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# Insulin Patch Pumps in Type 2 Diabetes

Cristin Altendorf CNMT, MRT(N), PA-S

## Abstract

- DM is a leading cause of death in Americans
- A HbA<sub>1c</sub> above 6.5% is diagnostic for DM because it is at this level the patient is at risk for retinopathy and other microvascular disease
- The purpose of this study is to determine alternative methods of maintaining tighter control on HbA<sub>1c</sub> to lessen the effects of type II diabetes.

## Introduction

- Type II diabetes accounts for approximately 90-95% of all diabetes cases
- DM carries a high rate of comorbidities such as kidney disease, blindness, and heart disease that lead to diminished quality of life, life expectancy, and increased cost of health care.

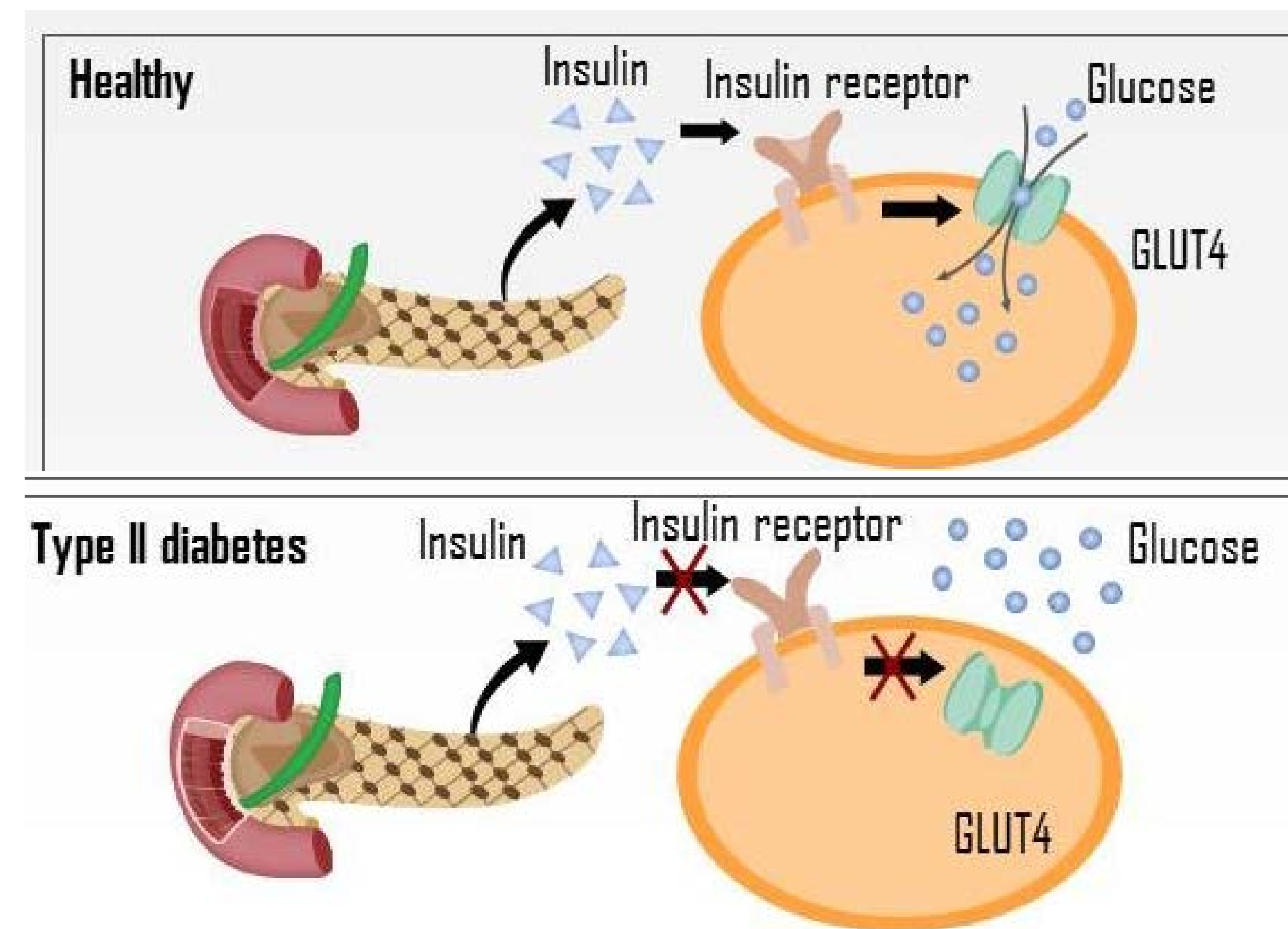
## Statement of the Problem

- With Type II Diabetes on the rise, studies are needed to show which methods of insulin delivery are most desirable for this patient population.

