

# Assessing Impact of Clinical Pharmacist-Led Telehealth Interventions to Achieve Blood Glucose, Blood Pressure, and Cholesterol Goals in Patients with Type 1 or Type 2 Diabetes Mellitus

Cherry Deng PharmD; Bao Le PharmD; Vedanshi Bhojak PharmD; Sneha Bhakta RPh, APh, BCACP, BC-ADM, CDCES; Erin Williams PharmD, BCACP

## INTRODUCTION

In 2020, Desert Oasis Healthcare (DOHC) initiated a cardiometabolic clinic to manage uncontrolled diabetes, hypertension, and hyperlipidemia at Heritage Victor Valley Medical Group (HVVMG) patients. Patients with hemoglobin A1c (HbA1c) > 8% could be referred by their primary care physicians (PCPs) for disease state management by Clinical Pharmacists until stabilized, after which patients could be discharged back to the care of their PCPs. There is robust literature recognizing the value of Clinical Pharmacists in reducing healthcare costs and hospitalizations.<sup>1</sup> However, the emergence of COVID-19 has highlighted a need to assess the effectiveness of telehealth visits to ensure the highest standards of care are upheld.

## OBJECTIVES

The purpose of this study is to evaluate the impact of Clinical Pharmacists using virtual telehealth visits on reducing HbA1c, achieving blood pressure and low-density lipoprotein (LDL) goals, and initiating guideline-directed therapy for diabetes, hypertension, and hyperlipidemia in patients with type 1 or type 2 diabetes.

## METHODS

The study examined 300 patients with a diagnosis of type 1 or type 2 diabetes mellitus who were enrolled in the HVVMG cardiometabolic clinic from August 20, 2020 to August 31, 2023. Of this population, 115 patients were chosen for the study based on all of the following criteria:

- Enrollment period of at least 90 days
- Baseline HbA1c > 8% within 3 months of enrollment
- Second HbA1c after enrollment

