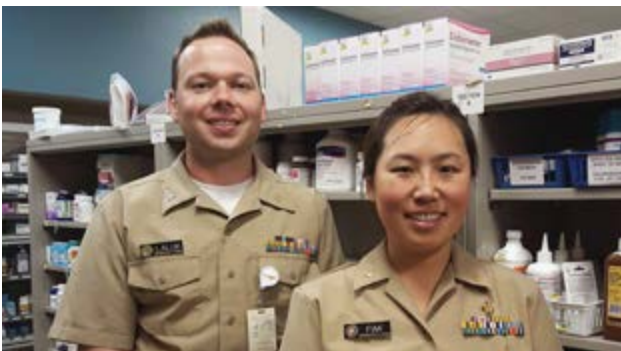


# Pharmacist-managed Insulin Titration Clinic's Impact on Highly Uncontrolled Diabetes in Patients Who Live in Rural Areas

**Submitted by:** LT Kelly Pak, Pharm.D., NCPS, CDE, Clinical Pharmacist/Medication Safety Officer, Winslow Indian Health Care Center, 500 N Indiana Ave, Winslow, AZ 86047; 928-289-6215; [Kelly.pak@wihcc.org](mailto:Kelly.pak@wihcc.org)

Team members include LCDR Kelly Pak, Pharm.D., NCPS, CDE, Clinical Pharmacist; CDR Peter Laluk, Pharm.D., BCACP, NCPS, Clinical Pharmacist; and Kenya Destin, Pharm.D., Clinical Pharmacist

**Editor's note:** Sarah W. Maksimovic, Pharm.D. candidate 2015, Palm Beach Atlantic University, Lloyd L. Gregory School of Pharmacy, West Palm Beach, FL, assisted in writing this case study.



From left, LCDR Kelly Pak, Pharm.D., NCPS, CDE, Clinical Pharmacist; CDR Peter Laluk, Pharm.D., BCACP, NCPS, Clinical Pharmacist;

**B26a.** Pharmacists in the rural ambulatory setting should manage an insulin titration clinic to serve those patients with elevated A1cs that were unable to meet their goals through traditional visits with their providers

## Situation Analysis

Current ADA guidelines recommend an A1c goal of <7% to decrease the risk of macrovascular and microvascular complications associated with diabetes.<sup>1</sup> Interventions such as routine appointments, telephone follow-ups, and formal education can assist patients in achieving their glycemic goals.<sup>2</sup>

With current patient volumes, increasing administrative requirements of physicians, and reimbursement rates for non-clinic visits, a provider's clinical time is often constrained. It is difficult for providers to contact patients as often as needed when initiating or adjusting insulin. As a result, the time between primary care visits at Winslow Indian Health Care Center in Winslow, AZ, averages approximately one to three months.<sup>3</sup> Difficulties patients may have finding transportation to the healthcare center can be alleviated through follow-up phone calls.

## Primary Intended Outcomes

1. To help patients achieve the American Diabetes Association's (ADA's) established A1c goal through pharmacist-created individual insulin dosing.
2. To reduce the number of patient emergency visits and hospitalizations due to hypoglycemia episodes.

## Relevant PAI Recommendations

**B26.** Every pharmacy department should:

# CASE STUDY

It has been demonstrated that pharmacist-managed diabetes care can improve outcomes, such as reduction in A1c, lipid parameters, and adherence to therapy.<sup>4,5</sup> A pharmacist-managed insulin titration clinic was developed to serve those patients with elevated A1c's who were unable to meet their goals through traditional visits with their providers.

## Service Description

Study subjects were recruited through referrals from primary care providers (PCPs). Patients who interacted with the Winslow Indian Health Care Center pharmacists for initial education and followed up within at least one month were included in the study. Patients were excluded from the study if they missed three consecutive visits or more, did not have pertinent lab data such as their A1c values, or if they were referred to a pharmacy-managed insulin clinic for less than one month.

The control group included patients on insulin therapy who were being followed by their PCPs with no pharmacist intervention. Control subjects were matched to intervention subjects based on age, gender, and insulin regimen. These patients also had to see their PCPs regularly and for at least a year and be on consistent insulin therapy. Control patients were excluded if they had any interaction with the clinic pharmacists, had gestational diabetes, had Type I diabetes, had no lab data, or had been treated by an endocrinologist.

