

Embedded Ambulatory Care Pharmacists: A Novel Approach to Patient Care

Michael Campbell, Pharm.D.¹, Angela Coulter, Pharm.D.¹, Megan Handley, Pharm.D.¹, Andrea Aguayo, Pharm.D., Jordan Roloff, M.H.A.¹, CiCi Kent, M.H.A.², Erin Green, M.H.A.³, Augustine Chavez, M.D.¹

¹Department of Family Medicine, ²Division of Hematology Oncology, ³Administration

BACKGROUND

In response to the evolving healthcare landscape, innovative strategies in primary care are essential for enhancing patient outcomes and ensuring efficient healthcare delivery. One example of innovation is redefining the composition and roles of the primary care team, such as embedding pharmacists as core members. Within this model, pharmacists collaborate with primary care clinicians, nurses, and medical assistants to provide:



Pharmacists' expertise has been shown to reduce emergency room visits, hospital admissions, and healthcare costs.¹ Amidst ongoing primary care shortages in the US, pharmacists on the care team are integral to reducing physician and overall team burnout.²

OBJECTIVES

To demonstrate how embedded ambulatory care pharmacists play a critical role in patient care, clinician and nurse job satisfaction, and efficiency of primary care clinics.

Key Drivers:

- Optimize ambulatory care teams
- Improve patient health outcomes
- Access to pharmacotherapy experts in-house

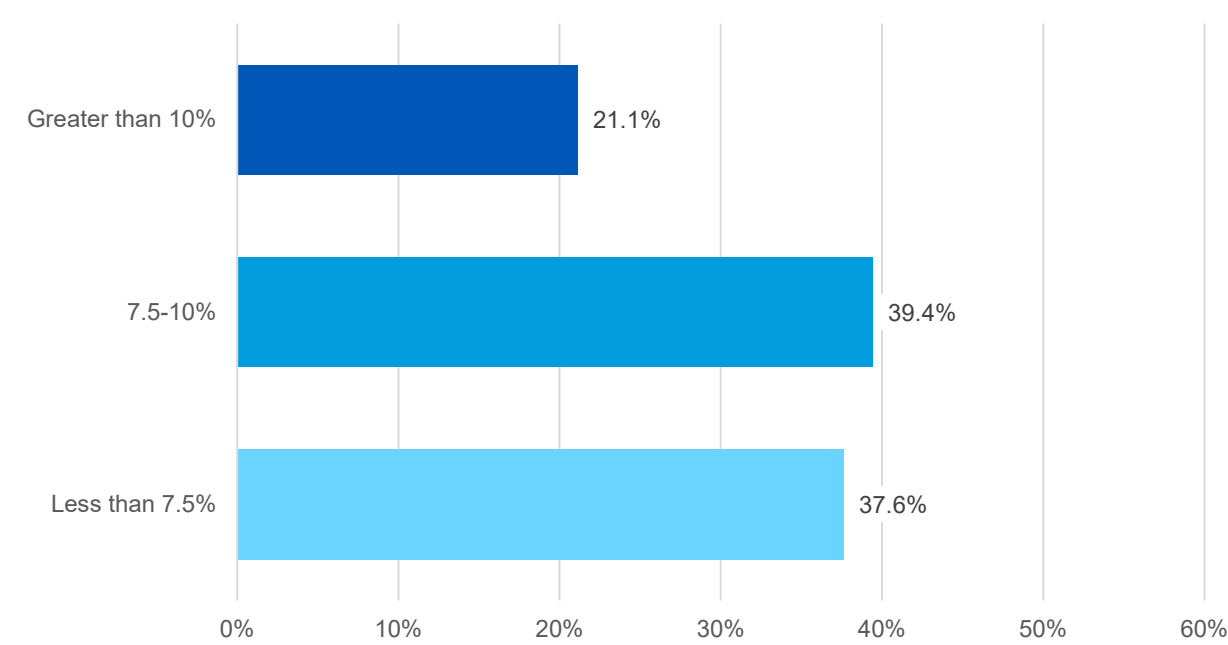
METHODS

In June 2021, a pharmacist was embedded to support the primary care team and its patients. By November 2023, Mayo Clinic Arizona (MCA) now has three embedded pharmacists across four Family Medicine clinics and one Women's Health Internal Medicine clinic, enhancing patient care, research, and education.

