



The Royal
Melbourne Hospital



ST VINCENT'S
HOSPITAL
MELBOURNE



wcmics

WESTERN & CENTRAL
MELBOURNE INTEGRATED
CANCER SERVICE

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.

Background Cont.

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

DAY ONCOLOGY CARE PLAN

SURNAME _____ URN _____

GIVEN NAME _____ DOB _____ SEX _____

ADDRESS _____

SUBURB _____ POSTCODE _____ TELEPHONE _____

Admission date: _____ **Consultant:** _____

Alert: _____ **Infection risk:** _____

Stream: _____

Diagnosis: _____

Chemotherapy / Treatment: _____

Cycle day: _____

Chemo education & consent

Clinical trial: _____

Next appointment: _____

Height: _____ **Weight:** _____

Pathology: _____ **Date:** _____

Full blood examination **Biochemistry**

Hb _____ Cr: _____

WCC _____ Billi _____

Neutrophils _____ K+/Mg+ _____

Platelets _____ Urea _____

Other _____ LDH _____

Glucose _____

PRE TREATMENT ASSESSMENT

	Grade	Comments		Grade	Comments
Nausea		_____ Days	Palmar-Plantar Erythema		
Vomiting		____ Per Day/ ____ days	Peripheral Neuropathy		
Mucositis			Mobility problem		
Indigestion			Rash		
Appetite changes			Alopecia		
Changes in urination			Nail changes		
Constipation			Fatigue		
Diarrhoea		____ Per Day/ ____ days	Sleep disturbances		
Febrile episodes			Memory/concentration		
Pain		Score ____/10	Sexual/body image		
Site(s) of pain:			Other		

If yes to any of above, document in comments. 0=none, 1=mild, 2=moderate, 3=severe

DAY ONCOLOGY CARE PLAN

SURNAME _____

GIVEN NAME _____ DOB _____ SEX _____

ADDRESS _____

SUBURB _____ POSTCODE _____ TELEPHONE _____

PRESSURE INJURY - RAPID SCREEN

Pressure injury risk screen Tick all that apply

Existing pressure injuries

Requires assistance with bed or chair mobility

Incontinent of faeces or urine

Can't feel pressure-related discomfort

None of the above

FALLS - RAPID SCREEN

Falls risk screen Tick all that apply

Altered cognition Current meds affect CNS/CVS

Vision or hearing impairment Bowel or urinary frequency, urgency or incontinence

65 years or older

Fallen in last 12 months At risk of postural hypotension, syncope or dizziness

Needs assistance or aids transferring or mobilising None of the above

NUTRITIONAL RISK - Malnutrition Screening Tool MST

Have you lost weight recently without trying? No (0) Unsure (1)

Yes, 1kg-5kg (1) 5.1kg-10kg (2) 10.1kg-15kg (3) >15kg (4)

Have you been eating poorly because of decreased appetite? No (0) Yes (1)

TOTAL SCORE _____

ENDOCRINOLOGY

Are you diabetic? No Yes

Type 1 Type 2 Other _____

If yes, how is this managed? _____

Completed by: _____ Signature: _____

Progress Notes: _____

If YES to any of the RAPID SCREEN questions, please put appropriate day ward Pressure Injury Prevention interventions in place.

If YES to any of the RAPID SCREEN questions please put appropriate day ward Falls Prevention interventions in place.

Admission wt: _____

Refer to a dietitian via Pager if:

- New diagnosis of diabetes
- Unstable diabetes
- Recently commenced on insulin
- Requires enteral (NG/PEG)
- Total MST score > 2

If yes - refer to oncology guidelines

DAY ONCOLOGY CARE PLAN

IP 22H

R

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 is 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 medication/s 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 dietitian 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 drink (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
- If 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 Guideline – 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 3050

Phone: (03) 9342 2600
8.00am – 4.30pm Monday – Friday, closed public holidays

Page: Call the hospital switchboard (03) 9342 2600 and ask for the Diabetes Educator, pager 20664

Email: diabeteseducation@mh.org.au

Diabetes Dietitian
The Royal Melbourne Hospital – City Campus

Phone: via Allied Health reception - 93427440



The information contained in this brochure is for educational purposes only and is not intended as a substitute for consultation with a doctor or health care professional

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

Blood Glucose Results

Of the 9 patients with elevated blood glucose readings:

- 1 patient had readings $> 12\text{mmol/l}$ but $< 15\text{mmol/l}$ 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 $> 20\text{ mmol/L}$** 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.

WCMICS Diabetes Study Group



Professor Peter Colman
Carmel Parlapiano
Katie Marley
Professor 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



Professor Richard MacIsaac
Laita Bokhari
Kathleen Steele
Professor Glenn Ward
Elizabeth Mulrooney
Andrew Cording
Lesa Stewart
Dr. Sue Ann McLachlan



Sue Kirsas



Graham Giles

Thank you