The pharmacist-managed insulin clinic consisted of an initial educational session, weekly telephone follow-ups, physician visits, and monitoring. PCPs referred patients to the clinic. An initial visit included education on the purpose of the insulin titration clinic, definition of A1c, definition of hypoglycemia, signs and symptoms of hypoglycemia, how to self-manage hypoglycemia, sick day management, education about proper fasting blood

glucose (FBG) and post-prandial blood glucose, and how to monitor blood glucose.

After the initial session, pharmacists followed up with patients via weekly telephone calls that included a review of the patient's self-monitoring of blood glucose (SMBG) and discussion of any hypoglycemia episode. Based on SMBG readings, pharmacists adjusted insulin doses independently per the institutional agreement. Basal insulin dose was adjusted based on average FBG readings, and bolus insulin dose was adjusted based on PPG readings or clinical judgment.

## Key Elements for Position Success

1. Establish a protocol to independently make insulin adjustments.
2. Ensure that pharmacists are trained for insulin titration.
3. Ensure that there is a pool of patients who are willing to participate in the program.
4. Set aside adequate time for each patient; be sure that there is no time limit per patient.
5. Make more frequent patient contacts (compared to the traditional number of visits in rural areas which can be between one and three months) to ensure enhanced care.

## Resource Utilization

**Personnel:** Two pharmacists and four pharmacy students

**IT and other infrastructure:** Software (Microsoft Excel) was used as a measurement tracking device; A1c was measured in clinic during primary care follow up.

**Return on Investment:** Although the overall return is still pending, the average cost for an inpatient hospital admission for hypoglycemia is around \$17,000. We

believe that the Winslow Indian Health Care Center will see significant savings in the future with the aforementioned pharmacist-managed insulin titration clinic.

## Recognized Intangible Benefits

The clinic expanded the use of the pharmacist to manage insulin titration for patients, resulting in better diabetes management and patient education. As noted in patient satisfaction surveys, patients felt they had more control of their diabetes and felt more comfortable with home diabetes management.

## Outcome Measures

1. Resulted in a mean decrease of 2.1% in A1c in patients who enrolled in the pharmacist-managed insulin titration clinic compared to 1.1% in A1c in the control group who conducted a traditional PCP visit.
2. 96% of hypoglycemic episodes were self-corrected by the patients who enrolled in the pharmacist-managed insulin titration clinic.

## Lessons Learned

1. The study included patients who started the program with less than three months of insulin titration. The short study time could lead to an underestimation of the clinic's positive impact on patients' insulin management.
2. Because no documentation existed for the control group's number of hypoglycemic episodes, it was difficult to glean a scientific comparison to the treatment group. (Providers aren't currently required to document details of hypoglycemic episodes in their notes, such as number of episodes, dates, severity, how to correct the problem, etc.)
3. Limited phone service in the rural area sometimes made it hard to obtain a proper patient follow up,

which is key to success for this type of insulin clinic program.

4. Frequent titration by pharmacists in between provider's visits improved reduction in A1c. Earning patient's trust can improve relationships with patients. Patients felt it was easier to talk to the pharmacist regarding their barriers to adhere to insulin therapy.

## Other Considerations

- Pharmacists must ensure that they are able to speak with patients either in person or by phone to discuss patient tests, symptoms, etc. The Winslow Indian Health Care Center pharmacist-managed insulin clinic helps to take some pressure off of PCPs and gives patients the time they need to ask questions, voice any concerns they might have, and adjust their insulin levels to the optimal dose.

## Suggestions for Other Hospitals/Health Systems

- A positive pharmacist-physician relationship is key to running a successful insulin-management clinic. Ensuring that the same pharmacists consistently staff the clinic also helps to build the pharmacist-patient relationship. The most important factor in ensuring clinic success, however, is time. It is critical that pharmacists set aside enough time to counsel patients on their disease states and appropriate insulin dosages as well as address any questions or concerns they might have.

## Helpful References

- American Diabetes Association: Standards of medical care in diabetes. *Diabetes Care* 2011; 34 (Supp. 1):S1-S61
- Coast-Senior EA, Krnoner BA, Kelley CL, Trilli LE: Management of patients with type 2 diabetes by

pharmacists in primary care clinics. *Ann Pharmacotherapy* 1998; 32:636-641

- Quilliam BJ, Simeone JC, Ozbay AB, Kogut SJ. The Incidence and Costs of Hypoglycemia in Type 2 Diabetes. *Am J Managed Care*. 2011; 17(10):673-680.