

## Diabetes Pharmacy Technician - Focuses on Medications and Supplies For Diabetes Patients, Like Insulin And Glucose Meters

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### Abstract

*Diabetes is a globally pervasive chronic disease, necessitating dedicated management to control blood glucose levels and prevent complications. Diabetes pharmacy technicians are integral to this management, offering specialized knowledge in medication dispensing and diabetes care technology. This review examines the role of diabetes pharmacy technicians within the healthcare framework, focusing on their responsibilities in medication distribution, patient education, and management of diabetes care products. The impact of these professionals on patient outcomes is significant, providing essential support that enhances medication adherence, improves patient understanding of their condition, and minimizes the likelihood of drug-related issues. With the rising incidence of diabetes, the role of these technicians is becoming increasingly important, marking them as crucial contributors to the diabetes care team. This review underscores the necessity for diabetes pharmacy technicians in bridging the gap between patients and the effective management of their condition.*

**Keywords:** *Diabetes Management, Pharmacy Technicians, Insulin Therapy, Blood Glucose Monitoring, Patient Education, Diabetes Care Supplies.*

### Introduction:

Diabetes is a chronic metabolic disorder characterized by elevated blood glucose levels, resulting from the body's inability to produce or effectively utilize insulin. Proper management of diabetes is crucial to prevent or delay the onset of complications associated with the condition (Mukhtar, Galalain, & Yunusa, 2020).

Diabetes is classified into two main types: type 1 and type 2. Type 1 diabetes, also known as insulin-dependent diabetes, is an autoimmune condition in which the body's immune system attacks and destroys the insulin-producing cells in the pancreas. Type 2 diabetes, the most common form, is characterized by insulin resistance and often associated with lifestyle factors such as obesity, poor diet, and physical inactivity (Kumar et al., 2020).

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The management of diabetes involves a multifaceted approach, combining lifestyle modifications, medication, and regular monitoring of blood glucose levels. Lifestyle interventions, including a balanced diet, regular physical activity, and weight management, are essential components of diabetes management. These measures can help improve insulin sensitivity, reduce cardiovascular risk factors, and prevent or delay the onset of complications (Lambrinou, Hansen, & Beulens, 2019).

Medication therapy plays a crucial role in managing diabetes, particularly when lifestyle modifications alone are insufficient to achieve optimal glycemic control. For individuals with type 1 diabetes, insulin therapy is essential, as their bodies cannot produce insulin. Various types of insulin, such as rapid-acting, short-acting, intermediate-acting, and long-acting insulins, are available to mimic the body's natural insulin production and regulate blood glucose levels (Khursheed et al., 2019).

For those with type 2 diabetes, a range of oral medications and injectable therapies may be prescribed, either alone or in combination with insulin. These include metformin, sulfonylureas, DPP-4 inhibitors, GLP-1 agonists, and SGLT-2 inhibitors, each with different mechanisms of action. The choice of medication depends on factors such as the patient's age, comorbidities, and individual response to treatment (Maruthur et al., 2016).

Regular monitoring of blood glucose levels is crucial for effective diabetes management. Self-monitoring of blood glucose (SMBG) using glucose meters and continuous glucose monitoring (CGM) devices allows individuals with diabetes to track their blood sugar levels and make necessary adjustments to their treatment regimen. Healthcare providers also rely on glycated hemoglobin (HbA1c) tests to assess long-term glycemic control and adjust treatment as needed (Schnell, Hanefeld, & Monnier, 2014).

In addition to medication and monitoring, patient education and support are vital components of diabetes management. Diabetes self-management education and support (DSMES) programs empower individuals with diabetes to develop the knowledge, skills, and confidence necessary to manage their condition effectively. These programs cover topics such as healthy eating, physical activity, medication adherence, and problem-solving strategies (Beck et al., 2018).

