

Improving Safety of Insulin Administration

Melissa Tucker
Joyce Najarian, RN, MSN, CDE

Inpatient Diabetes Team, Department of Medicine, Lehigh Valley Health Network

Abstract:

Managing inpatient glycemic control is a challenge. With the rising prevalence of diabetes in the United States, there is an emerging importance for health care providers to have a thorough knowledge of the disease process and treatments. The Inpatient Diabetes Team at Lehigh Valley Health Network has put forth many efforts to improve inpatient care of patients with diabetes. This paper delineates the efforts to provide education to health care providers, improve inpatient insulin delivery, and assist patients after discharge whom have added insulin to their medication regimen. Results of these projects include a pocket reference card that goes into extensive details for each insulin product, a comprehensive analysis of a survey taken by Registered Nurses on perceived barriers to delivering insulin in an appropriate time frame, a post discharge follow up phone questionnaire for future use in the Inpatient Diabetes Team.

Keywords: *diabetes management, insulin, safety, administration*

Background:

Insulin is a medication used as the main therapy in Type 1 diabetes and often used in therapy for Type 2 diabetes. With current statistics indicating that 29.1 million people in the United States have diabetes, there should be an emphasis on healthcare providers understanding the disease process and proper treatment. Focusing on just Lehigh Valley Health Network, about 30% of admitted patients have a diagnosis of diabetes.

A common barrier to proper inpatient diabetes care is the fear of hypoglycemia related to insulin use. Some of the apprehensions may originate from situations where hypoglycemia was the result; but it was not the medication dose, rather the timing of the medication that was the root cause. The standard of care states that any insulin dose covering high blood glucose must be given within 30 minutes in order to be appropriate. From a survey conducted in LVHN in May 2015, only 47.68% of RNs admitted to “Almost always” giving the dose within the correct time frame. Of the remaining participants, an alarming 43.71% selected “About half the time.” Based on these results, there is a need to examine the current practice and possible resolutions.

The addition of insulin to a treatment regimen can be a result of many situations. A new diagnosis of Type 1 diabetes will always include the need for insulin. Unlike Type 1, a new diagnosis of Type 2 will not always necessitate an insulin regimen. Furthermore, a patient with a new or pre-existing diagnosis of Type 2 diabetes may need insulin to control their chronic

disease. Since insulin is an injectable medication that may cause a severe side effect, education is a necessity for successful transition onto the medication. The Institute for Safe Medicine Practices lists insulin as a high-alert medication. These factors also increase the importance of regular visits to a physician who can assist the patient in managing their disease correctly. The transition for a patient leaving the hospital new to this medication requires education on the disease, precise instructions on administration, the correct materials, and intent to follow up with a provider.

Objective:

The overall purpose of this project is to assist in improving the safety of insulin administration. There are three sub-projects that aim at more specific goals. First, the intent is to provide updated and vital information on each type of insulin to healthcare professionals via pocket cards along with developing weekly interactive case based education. Second, to provide insight from RNs as to the barriers they face when insulin cannot be administered in an appropriate time frame. The final objective is to assist in the transition from hospitalization to home for patients who need insulin added to their home medication regimen after being discharged.

Methodology:

The first sub-project involved collecting and analyzing data from a survey that was created by the Diabetes Management Quality Improvement Team that focused on identifying the perceived barriers to timely deliverance of insulin as well as suggestions to aid in improvement. Four hundred and sixty one Registered Nurses completed the survey from all three Lehigh Valley Health Network campuses. Additional quantitative analysis as well as themed analysis responses provided a complete breakdown of the challenges faced while “on the floor.” Targeting and listening to the professionals who are in constant patient contact is of high importance for safe inpatient use of insulin.

Evaluation to determine the presence of a knowledge deficit related to insulin administration involved correcting, entering, and analyzing Insulin Knowledge Assessment tests given to a group of 40 people including medical students, residents, and general medicine faculty. The assessment was created to assess baseline knowledge of medical residents on 5K. The average percent correct on the 17 question assessment was 63.82%. Once a deficit in knowledge was confirmed, research into product information and current practice was conducted to update previous materials from the Inpatient Diabetes Team for creation of a pocket card. Most assistance was provided in formatting and reorganization of the material.

