular history
- CKD

Case Study #3: David
Goal A1C <8%
- Initiate metformin and insulin
- Start basal insulin weight base 0.2 u/kg/day
- 18 units daily and titrate up every 3 days by 2 units until FBS 140
- Short term follow up
Case Study #3: David
2 week follow up

- Has titrated up to 28 units
- Unable to tolerate metformin
- FBS>200
- Pre-dinner BS 300
- Consider basal bolus or premixed insulin
- Consider endocrine referral

The starting line...

Know what you know and what you don’t know

Know your team

Know your patient

Know when to refer

Know what you know and what you don’t know...

- Develop a quick reference of treatment options
- Update this periodically with your team
- Consider joining organization or subscribing to journal for up to date information

Know your Team

- Medical assistant
- Nurse/Care manager
- Dietician/diabetes educator
- Social worker
- Therapist/counselor
- Pharmacist
- Other providers
- Specialist

Know when to Refer

- Unable to achieve glycemic target
- Reoccurring hypoglycemia
- Unable to accommodate a complicated medication plan follow up

References


