Addressing Disparities in Diabetes with Project ECHO: A Focus on Chronic Kidney Disease
An Initiative Addressing Complex Diabetes Management in the Primary Care Setting

Session 3: March 16, 2022

Submitted Case Presentation

31 y/o F with T2D with A1c above target. How can we encourage lifestyle modifications? What medication adjustments should be made?

31-year-old Hispanic female with a 17 year history of type 2 diabetes (T2D) complicated by severe insulin resistance presenting with hyperglycemia, recurrent pancreatitis, obesity (BMI 31), hypertension, disordered eating, and anxiety disorder. Recent hospitalization for pancreatitis. Diabetes management includes long-acting concentrated-500 regular insulin (~ 9u/k/d). Strong family history T2D and hypertriglyceridemia with premature heart disease. Most recent A1c 10.1% (decrease from 13.1%). Currently uses a CGM. Time in Range (TIR) increased to 12% with 0% hypoglycemia.

Kidney disease/Cardiometabolic disease:

- **CKD:** recent eGFR 100 mL/min/1.73m^2; uACr 472 mg/g during hospitalization for pancreatitis. No previous eGFRs
- **ASCVD:** none known **Heart Failure:** no. Family Hx of premature heart disease; brother passed away in 30s due to heart attack in setting lipid disorder and insulin resistance.
- **Hypertension:** yes **Hypercholesterolemia:** yes (TG in 1000s baseline) **+** strong family history hypertriglyceridemia
- **Recent BP:** 118/70 mmHg **BMI:** 31 **Weight** 90.7 kg **Recent lipid panel:** TC: 276 mg/dL, LDL: invalid result due to triglycerides, HDL: 24 mg/dL, TG: 1171 mg/dL
- **Diabetes:** Diagnosed with T2D 17 years ago with last A1c 10.1% (past week), 12.9% (approximately 2 months ago). T1D antibodies negative.

Current Medication Management:

- Lisinopril 5mg
- Rosuvastatin 40 mg
- Fenofibrate 200 mg
- Ezetimibe 10mg
- Fish oil 1000 mg QID
- Spironolactone
- Sertraline
- Doxycycline 50 mg BID
- ASA

Glucose-lowering agent(s):

- U-500R 490 units BID
- Lispro (Humalog) 20 units PRN "large meals"
- Empagliflozin (Jardiance) 25mg daily

Social support and concerns:

- **Evaluation:** No reported PHQ-2, PQH-9, or Diabetes Distress Scale
- **Barriers:** No age appropriate social outlets, dependent on managed Medicaid
- **Support:** Lives with parents, does not have full time employment, no social outlets, video gamer

Question to the ECHO Diabetes Community: What are possible differentials for her severe insulin resistance? How can we optimize insulin dosing? Treatment recommendations for hypertriglyceridemia? Need strategies for encouraging lifestyle modifications.

Case Recommendations and Considerations:

In wrap up to this case, we would like to applaud you and your clinic for partnering with a community based organization, such as Vayu to address health inequities and diabetes stigma and overcoming long-standing provider and system implicit bias, This is a patient who traditionally would have be labelled as "uncontrolled" with A1c value over 14% and not have been offered CGM or SGLT2 therapy because they were not "trying hard enough." This case is such an excellent example of overcoming diabetes stigma and overcoming therapeutic inertia and we applaud you!

CATEGORY	RECOMMENDATIONS	REFERENCES/RESOURCE LINKS
Social Determinants of Health (SDOH)	• Consider integrating peer support by working in a group setting as this may feel more like family to the patient. One important advantage for this peer support during education sessions (where group can review things like checking glucose levels, monitoring blood pressure, etc)	Diabetes Group Visits Sample Manuel (University of Colorado) AHRQ Strategy to Group Visits

		Strategies for Quality Care Guide- Group Visits in Patients with Type 2 Diabetes AAFP Group Visits & Reimbursements Coding Sample Group Visit Implementation Toolkit (Greater Flint Health Coalition's Group Visit Project) DiaTribe: Power of Peer Support Diabetes Communities
Behavioral Health	• Use motivational interviewing techniques • Continue to pay attention to depression and diabetes distress • Work with family on a common goal eating a meal together. • Use appropriate diabetes language and remind her family to do the same	Behavioral Diabetes Institute- Introduction to Motivational Interviewing: Simple Strategies for Promoting Positive Behavior Change in Diabetes Association of Diabetes Care & Education Specialist- Diabetes Language Guide: What You Say Matters dStigmatize https://www.dstigmatize.org/ DiaTribe: How and Where to Find In-Person Support Groups and Social Activities for Young Adults with Diabetes
Glucose Monitoring, Set A1C + Glycemic Goals	• Review CGM systematically with individualized targets for each and applaud and recognize success when meeting ANY target or improvement in targets o Glucose Management Indictor (GMI) o Time in range (TIR) o Time below range (TBR) o Glucose Variability (CoV) o % Time CGM Active	DiaTribe: Limitations of A1c in Chronic Kidney Disease Glucose Monitoring AAFP Resource for implementing CGM in primary care: https://www.aafp.org/news/practice-professional-issues/20210422cgm-tips.html