In order to generate a foundation for a questionnaire for phone calls following up with patients discharged new to insulin, staff interviews and research from other teams who conduct disease specific post-discharge phone calls (i.e. Community Care Teams). With assistance from these resources, a ten question phone survey was created that would take place one business day after discharge and a second call one week from the first phone call. Prior to conducting the phone

call, the patient's vital information is recorded on the survey form. If the patient is being followed by a physician who utilized the Community Care Team, then the follow up is handled by CCT. Once the need for follow up is established, a systematic review of the Discharge Instructions (DCI) is conducted to gather what medications, prescriptions, supplies, appointments, and instructions they had been sent home with. After all relevant information was collected; then the patient would be called using the survey as a guide for questions. An algorithm is used to determine actions taken by the person making the phone call. The piloted results were recorded and then reported to Joyce Najarian, Program Manager of Inpatient Diabetes, immediately following the conclusion of the phone calls.

Discussion:

Results from the survey "Barriers to Timely Delivery of Insulin" indicate the specific problem areas that can be addressed. At 46.21%, the highest perceived barrier is that the nurse has too many other responsibilities. Among the other responses, communication between the RN, technical partner, and dietary staff proves to be another issue with regards to insulin delivery. Forty-two percent of respondents indicate that they "rarely get communication that my patient's tray has arrived," and 26.44% say that they do not get communication from the TP that the pre-meal blood glucose has been taken. The last question of the survey allowed respondents to type in suggestions. Among those themed responses, some of the top indicated suggestions are as follows: increasing staff and lowering patient to nurse ratio, scheduled mealtimes for patients with diabetes, improved communication with technical partner, improved communication with dietary staff, and education on diabetes, insulin, and mealtimes.

The information for the pocket card was derived from interviews with Joyce Najarian, resources provided by the Inpatient Diabetes Team, and package inserts for each insulin product. Once all the information was accounted for, the next task was to organize the information in an easy to understand manner. The insulin products that are commonly used for inpatient care are on one side and the uncommon inpatient insulin products are on the other. While formatting and organizing this education tool, the content became more familiar. There is now a higher comfort level with my knowledge of insulin products because of this.

The questions of the survey were specific to discharge planning with regards to diabetes care. The first question asks if the patient has made or attended an appointment with a doctor who will manage their diabetes. Through a series of ten questions, it explores if the patient had any trouble obtaining their medications, using their glucose-testing meter, or using their insulin. Several phone calls occurred after the completion of the piloted questionnaire. Results will be tracked, including refusals, to identify potential safety issues or other opportunities to ensure safe discharge on insulin.

Future Implications:

A comprehensive report of the survey result was compiled and distributed on July 2, 2015. The report was shared with a group of Lehigh Valley Health Network Nurse Administrators in hopes to draw attention to these perceived barriers. Consequently, the attention may assist in the development of solutions to improve patient safety and decrease RN frustration on the floor. Additionally, a group of Nurse Residents are in communication with Joyce Najarian in order to potentially implement some interventions to improve insulin timing at the LVHN Muhlenberg campus.

The pocket reference cards have been submitted to be printed. The intent is to distribute these pocket cards to Residents, RNs and any other professionals who can benefit from the information.

Moving forward, the follow up phones are planned to continue for patients who are discharged new to insulin. Through experience, the survey will be adapted and updated to better fit the responses from these phone calls. Many useful outcomes are intended to come of this. For example, if a patient expresses concern about injecting insulin correctly, there will be a systematic way to refer the patient to an outpatient education appointment. The algorithm will continue to exist based on the needs to the patients. The intent remains to ensure that patients are safely using their insulin at home and comfortable doing so.

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Pre-test results from Insulin Knowledge Test given to Residents and Medical Students rotating through 5K unit at LVHCC as part of a Diabetes Quality Improvement Project.