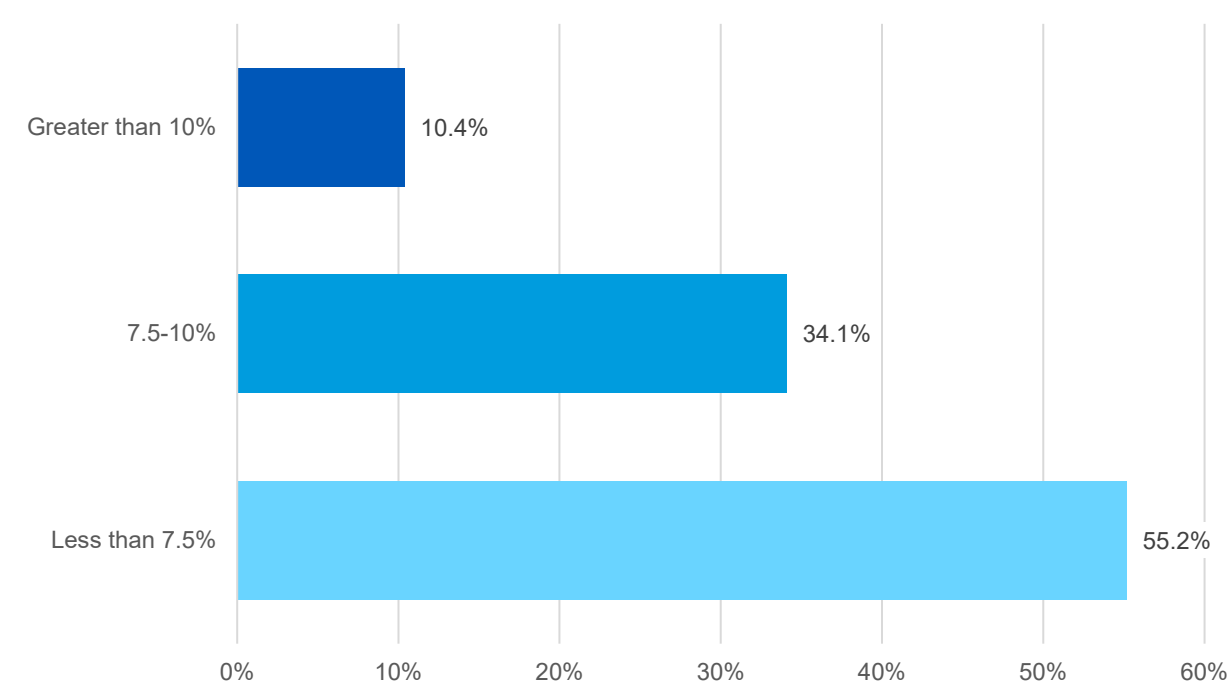
Research methodology involved a mixed-methods approach examining patients who had at least one encounter with an embedded ambulatory care pharmacist in 2023 and incorporated quantitative data analysis and qualitative feedback from healthcare clinicians. The primary outcomes measured were diabetes control, hypertension control, appropriate statin therapy use, aspirin use, and tobacco cessation. Secondary outcomes included clinician and nursing satisfaction surveys of clinic-embedded pharmacists, data of pharmacist utilization, and a cost-effectiveness analysis.