	• She has a clinically representative data set, thank her for wearing the CGM and working hard to get this information. Emphasize that three measures are at target which can be helpful to help form a positive therapeutic alliance	DiaTribe: Your Guide to the 2022 Changes to the ADA Standards of Care: https://diatribe.org/your-guide-2022-changes-ada-standards-care
Medication Therapy & Adjustments	**Medication Considerations** **Diabetes**: • U-500 insulin as well as post-prandial insulin should continue to be titrated per CGM feedback, current CGM shows 0% time below glucose targets, so risk of hypoglycemia is non-existent right now. • Could also consider TID vs. BID dosing with U-500 insulin • If < 300 units/day BID; > 300 TID; > 700 QID; consider pioglitazone (which may also help with TGs) **DM, Lipids & PCOS:** • Continued insulin titration>>>likely reduce TG • Insulin is doing the heavy lifting, but metformin has benefits outside of glucose control (e.g. PCOS benefit, lipid benefit, metabolic regulation, hormonal regulation, etc) and full dose may be considered if no history of eGFR below 60 or SCr above 1.5-ish • Obtain an LDL, direct if possible • Consider Icosapent ethyl for TG reduction; goal is prevention of pancreatitis • Maximize metformin (especially because of her history of PCOS) **Lipids**: • Statin (40 mg rosuvastatin daily) and fish oil dose (4 grams daily) are already maximized. Ensure fibrate is also maximized provided there are no drug-drug interactions; gemfibrozil tolerates polypharmacy better (fewer med interactions,	ADA Standards of Medical Care in Diabetes—2022 Abridged for Primary Care Providers DiaTribe: Your Guide to the 2022 Changes to the ADA Standards of Care Management of hypertriglyceridemia: https://www.bmj.com/content/371/bmj.m3109.abstract Hypertriglyceridemia and SGLT2 inhibitors https://pubmed.ncbi.nlm.nih.gov/33649621/ Secondary Analysis of the CREDENCE Trial Decision algorithm for prescribing SGLT2i and GLP-1 RAs: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7646234/

	less myalgia), but is not as good at TG lowering compared to fenofibrate (more med interactions, more myalgia risk so careful monitoring is needed, but excellent TG lowering). • If existing medications, weight loss, and glycemic improvement are not enough to reduce TGs on the next measurement, due to hx of pancreatitis, PCSK9s may be worth the high cost. PCSK9's are intended primarily for LDL lowering, but there is modest TG lowering also; therefore, when added to the medications already in use, in addition to behavioral changes already underway, it may really help this patient. Note: Niacin not recommended due to worsening glycemic effects • GLP-1s can exacerbate pancreatitis episodes; consideration of this medication class can be revisited in the future once/if triglycerides are controlled for a sustained period, but right now since TGs are elevated and pancreas has experienced several insults requiring hospitalization already, best not to try. **Renal**: • Maximize the ACE/Lisinopril dosage, if hypotension and hyperkalemia are not a concern, as 5 mg may be low. • Hypertriglyceridemia can drive albuminuria; SGLT2 addition was good planning; expect for Serum Cr to increase by 30%	
CKD Management Considerations	• Maximize the ACE/Lisinopril dosage, if hypotension and hyperkalemia are not a concern, as 5 mg may be low. • Great choice in starting SGLT2i – continue to assess for titration of empagliflozin • Hypertriglyceridemia can drive albuminuria; SGLT2 addition was good planning • Fluctuations in serum creatinine with the addition and titration of medication such as ACEI, ARBS and SGLT2 inhibitors are common and in	KDIGO Diabetes CKD Guidelines (2020) https://cjasn.asnjournals.org/content/16/4/631.long NKF Kidney Screening Recognition Resource: https://www.kidney.org/kidneydisease/siemens_hcp_quickreference