### Primary Endpoints:

- Average percentage HgbA1c reduction after the last telehealth visit

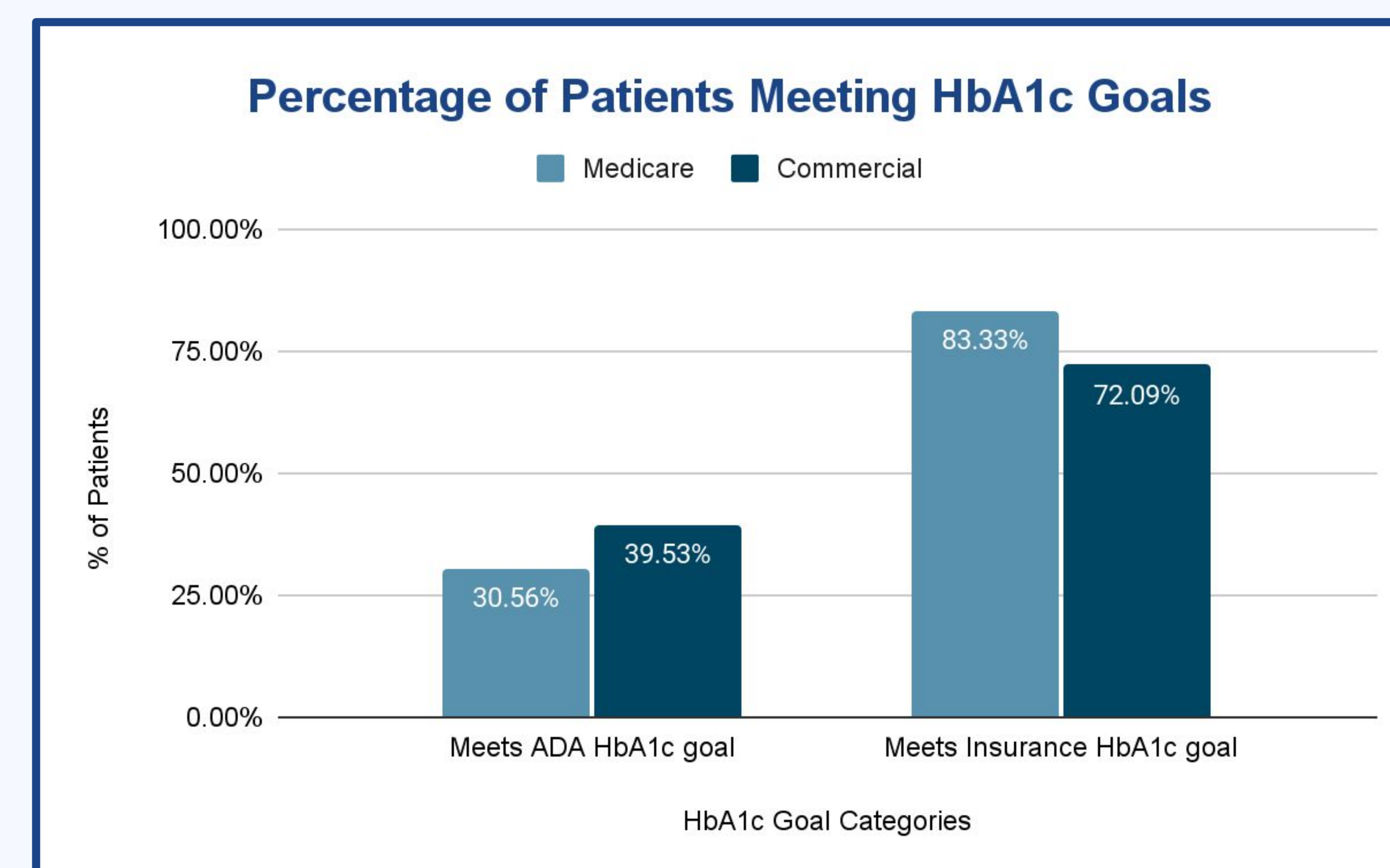
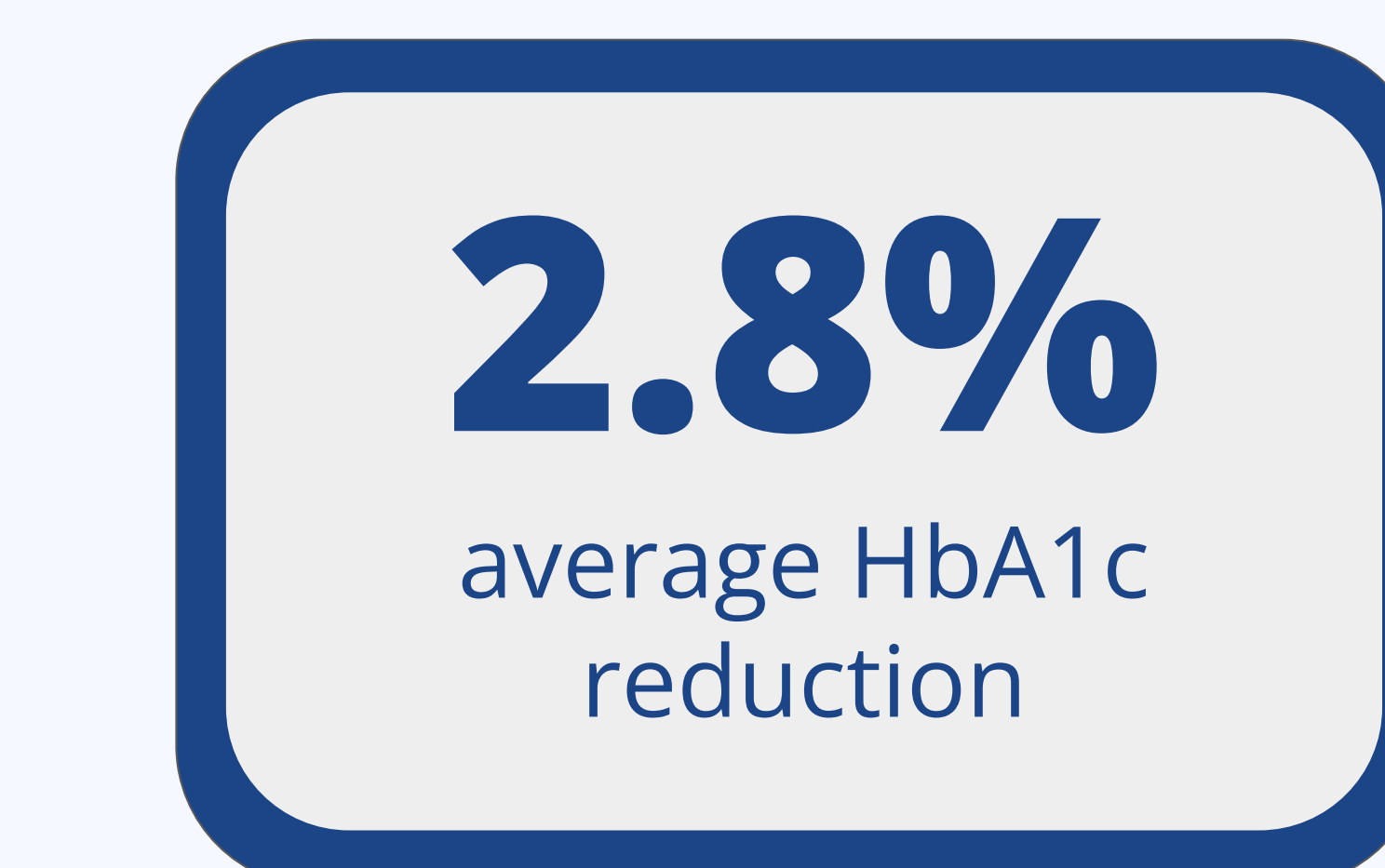