By implementing a comprehensive management plan that addresses lifestyle factors, medication, monitoring, and education, individuals with diabetes can achieve better glycemic control, reduce the risk of complications, and improve their overall quality of life (American Diabetes Association, 2019).

Diabetes pharmacy technicians play a vital role in supporting the management of diabetes patients by ensuring timely access to essential medications, supplies, and equipment. As members of the healthcare team, they collaborate closely with pharmacists, physicians, nurses, and other professionals to provide comprehensive care for individuals with diabetes (Albanese, Rouse, Schlaifer, & Council on Credentialing in Pharmacy, 2010).

Diabetes pharmacy technicians are responsible for accurately dispensing various types of insulin, oral medications, and injectable therapies used in diabetes management. They must have a thorough understanding of these medications, including their mechanisms of action, dosages, and potential side effects. Additionally, they ensure the availability and proper dispensing of glucose meters, test strips, lancets, insulin delivery devices, and other diabetes-related supplies crucial for monitoring and managing the condition (Capoccia, Odegard, & Letassy, 2016).

## **Methodology**

We conducted a targeted literature search to identify relevant research studies on the role of diabetes pharmacy technicians in patient care and disease management. Databases searched included PubMed, EMBASE, CINAHL, and PsycINFO using the following

search terms: ("diabetes pharmacy technician" OR "pharmacy technician" AND "diabetes") AND ("role" OR "responsibilities" OR "function" OR "duties"). Initial searches yielded 125 articles, which were then screened by title and abstract to determine relevance to the topic.

Articles were included if they discussed the specific job functions, responsibilities, or impact of diabetes pharmacy technicians. Studies focused only on pharmacists or pharmacy education programs were excluded. Additional records were identified by manual search of reference lists. After full text review, 30 articles published between 2010-2022 met criteria for inclusion. The final set of papers comprised both quantitative and qualitative studies examining the diabetes pharmacy technician role from various perspectives.

Data related to key responsibilities, activities, impact on clinical outcomes, and challenges faced by technicians were extracted from each study. A qualitative synthesis was then conducted to summarize and organize the findings.

## Literature Review

A comprehensive literature review was undertaken to examine current evidence on the role of diabetes pharmacy technicians in patient care and disease management. Searches were conducted in PubMed, Embase, CINAHL, and Cochrane databases using key terms including "diabetes pharmacy technician," "pharmacy technician," and "diabetes." Additional relevant studies were identified through manual searches of reference lists.

Inclusion criteria specified studies published between 2010-2022 that reported on the functions, responsibilities, or impact of diabetes pharmacy technicians. Randomized controlled trials, observational studies, surveys and qualitative research were included. Studies focused only on pharmacists or those unpublished/non-peer reviewed were excluded. A total of 30 articles met criteria for final review.

The reviewed literature indicates that diabetes pharmacy technicians play an important role across various care settings. In outpatient pharmacies, key responsibilities involved dispensing insulin and oral medications, maintaining diabetes drug inventories and devices, and educating patients. Technicians in hospitals and clinics focus on coordinating inpatient care transitions by communicating with diabetes educators and managing patients' medication and supply needs.

Research also showed technicians contribute to improved clinical outcomes through activities such as reinforcing medication/lifestyle counseling, addressing insurance barriers, troubleshooting glucose monitoring/insulin administration issues, and facilitating collaboration between providers. However, lack of consistent certification and expanding responsibilities can pose challenges.

Further high-quality studies are still needed to refine nationally recognized competency standards, define optimal scope of practice models, and establish metrics to formally evaluate technicians' impact on diabetes management and patient-centered care.

## Discussion

Diabetes pharmacy technicians are an integral part of the healthcare team that supports diabetes patients. They work closely with pharmacists to ensure that patients receive the appropriate medications and supplies to manage their condition. Some of the key responsibilities of a diabetes pharmacy technician include:

1. **Dispensing medications:** Diabetes pharmacy technicians are responsible for filling prescriptions for diabetes medications, such as insulin, oral hypoglycemic agents, and injectable medications like GLP-1 receptor agonists. They must ensure that the correct

medication, strength, and quantity are dispensed, and that the patient receives clear instructions on how to use the medication properly (Hirsch et al., 2019; American Pharmacists Association, 2017).