	fact expected. A rise in serum creatinine/decline in eGFR up to 30-50% it not an indication to discontinue therapy. ACEi/ARBs and SGLT2 inhibitors work by changing glomerular hemodynamics via the efferent and afferent arteriole respectively. This functions to reduce intraglomerular pressure, which in turn will decrease single nephron GFR. The initial decline in eGFR ultimately leads to long term renal protection.	NCQA Toolkit for clinics to implement new kidney health measure screen: https://www.ncqa.org/wp-content/uploads/2021/09/NCQA_Kidney-Health_Provider-Guide_Digital.pdf NEWSBREAK: Jardiance phase III EMPA-KIDNEY trial will stop early due to clear positive efficacy in people with chronic kidney disease: https://www.mrc-phru.ox.ac.uk/news/empa-kidney-trial-stops-early-due-to-evidence-of-efficacy NKF Patient & Family Resources (Includes links to prescriptions and affordable healthcare)
Risk Reduction	• Strong recommendation to screen for familial causes of hypertriglyceridemia, given family hx (brother with premature CV disease). • Screen for hepatitis B and C, if not done already • The fact that she is so sedentary already, at such a young age, suggest there might be pain, neuropathy, myalgias, etc. • It may not have occurred to her to say anything, as some patients in constant pain, consider it as being "normal" and don't' even think to share/offer this info until asked. • A podiatry or neurology consult can also double-check, as over 17 years with DM outside of recommended targets can lead to neuro/pain/pedal issues. • Statins and fibrates can also contribute to pain, though her statin is very low risk for this side effect the addition of fibrates and her polypharmacy increase the risk. Review of her	Statin induced myopathy https://www.bmj.com/content/bmj/337/7679/Clinical_Review.full.pdf

	labs (e.g. CPK, LDH, hepatic enzymes, etc) can also help discern myalgic from neuropathic pain if she says she has pain since relay of any pain symptoms is not always clear. • Screen for Cushings (because of high insulin need) . Aside from PCOS, additional hormonal issues may be brewing in the background. The amount of insulin being required is tremendous. Various endocrine screens can help look for source(s) of metabolic dysregulation (e.g. thyroid, adrenal, hypothalamic, pituitary/GH, etc)	
Diabetes Self-Management Education & Support (DSMES)/Follow Up	• Discuss with patient her treatment goals, use motivational interviewing techniques. Find out her personal goals. Impress upon her the importance of lifestyle to achieve her personal goals. Nutrition and physical activity changes are imperative. **Nutrition:** • Recommend caloric restriction for weight loss, use stepwise changes until a max 1,500 calories daily reached if this is realistic for her. Consider low glycemic diet/carb restriction for reducing the glycemic load. A nutrition consult can help meal-plan, especially since she lives in a food desert and fresh produce can be hard to come by • Note that very low-carb diets and SGLT2 inhibitors may cause ketosis • Consider bariatric surgery **Fitness:** • Write an exercise prescription • 10 minutes few times per week is great, but encourage more if there are no disabilities or fall risk (e.g. joint pain, unsteady gait, disabling neuropathy, etc). • Familial/communal options are clearly in her wheelhouse since she is a gamer and lives in a home with extended family. There are online Zumba classes via you tube and Zoom that are free with an internet connection, since she lives	Sample Diabetes Exercise Prescription (Canada Diabetes Association) ADCES- Tips for Being Active (English, Spanish, Chinese, French, Tagalag) CDC Research Brief: Screening for Depression and Diabetes Distress in Adults with Type 2 Diabetes Diabetes Distress Resource Center For Providers https://diabetesdistress.org/for-providers ADA: Psychosocial Care for People With Diabetes: A Position Statement of the American Diabetes Association

	in a rural area and may not have access to a local YMCA and/or community rec center. **Videogame type fitness options:** • Consider Oculus Virtual reality video games and/or Nintendo Wii have games that are CV-challenging from low intensity (e.g. bowling or walking games) up to max intensity (e.g. tennis, dancing, tactical virtual battles, etc) if she is willing to experiment • Animal Crossings is a Switch game that is one that many like • The "belonging" that Omnipod Island is giving etc. is getting really good early reviews - would asking the patient for her expert opinion on it as a gamer work? Ask her to rate the games? **Sleep:** Dysregulation of sleep has a huge impact on weight and metabolism, she likely isn't getting an uninterrupted 7 hours per night with all her gaming. Perhaps discuss the principles of sleep hygiene and how it can impact glucose/metabolism.	Example of gaming targeting diabetes and intensive diabetes management for insulin pump therapy

PLEASE NOTE that case consultations and submissions for ECHO Diabetes do not create or otherwise establish a provider-patient relationship between ECHO Diabetes Action Network, Med-IQ and/or any other clinician on the Addressing Disparities in Diabetes with Project ECHO faculty.