Glycaemic control in patients with type 1 diabetes after provision of public hospital-funded insulin pumps

Ken Y Thong, P Gerry Fegan and Bu B Yeap

To the Editor: In Australia, patients with type 1 diabetes and private health insurance are eligible for rebates on the purchase price of insulin pumps if deemed necessary for treatment. In contrast, hospital-funded or donated pumps are often used by non-insured patients. Hospitals may provide pumps to certain patients for various reasons — for example, to pregnant women (to improve their glycaemic control), to patients who want to try the pump to determine their preference or their ability to use it, or to patients waiting for private health insurance cover to be activated. Patient selection is important, as insulin pumps are cost-effective only if they reduce levels of glycated haemoglobin (HbA_{1c}) and the frequency of hypoglycaemia[1] — although quality of life may also be an important benefit.

We conducted a study to compare outcomes for patients with public hospital-funded pumps (Group A) with outcomes for those with private health insurance-funded pumps (Group B). All pump starts between June 2000 and January 2008 at Fremantle Hospital and Rockingham General Hospital in Western Australia were assessed. HbA_{1c} levels before and 6 months after pump initiation were recorded. Diabetes-related hospital admissions over a 1-year period before and a 1-year period after pump commencement were recorded using hospital software (TOPAS KEA! 340, version 5.106) that tracked admissions to all hospitals within the greater metropolitan area of Perth. Patients were excluded from our study if they had type 2 diabetes; had commenced pump use at a different hospital; had moved during the study period to a region not captured on the database; or had used a pump for less than a year (this last exclusion criterion was to ensure that admission rates for the subsequent 12 months were representative of the influence of pump therapy).

We identified 109 patients (32 in Group A, 77 in Group B). There were no significant differences between the two groups in age, diabetes duration, initial HbA_{1c} levels (9.2% v 8.7%; $P = 0.29$) or sex, although the proportion of females was higher in both groups (65.6% and 70.1%, respectively).

Patients in Group A had more hospital admissions than those in Group B before and after commencement of pump therapy (0.7 v 0.2 admissions/year before [$P = 0.02$]; 0.7 v 0.2 admissions/year after [$P = 0.04$]). After commencing pump therapy, HbA_{1c} levels fell significantly in Group B patients (8.7% v 8.0%; $P < 0.005$) but not in Group A patients (9.2% v 8.9%; $P = 0.17$). The mean interval between pump initiation and follow-up HbA_{1c} readings was similar in both groups (10.3 months [Group A] v 10.8 months [Group B]; $P = 0.70$). There was no significant difference in diabetes-related admissions before and after commencement of pump therapy in either group.

Ken Y Thong, Endocrinology Advanced Trainee[1]
P Gerry Fegan, Physician and Endocrinologist[2]
Bu B Yeap, Head,[1] and Associate Professor of Medicine[3]

1 Department of Endocrinology and Diabetes, Fremantle Hospital, Fremantle, WA.
2 Department of Medicine, Fremantle Hospital, Fremantle, WA.
3 School of Medicine and Pharmacology, University of Western Australia, Fremantle, WA.
kythong@gmail.com

1 Cohen N, Minshall ME, Sharon-Nash L, et al. Continuous subcutaneous insulin infusion versus multiple daily injections of insulin: economic comparison in adult and adolescent type 1 diabetes mellitus in Australia. *Pharmacoeconomics* 2007; 25: 881-897. ❑