## Research Questions

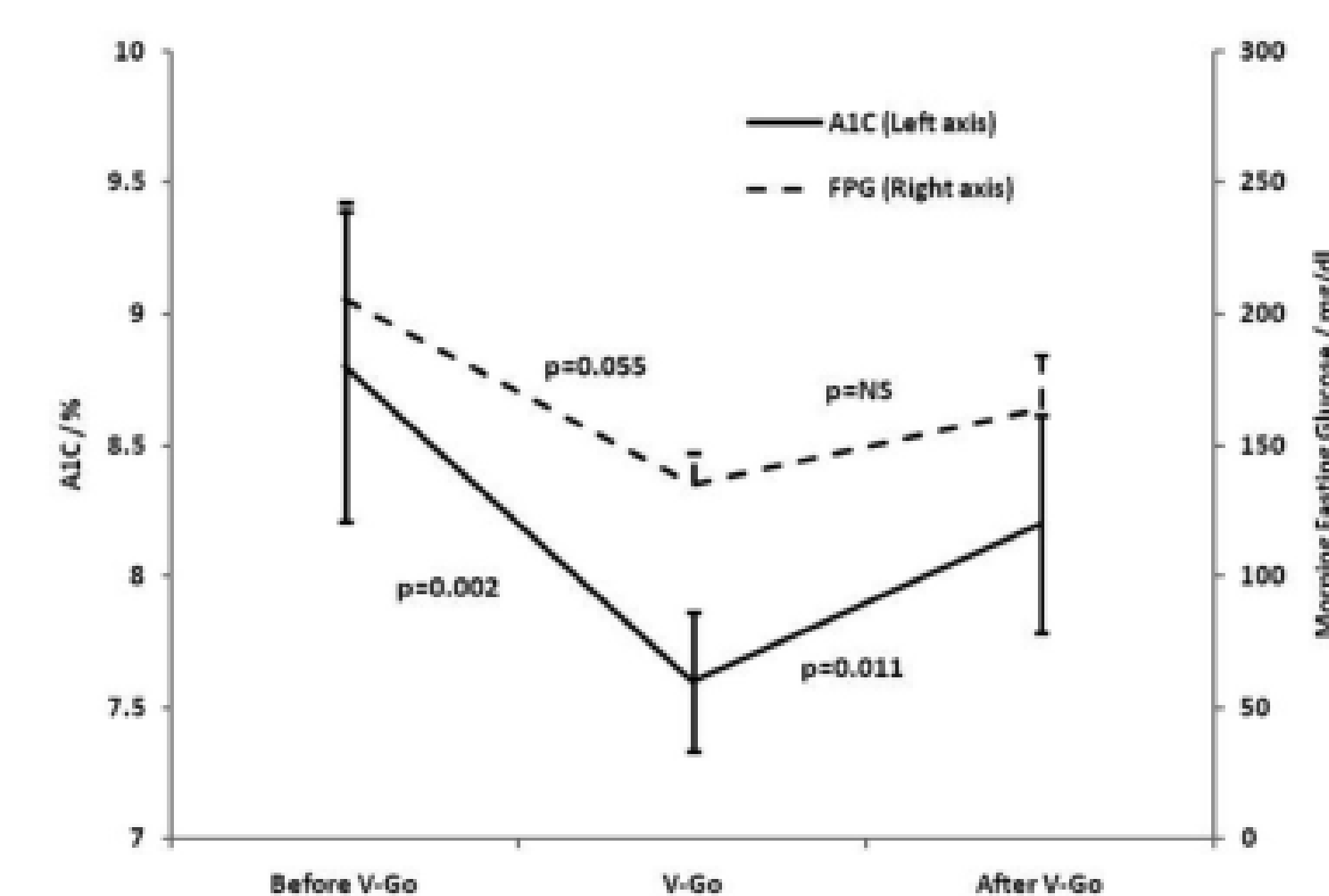
- Is insulin the most effective/appropriate therapy for treatment of type II diabetics who fail oral antidiabetic drugs?
- In Type II diabetic patients, are insulin patch pumps more effective than traditional insulin delivery systems for the control of HbA<sub>1c</sub>?

## Pathophysiology



## Literature Review

- Early, intense insulin therapy in T2DM safely improved  $\beta$ -cell function in a multiethnic sample of patients
- Achieving good glycemic control sooner than later significantly reduces the risk of diabetic complications
- Patients achieved better HbA<sub>1c</sub> control, used less insulin and reported better quality of life on insulin pump over multi-dose regimen
- V-Go patch pump showed decreased fasting plasma glucose and HbA<sub>1c</sub> and rebound after discontinuance



- HbA<sub>1c</sub> greatly decreased in the first 3 months of OmniPod use
- Patients reported more satisfaction with patch pump



## Discussion

- Early insulin intervention improves  $\beta$ -cell function as well as insulin sensitivity
- When MDI and CSII are compared, CSII produces better glycemic control in T2DM patients
- Patch pump insulin delivery systems such as the V-Go and OmniPod have been proven to be functionally sound and effective for glycemic control in T2DM
- Patch pumps have also received favorable reviews from patients which may impact patient compliance and therefore long-term glycemic control



## Applicability to Clinical Practice

- Set glycemic goals on an individualized basis, keeping HbA<sub>1c</sub> below 7.0% for most patients
- ADA recommends metformin as the first-line drug of choice to a maximum of one gram three times per day. If glycemic goals are not met on monotherapy with metformin, current guidelines suggest the addition of a second or third oral antidiabetic
- If glycemic goals are still not met, an injectable antidiabetic medication such as glucagon-like peptide-1 (GLP-1) receptor agonist or insulin are indicated
- Insulin has traditionally been a last line therapy for T2DM, however evidence suggests earlier intervention could provide better patient outcomes

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## Thanks . . .

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