



2015

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Recommended Citation

Altendorf, Cristin, "Insulin Patch Pumps in Type 2 Diabetes" (2015). *Physician Assistant Scholarly Project Posters*. 92.
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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_{1c} 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_{1c} 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.

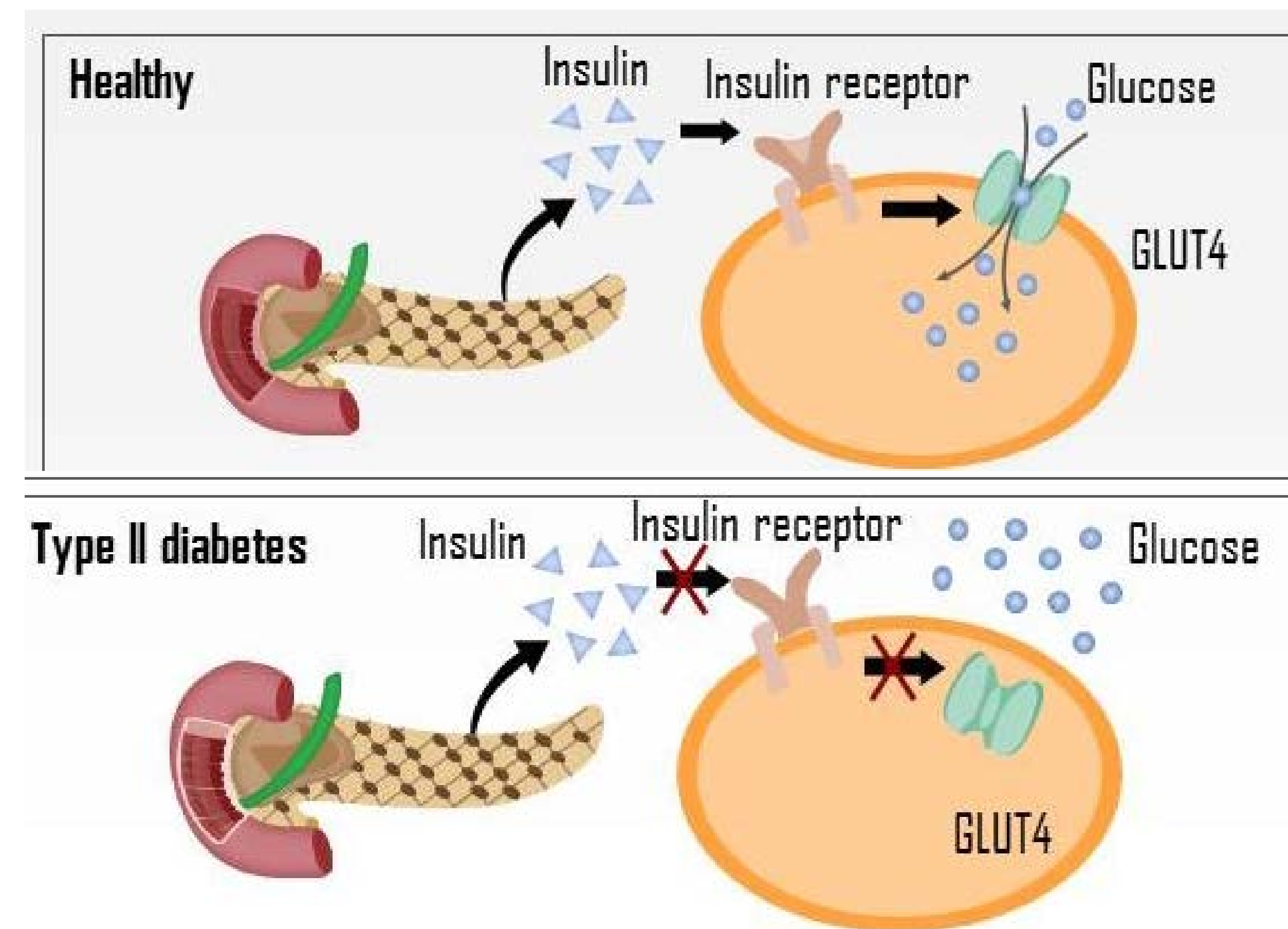
Statement of the Problem

- 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

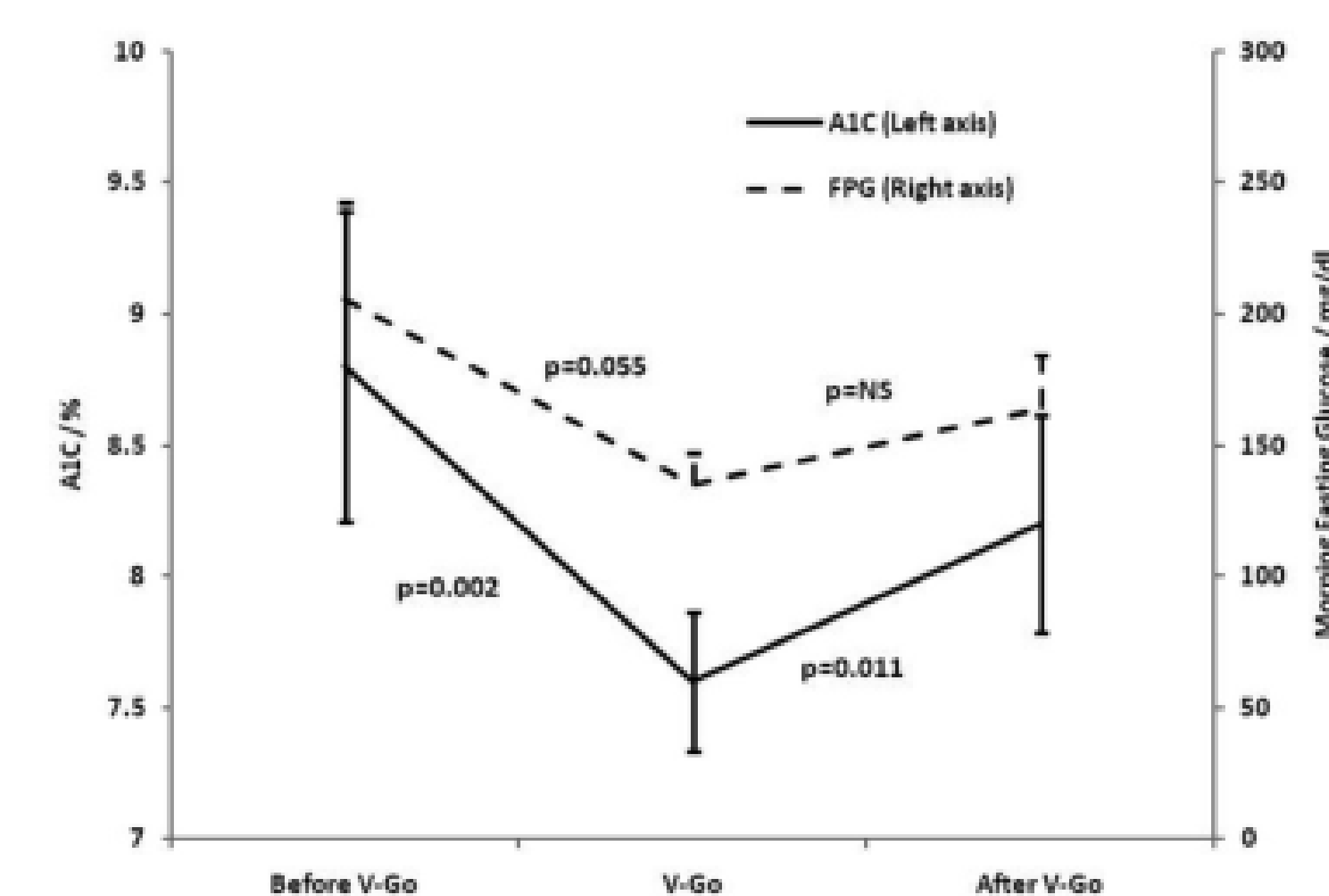
- Is insulin the most effective/appropriate therapy for treatment of type II diabetics who fail oral antidiabetic drugs?
- In Type II diabetic patients, are insulin patch pumps more effective than traditional insulin delivery systems for the control of HbA_{1c}?

Pathophysiology



Literature Review

- Early, intense insulin therapy in T2DM safely improved β -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_{1c} 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_{1c} and rebound after discontinuance



- HbA_{1c} greatly decreased in the first 3 months of OmniPod use
- Patients reported more satisfaction with patch pump



Discussion

- Early insulin intervention improves β -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_{1c} 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 . . .

The author would like to express sincere appreciation to Dr. Susan Kuntz for serving as the academic advisor and mentor for this project; Dr. Charles Addington for providing inspiration and commitment to his students; David and Cathy Lott for their help throughout the educational process; and John and Taylor Altendorf for their love and support through long days and longer nights.