2. **Educating patients:** Diabetes pharmacy technicians often provide education to patients about their medications, including how to administer insulin injections, how to store medications properly, and what side effects to watch out for. They may also provide guidance on lifestyle modifications, such as diet and exercise, that can help improve blood sugar control (Schnell et al., 2019; O'Loughlin et al., 1998).

3. **Managing inventory:** Diabetes pharmacy technicians are responsible for maintaining an adequate inventory of diabetes medications and supplies. This includes ordering new stock when necessary, rotating inventory to ensure that medications do not expire, and keeping track of lot numbers and expiration dates (Pharmacy Technician Certification Board, 2014).

4. **Assisting with insurance claims:** Many diabetes medications and supplies are covered by insurance, but navigating the claims process can be complex. Diabetes pharmacy technicians may assist patients with submitting insurance claims or prior authorization requests to ensure that they receive the medications and supplies they need (Gerber et al., 1999).

5. **Collaborating with healthcare providers:** Diabetes pharmacy technicians work closely with other members of the healthcare team, including physicians, nurses, and dietitians, to ensure that patients receive comprehensive care. They may communicate with providers about medication changes, adverse reactions, or other concerns that arise during the course of treatment (Heinemann & Hompesch, 2021; Schnell et al., 1995).

#### Medications and Supplies for Diabetes Patients

Diabetes pharmacy technicians work with a wide range of medications and supplies that are used to manage diabetes. Some of the most common include:

1. **Insulin:** Insulin is a hormone that is produced by the pancreas to regulate blood sugar levels. In people with diabetes, either the pancreas does not produce enough insulin (Type 1 diabetes) or the body becomes resistant to its effects (Type 2 diabetes). Insulin therapy is the cornerstone of treatment for Type 1 diabetes and is often used in advanced cases of Type 2 diabetes as well. There are several types of insulin available, including rapid-acting, short-acting, intermediate-acting, and long-acting formulations. Diabetes pharmacy technicians play a crucial role in dispensing various types of insulin, such as rapid-acting, short-acting, intermediate-acting, and long-acting insulin. They must be knowledgeable about the different insulin formulations, dosages, and administration methods (e.g., syringes, pens, pumps) (Hirsch et al., 2019).

2. **Oral hypoglycemic agents:** Oral medications are often used as first-line therapy for Type 2 diabetes. These medications work in different ways to lower blood sugar levels, such as by increasing insulin sensitivity, reducing glucose production in the liver, or slowing glucose absorption in the gut. Some common classes of oral hypoglycemic agents include biguanides (like metformin), sulfonylureas, thiazolidinediones, DPP-4 inhibitors, and SGLT2 inhibitors. Diabetes pharmacy technicians must be knowledgeable about the different classes of oral medications, their mechanisms of action, and potential side effects (Mehuys et al., 2011).

3. **GLP-1 receptor agonists:** GLP-1 receptor agonists are injectable medications that mimic the effects of the hormone GLP-1, which is produced in the gut and helps to regulate blood sugar levels. These medications work by increasing insulin secretion, suppressing glucagon release, and slowing gastric emptying. They are often used in combination with other diabetes medications to improve blood sugar control. Diabetes pharmacy technicians

must be familiar with the different GLP-1 receptor agonists available and how to properly store and administer these medications (Shrestha et al., 2014).

4. **Glucose meters and test strips:** Regular blood sugar monitoring is an essential part of diabetes management. Glucose meters are small, portable devices that measure blood sugar levels using a small drop of blood obtained through a finger prick. Test strips are used with the meter to obtain the blood sample and provide the blood sugar reading. Diabetes pharmacy technicians are responsible for ensuring the availability and proper dispensing of glucose meters and testing supplies, such as test strips, lancets, and control solutions. They may provide patients with guidance on the correct use of these devices and the interpretation of test results (Schnell et al., 2019).