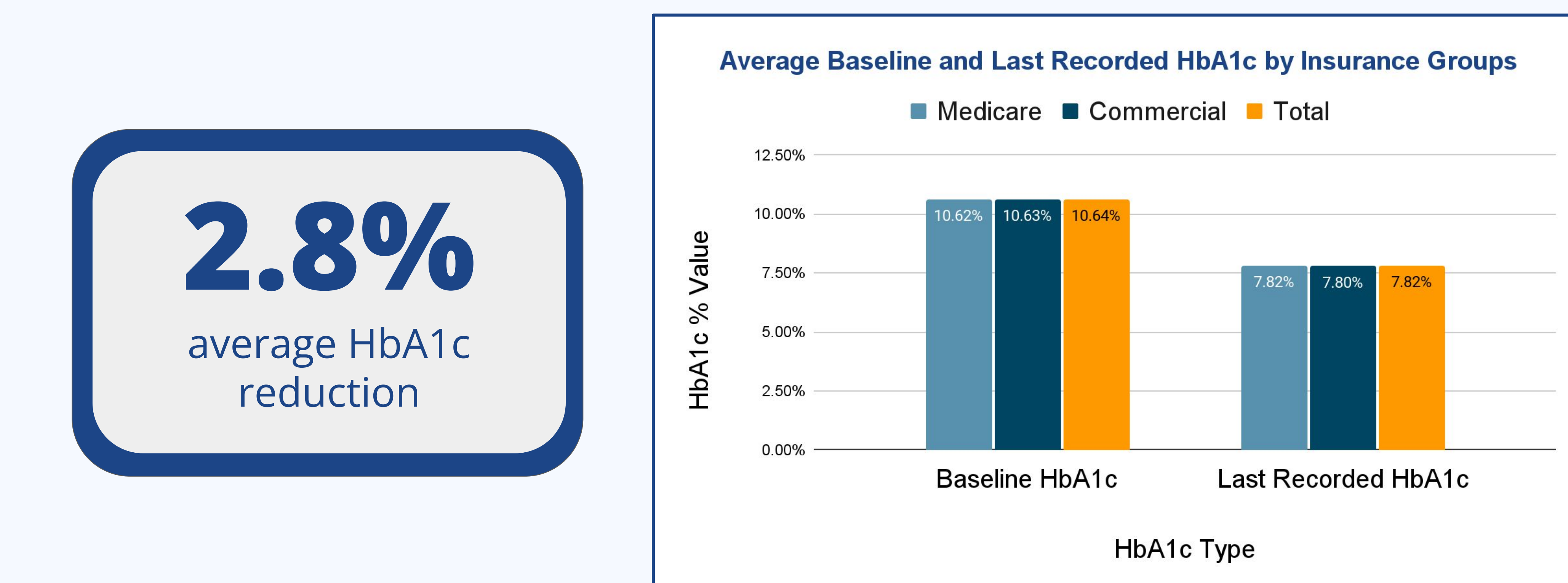
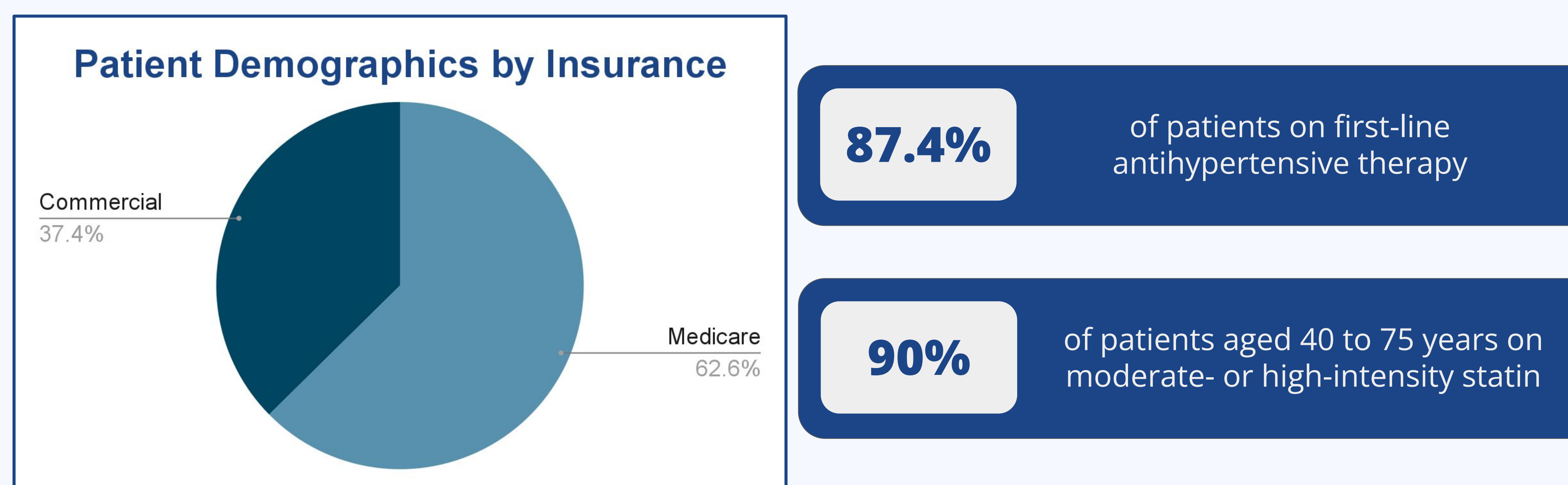
### Secondary Endpoints:

- Average number of days for patients to achieve goal HbA1c < 7% as defined by the 2023 American Diabetes Association (ADA)<sup>2</sup>
- Average number of days for patients to achieve goal HbA1c < 9% as defined by Medicare Star quality measures or average number of days for patients to achieve goal HbA1c < 8% as defined by commercial insurance HEDIS quality measures
- Percentage of patients achieving blood pressure goals as defined by the 2023 ADA guidelines<sup>2</sup>
- Percentage of patients on first-line antihypertensive medications<sup>2</sup>
- Percentage of patients achieving LDL goals as defined by the 2023 ADA guidelines<sup>2</sup>
- Percentage of patients aged 40 to 75 years on a moderate- or high-intensity statin<sup>2</sup>
- Number of emergency room or hospital visits related to hyperglycemia or hypoglycemia, hypertension or hypotension, and atherosclerotic cardiovascular disease (ASCVD)

Assuming a significant HbA1c change of 0.5%,<sup>2</sup> a sample size of 15 patients was needed to achieve 95% power with two-sided  $\alpha=0.01$ .

## RESULTS

Primary and Secondary Endpoints	
Average HbA1c % reduction (n=115)	2.8% (-4.1% to 8.1%)
Average # of days to achieve HbA1c < 7% (n=115)	254.8 days (44 to 787 days)
Average # of days to achieve HbA1c < 8% (n=43)	174.8 days (44 to 681 days)
Average # of days to achieve HbA1c < 9% (n=72)	153.8 days (32 to 802 days)
% of patients with BP < 130/80 mmHg (n = 103)	43.7% (45/103)
% of patients on first-line antihypertensives (n=103)	87.4% (90/103)
% of patients achieving LDL goals (n=109)	56.9% (62/109)
% of patients aged 40 to 75 years on a moderate- or high-intensity statin (n=115)	90% (97/109)



## DISCUSSION

At baseline, average HbA1c was 10.6%. A paired t-test statistical analysis was conducted and determined that a Clinical Pharmacist conducting telehealth visits for patients with diabetes was able to achieve a significant average HbA1c reduction of 2.8% (99% CI,  $P<0.001$ ). With a sample size of 115, the study was sufficiently powered to detect a significant HbA1c change. Four patients were non-adherent to their medications and had increased HbA1c at their last follow-up visit; average HbA1c reduction was 3% if these patients were excluded. At the conclusion of the study, 71 patients were still actively enrolled in the clinic; 54 of these patients still had HbA1c > 7% on the last date of data collection, making up nearly a third of the total patients in the study. A limitation of this study is that the device used to measure HbA1c could not provide specific HbA1c values > 14%. Ten patients whose HbA1c values were reported as > 14% were labeled as having an HbA1c of 14% for the purpose of this study. Therefore, 2.8% may be an underestimation of the true impact a Clinical Pharmacist can make on diabetes management via telehealth.

The 2023 ADA guidelines recognize that it is not always safe to target aggressive HbA1c goals in older adults,<sup>2</sup> which may explain the more lenient HbA1c goal of less than 9% that Medicare adopts and why more patients achieved target HbA1c set by Medicare in this study.

The guidelines further recommend a target LDL reduction of  $\geq 50\%$  from baseline in patients with diabetes. Baseline LDL was difficult to ascertain as patients were previously managed by other providers or had already tried different lipid-lowering agents prior to being managed by the Clinical Pharmacist. Therefore, a clinically relevant LDL goal of < 100 mg/dL was targeted in diabetic patients with low ASCVD risk. LDL goals of < 55 mg/dL and < 70 mg/dL were used for patients with a history of ASCVD and at high risk for ASCVD, respectively, per guidelines.

Of the five patients who had hospitalizations associated with hyperglycemia or ASCVD while enrolled in the clinic, four patients had HbA1c > 8%, two of which had HbA1c > 10%. Higher A1cs did not appear to be correlated with longer hospital stays, though this small sample size limits the generalizability of these findings.

## CONCLUSION

This study quantifies the impact of a Clinical Pharmacist on diabetes management conducted via telehealth. Our results again reflect positive impact by Clinical Pharmacists; a different Clinical Pharmacist-led diabetes program resulted in a 1% HbA1c reduction over five months.<sup>3</sup> By appropriately managing comorbid chronic disease states, patients are also at lower risk for additional health complications, such as stroke and other cardiovascular-associated hospitalizations. Future studies should examine the initiation of first-line antidiabetic medications by Clinical Pharmacists, as the recommendations for first-line therapy in diabetes have changed in the 2023 ADA guidelines.<sup>3</sup> The success of this telehealth program has implications on the potential of Clinical Pharmacist-managed telehealth programs in the management of other chronic disease states and is also contingent on a multidisciplinary approach to chronic disease state management. Other departments, such as Health Education, should also be involved for comprehensive care.

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