Diabetes Management in Cancer Patients
Changes in Nursing Practice

Carmel Parlapiano, Peter Colman, Katie Marley, Mark Rosenthal, Cameron Grant, Luke Bacon, Leanne Enright, Natalie Nanayakkara, Shanal Kumar, Barbara Paldus, Anna Galligan, Ashley Sandison, Wayne Dawson, Joshua Tsan, Lois Rowan, Catherine Thien, Erika Urban, Rebecca Comer, WCMICS Steering Committee

Diabetes and Endocrinology and Oncology, The Royal Melbourne Hospital
Background

Chemotherapy regimens can have a significant impact on blood glucose levels (BGL’s) in patients with or without diabetes. Identifying and managing these patients, who are often treated in day chemotherapy wards is a challenge.

Historically, BGL’s were not monitored in the Day Oncology Centre at The Royal Melbourne Hospital.
The Western and Central Melbourne Integrated Cancer Services’ (WCMICS) Diabetes and Cancer project developed guidelines for detecting and managing diabetes during chemotherapy treatment.

New processes were then developed and implemented in the Day Oncology Centre and piloted over a 3 month period. Data was collected on patients being monitored for/ or at risk of developing unstable blood glucose levels.
Pre-implementation

• Engaged Medical Oncology and NUM/ANUMs of the Day Oncology Service
• Education for Day Centre Staff
• Addition of 3 extra blood glucose meters in the Day Centre
• Introduction of the Loan Blood Glucose Meter Program
• Inclusion of BGL/Diabetes Assessment on the Day Centre Nursing Care Plan
• Diabetes Team referral criteria development
Changes in Practice

- Random BGL on all patients attending the Day Centre
- Documentation of previous history/diagnosis of diabetes
- HbA1c on all patients
- Patient education and development of patient brochure
  - Day Centre Staff
  - Pre-chemo assessment
  - Referrals to Diabetes Service – Endocrinology, Diabetes Education, Dietitian
Referral Process

**Diabetes Education Referrals**
Patients to be referred to the Diabetes Education Service:

- All patients with Type 1 diabetes
- Patients with pre-existing diabetes commencing on high dose steroids who are not monitoring their blood glucose levels
- Patients experiencing frequent hypoglycaemia
- Patients with newly diagnosed Steroid Induced Diabetes
- Patients with BGL’s >12mmol/l

**Endocrinology Referrals**

- Blood Glucose Level’s greater than 12 mmol/l
Screening for Steroid Induced Diabetes

Consideration for home blood glucose monitoring for patients at high risk of developing steroid induced diabetes

• Outpatients or patients for discharge that need further monitoring
• Commencing high dose steroids for >3 days*
• High BMI*
• Family History of diabetes*
• BGL elevated during treatment / admission
Patient Education

Pre-chemo Assessment (Day Centre ANUM)

- Documentation of past history of diabetes
- Assess if patient self-blood glucose monitoring
- Diabetes and Oncology Treatment information brochure
- Assess if commencing on steroids
- Hypo management sheet

• Consider Loan BGL Program
• Referral to Diabetes Education per criteria
Diabetes and Oncology Treatment

- Medications used during the course of your cancer treatment can affect your blood glucose levels
- Nausea and vomiting sometimes experienced during oncology treatment can also have an effect on your blood glucose readings

Diabetes

Diabetes is a common condition marked by elevated blood glucose (sugar) levels. This usually occurs when the body is not able to make sufficient amounts of the hormone insulin or cannot use insulin effectively. Insulin is used by the body to move glucose from the blood to the cells to be used as energy. There are several different types of diabetes, the most commonly known are Type 1 and Type 2 diabetes. During cancer treatments such as chemotherapy, blood sugar levels can be affected by nausea, vomiting and weight loss as well as medications such as steroids.

Steroids

Corticosteroid (steroid) medications such as dexamethasone, prednisolone and hydrocortisone are useful in preventing nausea and reducing pain and inflammation and may be given as part of cancer treatments such as chemotherapy. Steroids can cause the blood glucose levels to rise as they block the action of insulin, causing insulin resistance. Blood glucose levels usually begin to rise approximately 6-8 hours after having a dose of steroids, although this can change depending on the type of steroid, the time you have it or whether it is taken orally or intravenously.

Can steroids affect my blood glucose levels if I do not have diabetes?