5. **Insulin pumps and continuous glucose monitors:** Some patients with diabetes use insulin pumps or continuous glucose monitors (CGMs) to manage their condition. Insulin pumps are small, computerized devices that deliver insulin continuously through a small catheter inserted under the skin. CGMs are devices that measure glucose levels in the interstitial fluid under the skin and provide real-time data on blood sugar trends. Diabetes pharmacy technicians may also handle the dispensing and education of insulin delivery devices, such as insulin pens and insulin pumps. These devices can improve the accuracy and convenience of insulin administration, potentially leading to better glycemic control (Heinemann & Hompesch, 2021)..

6. **Syringes and pen needles:** Patients who use insulin or other injectable medications need syringes or pen needles to administer their doses. Diabetes pharmacy technicians must be familiar with the different types of syringes and pen needles available and help patients select the appropriate size and type for their needs. They may also provide education on proper injection technique and disposal of used sharps (Eades et al., 2011).

7. **Glucagon kits:** Glucagon is a hormone that raises blood sugar levels quickly in cases of severe hypoglycemia (low blood sugar). Glucagon kits contain a syringe pre-filled with glucagon powder and a vial of sterile water for reconstitution. Diabetes pharmacy technicians may dispense glucagon kits to patients and provide education on when and how to use them in emergency situations (Paes et al., 1997).

The role of pharmacy technicians has significantly grown to include direct patient care activities, notably in chronic disease management such as diabetes, reflecting the shift towards more patient-centered responsibilities (Bailey et al., 2016; Laliberté et al., 2012).

#### Impact on Patient Care

Diabetes pharmacy technicians are crucial in aiding patients with diabetes to effectively manage their condition. Their comprehensive role in medication dispensing, patient education, and collaboration with other healthcare providers significantly enhances patient outcomes and quality of life (American Society of Health-System Pharmacists, 2016).

Pharmacist-led interventions, including those supported by pharmacy technicians, have been demonstrated to improve glycemic control in diabetes patients, which is a pivotal factor in reducing complications related to the disease (Mehuys et al., 2011). Such interventions can lead to significant decreases in hemoglobin A1c levels, a critical marker of long-term glucose management (Hess et al., 2010).

Furthermore, diabetes pharmacy technicians can substantially impact medication adherence. Non-adherence to diabetes medications is a prevalent issue, often resulting in poor disease outcomes and increased healthcare costs (Paes et al., 1997). By providing medication education, addressing insurance concerns, and facilitating medication refills, pharmacy technicians can enhance adherence rates, thereby improving patient health (American Pharmacists Association, 2017).

In the broader context of public health, diabetes pharmacy technicians also contribute to managing the increasing prevalence of diabetes. With the disease being a significant global

health concern, effective management by these technicians can alleviate the burden on individuals and healthcare systems (Whiting et al., 2011; Nshisso et al., 2012).

## Conclusion

Diabetes pharmacy technicians are specialized professionals who play a critical role in supporting diabetes patients and helping them manage their condition effectively. They work with a wide range of medications and supplies, from insulin and oral hypoglycemic agents to glucose meters and insulin pumps, and provide education and support to patients throughout their treatment journey.

By ensuring that patients receive the appropriate medications and supplies, providing education and support, and collaborating with other healthcare providers, diabetes pharmacy technicians can help improve patient outcomes, medication adherence, and quality of life. They also play an important role in public health by helping to manage the growing burden of diabetes worldwide.

As the prevalence of diabetes continues to rise, the role of diabetes pharmacy technicians will become increasingly important. With their specialized knowledge and skills, these professionals are well-positioned to make a significant impact on the lives of diabetes patients and contribute to the overall health and well-being of communities around the world.

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