

V-Go: The new frontier in management of diabetes

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Over the course of 34 years the number of patients with diabetes has mushroomed from 108 million in 1980 to 422 in 2014.¹ HbA1C of less than 7% has been recommended by the American Diabetes Association.² Peer pressure can have a significant impact on one's life. A lot of patients with diabetes feel embarrassed when using insulin injection in a public gathering.³ Fear of injection, self-injecting, hypoglycemia, travel restrictions, impact on meal flexibility and impact on the job are some of the other reasons why patients avoid insulin therapy despite having high self-motivation and community support.

V-Go is a simple easy to use the device. The patient just has to place it on skin and press a button to insert a needle. Due to the small size of the needle, the patient does not experience a great deal of pain. V-Go provides a continuous subcutaneous insulin infusion over 24 hours on preset basal rates between meal and night times and also provides on-demand bolus dose to cover glucose during meals. It has to be changed after every 24 hours. The V-Go is disposable and does not involve any batteries, electronics or infusion set. It can be used in adult patients with Type 1 or Type 2 diabetes who require insulin. However, it has been primarily used in patients with Type 2 diabetes because these patients usually have a constant preset basal rate in contrast to patients with Type 1 diabetes.

V-GO is available in three different preset basal rates, depending on the basal delivery requirement of 20, 30, or 40 units per day (0.83 U/hr, 1.25 U/hr or 1.67 U/hr, respectively). Each version allows up to 36 additional units for on-demand bolus dosing in 2-Units increments. V-Go can deliver up to a total of 56, 66, or 76 units of insulin per day depending on the chosen preset basal rates. A retrospective analysis concluded that V-Go adequately met the insulin requirements of over 90% of study patients without the need for supplemental insulin.⁴ This was found to be clinically significant because the study

included patients requiring up to 310 units per day at baseline.⁴

V-Go is not advisable in patients who need to make regular adjustments or modification to their basal rate, or if the amount of insulin used at meal requires adjustments of less than 2-Unit increments, as it may result in hypoglycemia. Patients who require less than 20 units of insulin per day can't use V-GO. Intensive management of diabetes with V-Go can result in an increased incidence of hypoglycemia. Interruptions in insulin delivery may result in hyperglycemia or diabetic ketoacidosis. Infection at the infusion site may occur. This risk can be drastically reduced with proper site preparation and frequent site rotation. V-Go should be removed and applied to a site far away from the infected site if the area around it becomes red, sore or swollen. Skin irritation because of the adhesive pad on V-Go is a more common complication than infection at the infusion site. Skin barrier products can be used to reduce the chance of skin irritation.⁵

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Glycemic control is the main key in assessing the efficacy of the insulin-delivering system. A retrospective analysis concluded that mean HbA1C levels decreased from baseline (8.8% to 7.6%) when patients were started on V-Go, and it rose to 8.2% upon discontinuation of V-Go.⁵ In another study comparing V-Go with subcutaneous insulin injections, it was found that V-Go offered better overall glycemic control at a significantly lower total insulin dose.⁶ Improvement of the glycemic control means that the patients on V-Go are less likely to develop diabetes-related complications.⁷ The complexity associated with multiple daily injections has been shown to decrease the compliance of patients with their treatment regimen.^{8,9} V-Go, on the other hand, has been shown to significantly improve the adherence to

treatment.¹⁰

A retrospective study showed insulin delivery with V-Go proved more cost-effective than administering intensified insulin therapy with multiple daily injections.¹¹ The average cost with V-Go was \$118.84±158.55 per patient/month as compared to \$217.16±251.66 per patient/month with multiple daily injection regimens (p=0.013).¹¹ Although V-Go is not currently available in Pakistan it can be easily be ordered.

V-Go offers convenient delivery of pre-meal bolus by a mere pressing of a button over the shirt, so the patients can afford flexibility in their meal times and don't have to pre-plan for meals. Multiple daily injections need extra syringes and pens while traveling. Job opportunities can be affected by dependency on insulin injections. Psychological stress and physical instability due to inadequate glycemic controls can significantly decrease the quality of work done by these patients. In summary, V-Go can markedly improve the quality of life of a patient with diabetes. It significantly improves the glycemic control of patients and decreases their insulin requirements. With its simplicity, patients from all walks of life can easily use it.

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