High doses of steroids such as prednisolone and dexamethasone can cause high blood glucose levels even in people without previously diagnosed diabetes. This is called Steroid Induced Diabetes and may be managed with oral medication or insulin. The blood glucose levels usually settle down as the steroid dose is reduced, and return to normal once the steroid is stopped. Your Oncology team and GP will monitor you for signs of steroid induced diabetes developing.

Diabetes management during cancer treatment

It’s important to monitor your blood glucose levels closely during your cancer treatment. This can be done by a simple finger prick blood test that you can do yourself at home. You can obtain a blood glucose meter from your local pharmacy or through the diabetes educators at the Royal Melbourne Hospital.

During your treatment, it is best to aim for blood glucose readings between 5 and 15 mmol/L (unless otherwise advised by your doctor).

Blood glucose levels above 15mmol/L can cause symptoms such as excessive thirst, frequent urination, tiredness, headaches, changes in vision and prolonged infection. You should report any symptoms to your Oncology team or your GP.

Depending on your readings, your diabetes medications may be increased or decreased or it may be necessary to start you on a new treatment such as insulin. You may also be referred to a diabetes educator for advice and further education regarding testing, managing high and low blood glucose levels and adjusting insulin doses.

Managing your diabetes when you are unwell

During your cancer treatment you may experience some nausea, vomiting and/or diarrhoea. Changes to your appetite and food intake can impact on your blood sugar levels and may cause them to drop below 4mmol/L. If you are unable to eat normally, it is recommended that you check your blood glucose levels more frequently and try to keep drinking if possible. A dietician will also be able to provide assistance with your food selections and managing nausea and vomiting.

If your readings are below 15mmol/L, consume carbohydrate containing fluids such as soft drinks (non- diet), juice, milk, tea or sports drinks.

If your readings are above 15mmol/L, it is important to keep hydrated with non-sweetened fluids such as water, diet cordial, diet soft drink and weak tea or broth.

Call your doctor if:
- You are unable to eat at all
- Vomiting or diarrhoea continues for more than 12 hours
- Your blood glucose levels are consistently above 15mmol/L for more than 12 hours
- You are experiencing blood glucose readings frequently below 4mmol/L
- You are too unwell to manage your diabetes yourself

Links and references

Diabetes Australia - ‘Steroids & Diabetes’. Diabetes Australia – ‘Sick days and Type 2 Diabetes’. Diabetes and Oncology Guidelines – The Royal Melbourne Hospital and St Vincent’s Hospital, Melbourne.

Contact

Diabetes Education Service
The Royal Melbourne Hospital – City Campus
Room 401, West Wing Level 4
Grattan Street, Parkville Victoria 3052
Phone: (03) 9342 2590

Diabetes Dietitian
The Royal Melbourne Hospital – City Campus
Phone: Allied Health Reception – 93427440

Tips for Managing Diabetes During Cancer Treatment

- Monitor your blood glucose levels closely.
- Keep hydrated with non-sweetened fluids.
- Adjust your medications as needed.
- Consult with a diabetes educator and dietician.

Department of Endocrinology and Diabetes | Policy Number | Authorised Title | Reviewed Date (month and year)
Pilot results

Data was collected on 53 patients during the pilot period

- 27 patients were identified through the pre-chemo education appointment
- HbA1c’s were ordered on 28 patients
  - 10 of these patients (36%) had HbA1c’s > 6.4%
    - 4 of these patients did not have a previous history of diabetes
- 39 (73%) received steroids during their treatment
- 34 patients had their BGL checked at some point during their treatment
  - 9 of these patients had readings >12mmol/l
Of the 9 patients with elevated blood glucose readings:

- 1 patient had readings > 12mmol/l but < 15mmol/l on the b/g of pre-existing Type 2 diabetes on Metformin, + dexamethasone given with chemo
  - BGLs within target range of 5-15mmol/l as outlined in the guideline
- 8 patients were referred to the Diabetes Education Team with unstable blood glucose levels including blood glucose readings > 20 mmol/L and significant hypoglycemia (1.1 mmol/L) during the pilot period
  - 6 of these patients had pre-existing diabetes
  - 1 patient was newly diagnosed with Steroid Induced Diabetes
  - 1 patient presented with new Type 1 diabetes*
Implications

Through increased education, support and awareness about diabetes, we changed standard practice in the Day Oncology Centre to include random BGL and HbA1c testing. We implemented ongoing plans for educating patients about management of their diabetes during cancer treatment.

We increased vigilance and referral of cancer patients with unstable BGL’s in the Day Oncology Centre.

We expect this initiative will improve outcomes for patients by reducing risk of adverse glycaemic outcomes.
Thank you