RESULTS: PATIENT OUTCOMES

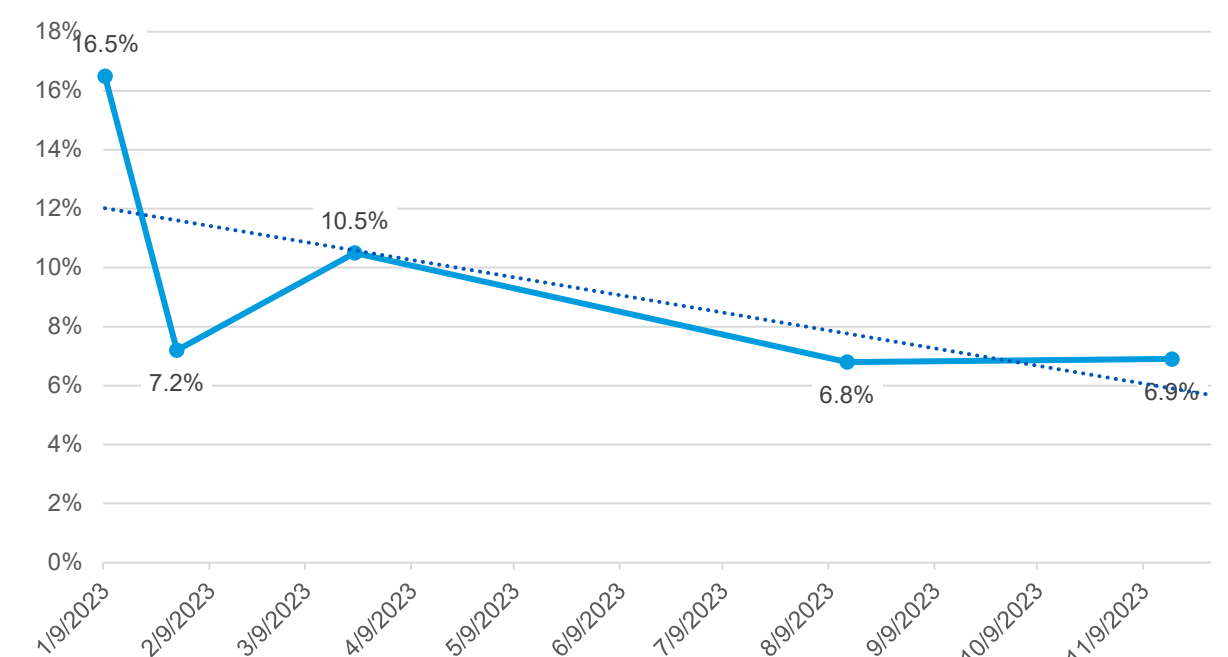
HbA1c at time of enrollment with the pharmacist



HbA1c after most recent pharmacist visit



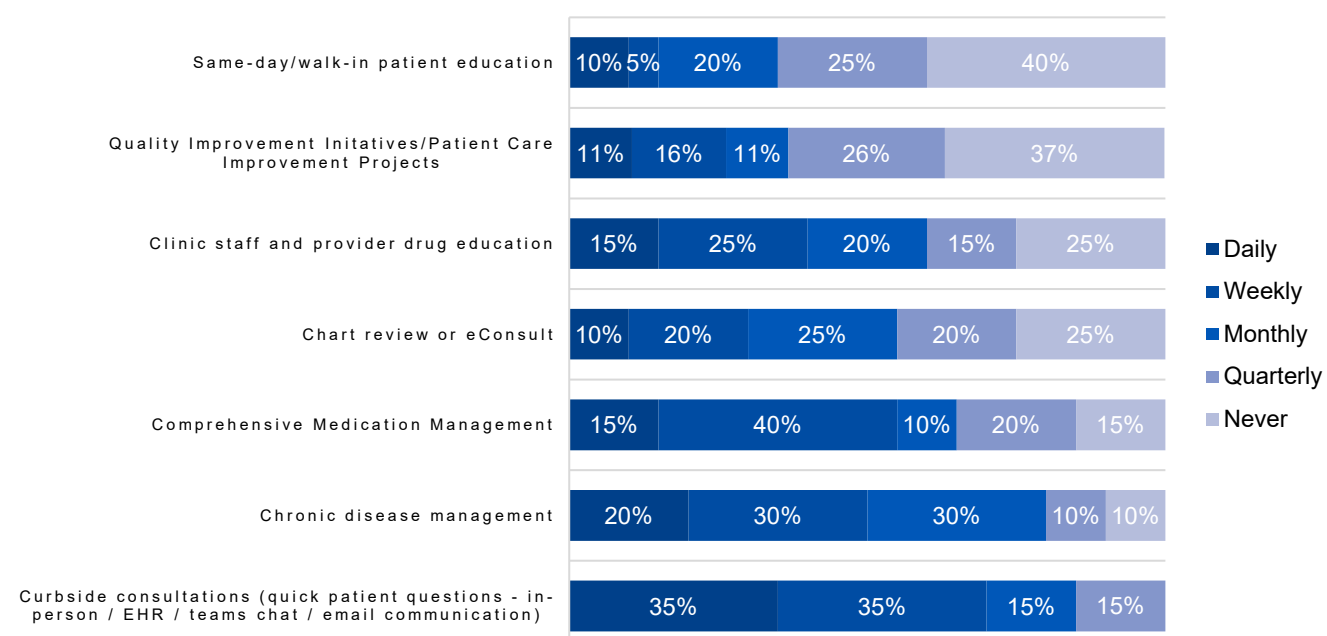
HbA1c change over time from start of enrollment to most recent measurement HbA1c start of visit with pharmacist



