

Optimisation Of Glycaemic Control For Newly Insulin Initiation Patients – A Patient Partnership Approach

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Introduction

Type 2 diabetes mellitus is characterized by insulin resistance and progressive beta cell failure. Most patients will eventually require insulin therapy; which will need adjustment over time to maintain good glycaemic control. However, with limited resources, physicians can only follow up these patients every 4-6 months, resulting in delay in insulin titration to achieve glycaemic targets.

The Diabetes and Endocrine Centre, Prince of Wales Hospital ran a pilot program on “Insulin Titration Program For Patient With Type 2 Diabetes” to empower patients in achieving and maintaining good glycaemic control within a shorter period of time.

Objectives

To develop a structured insulin titration program to empower and engage patients to better understand and be more involved in their diabetes care

To educate and encourage patients to self-titrate their insulin dosage according to a structured insulin titration algorithm

Methodology

Patients (aged 18 to 75) newly initiated supplementary bedtime insulin were invited to join the program. In the program, patients learned the technique of self-injection, blood glucose monitoring, hypoglycemic management, healthy lifestyle modifications. Self-adjustment of insulin dose was encouraged, based on 3 consecutive home fasting blood glucose (FBG) readings, and a weekly fine-tuning titration of +/- 1-2 units. Patients were phone contacted on their progress at Week 1 and 2, and their insulin titration ability assessed using a standardized assessment form at Week 3. Patients who passed the evaluation would self-titrate their insulin dose with the support of diabetes nurses. If they failed the assessment, diabetes nurses would lead the insulin adjustment accordingly. Phone interviews continued until patients achieved their target FBGs.

Result & Outcome

33 patients (male=22; female=11; mean age 60.5 ± 10.8 years) completed the program. At Week 0, mean baseline HbA1c was $9.5 \pm 1.2\%$. At 5 months, HbA1c was lowered to $8.0 \pm 0.7\%$. 19 patients (57.5%) had adjusted insulin dose according to the prescribed algorithm. There were a total of 119 insulin titration episodes with few episodes of mild hypoglycemic event during the study period: titration by nurse=56.3% (n=67); by patients = 33.6% (n=40); by doctor = 10.1%(n=12). 6 patients did not require insulin titration as home FBGs were optimized by the prescribed starting dose of insulin therapy.

Conclusion

Empowering patients to take greater control of their diabetes, through education and patient-oriented insulin titration algorithms, can achieve targeted FBGs at a faster and more effective manner.

Establishment of fasting glucose targets:

Patient Group	Target fasting hstix (mmol/L)
Young Type 2 DM patients (<40 years of age)	4-5 mmol/L
General Type 2 DM patients	5-6 mmol/L
Type 2 DM with CV and renal complications or with hypoglycaemia risks*	6-7 mmol/L

*Note that for elderly and frail patients, or patients with co-existing cardiovascular disease or renal disease whereby tight glycaemic control or hypoglycaemia would have untoward effect for the patient, titration of insulin will be less aggressive.

Titration Guide for Patients with Type 2 Diabetes Mellitus to be Started on Supplementary Bedtime Insulin

Date of Insulin Initiation _____

Diabetes Educators/Endocrinologist _____



1. Your current body weight is _____ Kg
2. We are starting you on _____ units of Humulin N / Protaphane subcutaneously at bedtime today (9pm - 12MN -> fixed time every day). Your insulin dose will be gradually titrated according to the blood glucose readings.
3. For supplementary insulin, half the body weight and half again, ie: _____ units of insulin will be approximately your supplementary insulin requirement.
4. Your targets: Fasting Glucose _____ mmol/L
5. If the fasting glucose is elevated on 3 mornings within a week, increase the bedtime insulin by _____ units
6. If the fasting glucose is low without any obvious remediable cause, decrease the bedtime insulin by _____ units.

