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INTRODUCTION

There is little information available about diabetes management in peritoneal dialysis (PD), yet according to the Kidney Foundation website, nearly 4 out of 10 new dialysis patients have diabetes.⁽¹⁾ In the Abbotsford PD program, greater than 50% of patients have diabetes. PD patients with diabetes often have issues with ultrafiltration, delayed wound healing, exit site leaks, and exit site infections due to ongoing hyperglycemia. These issues can result in patients requiring hemodialysis temporarily, or sometimes even permanently.

Recent PharmaCare coverage in British Columbia for Dexcom Continuous Glucose Monitors (CGMs) and now Libre, has facilitated timely data collection that assists in improving diabetes management for PD patients.

AIM

By improving diabetes management, PD patients could:

- Have more efficient ultrafiltration with PD
- Benefit from an increased length of time on PD
- Improve chances of qualifying for a transplant
- Delay, or prevent, the need to change to hemodialysis

CONTACT

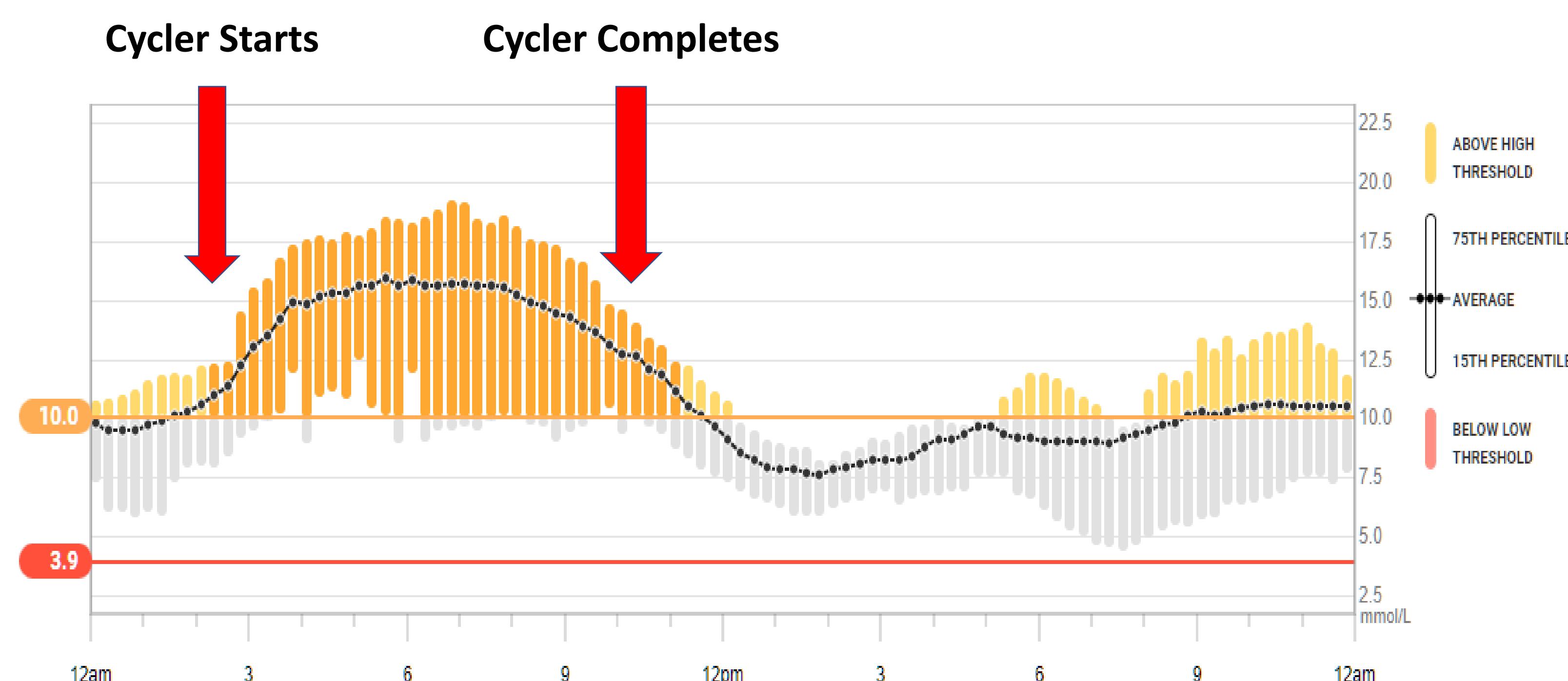
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REFERENCES

(1) Kidney Foundation, Sept 2023, <https://kidney.ca/News-Media/Campaigns/End-Diabetic-Kidney-Disease>

CASE STUDY

- 71 year old male with type 2 diabetes
- On PD for 3 years
 - Continuous cycling peritoneal dialysis (CCPD) daily using the Baxter HomeChoice cycler
 - Euvolemic with average daily ultrafiltration of 200-500mls
 - Daily PD prescription
 - Dianeal 2.5% on heater line
 - Dianeal 1.5% on supply line
 - Extraneal 7.5% on final line
- Medications include:
 - Gliclazide MR 120mg PO once daily in the morning
 - Basaglar insulin 74 units.
 - Admelog 50 units at lunch if he eats, and 60 units at supper.
- Blood glucose management
 - HbA1C of 7.6%
 - HbA1C ranged between 7.4% - 8.9% since starting PD
 - Dexcom CGM data showed patient's glucose levels rose to almost 20mmol/L after initiating CCPD each night
 - Glucose trend occurred with or without food intake at HS
 - Hypothesized that the dextrose from the Dianeal was causing the increase
 - Patient uninterested in changing dietary intake, or timing of intake
 - Patient unable to increase activity due to pain from arthritis



INTERVENTIONS

PD RN and primary nephrologist decided to:

- 1) Split the dose of Gliclazide MR PO to 60mg QAM and 60mg QPM
 - Rationale: treat glucose exposure over night same as oral intake in day
- 2) Adjust the order of the dialysate fluids so the Dianeal 1.5% is on heater line and 2.5% is on the supply line
 - Rationale: patient to have a Dianeal 1.5% as the first fill, followed by a mix of Dianeal 1.5% and 2.5% for the remaining fills, to prevent glucose spikes caused by exposure to undiluted, higher strength dialysate.

OUTCOME

Three months after the interventions the patient's HbA1C dropped to 6.7%. Ultrafiltration did not change dramatically as the patient was euvolemic prior to the interventions. Follow up Dexcom data not available as patient did not upload data. The patient has been able to continue with same dialysate solutions and remains on PD.

FOLLOW UP

After seeing the improvement the interventions made for this patient, data from other patients using Dexcom CGMs was collected (with the patients' permission). We found similar patterns. PD nurses began to use visual graphs of Dexcom CGM data as shown here to teach more patients about the impact of overnight dextrose exposure on blood glucose levels.

This led to other patients:

- Having improved understanding of the relationship between blood glucose levels and dialysate strengths.
- Decreasing the usage of higher strength dextrose dialysate and remaining euvolemic.
- Splitting long acting insulin doses from once a day to twice a day.
- Choosing to give a small dose of short acting insulin before bed.
- Changing Gliclazide dosing.
- Having improved HbA1C results.