RESULTS: UTILIZATION

Quarter	Calendar Utilization = Fill Rate	Outpatient Visits	In-Basket Messages	Composite Utilization
Pharmacist 1				
2023 Q1	111%	172	306	148%
2023 Q2	100%	169	542	159%
2023 Q3	78%	139	445	125%
2023 Q4	74%	133	396	114%
Pharmacist 2				
2023 Q1	74%	116	168	93%
2023 Q2	89%	173	217	110%
2023 Q3	93%	190	225	113%
2023 Q4	93%	140	205	117%

Provider Reported Utilization of Pharmacy Services by Task

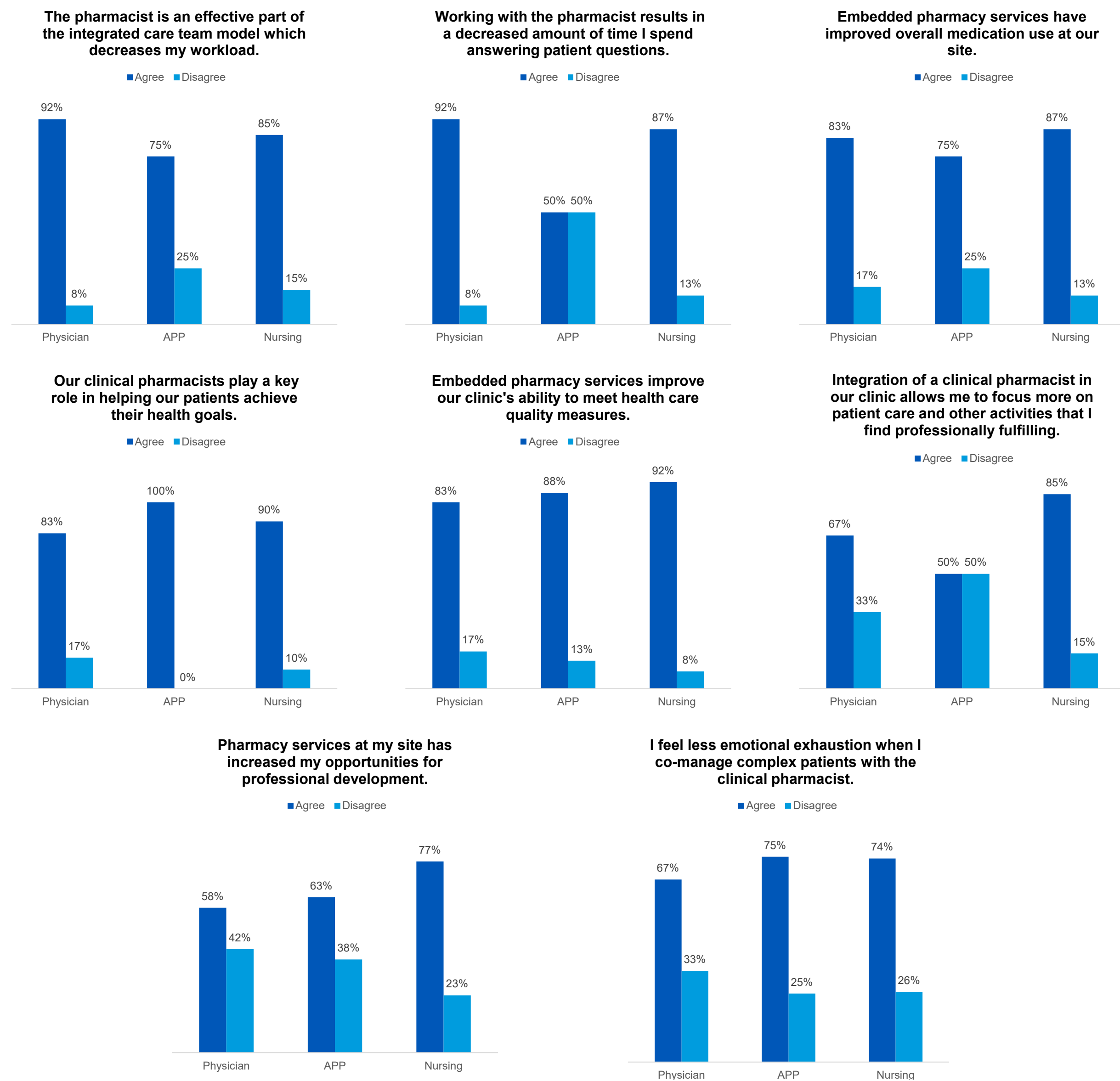


RESULTS: COST EFFECTIVENESS

Category	Dollar Value
Estimated Annual Salary & Benefits (1.60 FTE)	\$(299,000)
Annual Expected Direct Revenue	\$152,000
Annual Expected Indirect Revenue (Increased clinician Access: 236 Pharmacist Visits multiplied by Gross Revenue Per Visit \$331)	\$78,000
Downstream Cost Savings (Patient Improved Outcomes: 236 Pharmacist Visits multiplied by \$555 per patient with 1% reduction in HbA1c) ¹	\$131,000
Total	\$62,000

RESULTS: STAFF SATISFACTION

Surveys were made available to 134 Family Medicine and Women's Health Internal Medicine physicians, advanced practice providers (APP), and nurses. There was a 44% response rate to the survey.



DISCUSSION

- **Patient Outcomes:** Over 60% of patients who met with the pharmacist were meeting D5 quality care metrics of hemoglobin A1c reduction, blood pressure control, appropriate statin therapy use, and aspirin therapy.
- **Utilization:** The composite utilization of a pharmacist includes number of patient visits and in-basket messages; however, it does not incorporate the number of curbside consultations which provide clinicians personalized answers to potentially urgent patient inquiries. Pharmacists alleviate clinician burden by contributing to the optimization of medication management, improving healthcare outcomes, and serving as clinical pharmacotherapy experts. This generates increased revenue streams by allowing clinicians to see more complex patients with higher acuity billing.
- **Cost Effectiveness:** A cost-benefit analysis examining only the expenses of a pharmacist's salary in comparison to the revenues billed yields a negative margin. However, if the analysis is broadened to include the benefit of clinicians' receiving additional time on their calendar, and the benefits of the healthcare organization due to the positive health outcomes, the return on investment was positive for embedding pharmacists in the MCA's primary care practice.
- **Staff Satisfaction:** Pharmacists alleviate clinician and nurse administrative burden by contributing to the optimization of medication management, improving healthcare outcomes, and serving as clinical pharmacotherapy experts.

CONCLUSIONS

- This research supports the finding that the integration of pharmacists into primary care at MCA helped to improve healthcare outcomes and value-based care metrics.
- Our study provides valuable insights for healthcare administrators aiming to optimize primary care services in an increasingly complex healthcare environment.
- Future research should be conducted to examine if the beneficial impact can be replicated in other ambulatory care departments such as endocrinology, rheumatology, neurology, and cardiology.

REFERENCES

1. Lage MJ, Boye KS. The relationship between HbA1c reduction and healthcare costs among patients with type 2 diabetes: evidence from a U.S. claims database. *Curr Med Res Opin.* 2020;36(9):1441-1447. doi:10.1080/03007995.2020.1787971
2. Haag JD, Yost KJ, Kosloski Tarpenning KA, et al. Effect of an Integrated Clinical Pharmacist on the Drivers of Provider Burnout in the Primary Care Setting. *J Am Board Fam Med.* 2021;34(3):553-560. doi:10.3122/jabfm.2021.03.200597