

Primary Care Physician and Advanced Practice Patient Outcomes in an Accountable Care Organization

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INTRODUCTION

- Primary care demand > physician supply¹
- Debate around the use of APPs (e.g. nurse practitioner or physician assistant) as primary care providers (PCPs) in ACO models persists
- In the Carolinas HealthCare System ACO, APPs have collaborating practice agreements with a physician but function as PCPs (patients are impaneled to APPs and responsible for their patient's quality measures)
- We compare cost and quality outcomes among patients who see a physician versus an APP as their PCP in the Carolinas HealthCare System ACO

METHODS

- Analysis of adult patient outcomes between January 1 and December 31, 2023 using EHR data.
- Multivariable logistic regression was used to assess associations between PCP type and quality outcomes,
- Total professional and ambulatory charges were analyzed using multilevel mixed-effects linear regression.
- Models adjusted for patient- and provider-level characteristics with provider-level random effects.
- Missingness addressed via multiple imputation by chained equations, using all data to impute missing covariate data on Charlson comorbidity index (5%), area deprivation index (21%), PC visit count (3%), and provider age (16%).

RESULTS

- In 2023, there were 43,079 unique patients attributed to 411 PC physicians and 7,515 unique patients attributed to 209 PC APPs.
- There were no differences in the majority of outcomes measured by a patient's PCP type.
- Patients attributed to APPs were more likely to be compliant with colorectal cancer screening and less likely to receive an annual influenza vaccine.
- Patients who had an APP PCP had lower total and ambulatory charges.

Table 1: Patient- and provider- characteristics that were used as covariates in regression models. SD denotes standard deviation. CCI denotes Charlson Comorbidity index. ADI denotes Area Deprivation Index.

	Patients with a physician PCP N=43,079	Patients with an APP PCP N=7,515
Patient Characteristics		
Age, mean (SD)	74.8 (9.3)	73.3 (10.9)
Sex		
Female	24047 (55.8%)	4947 (65.8%)
Male	19032 (44.2%)	2568 (34.2%)
CCI, mean (SD)	1.6 (2.2)	1.7 (2.20)
National ADI, mean (SD)	42.3 (26.2)	50.9 (28.23)
State ADI, mean (SD)	3.5 (2.4)	4.3 (2.64)
PC Visit Count 2022, mean (SD)	4.6 (2.9)	5.2 (3.80)
Provider Characteristics		
Age, mean (SD)	49.7 (9.8)	43.3 (10.3)
Sex		
Female	15445 (35.9%)	6741 (89.7%)
Male	27634 (64.2%)	774 (10.3%)
Patient panel size, mean (SD)	3258.0 (1660.5)	1586.4 (1001.4)
Experience, mean (SD)	15.0 (3.7)	10.1 (5.1)

IMPLICATIONS



Patients who saw an APP had similar outcomes to patients who saw a physician PCP, with fewer total professional and ambulatory charges.



These findings support the continued model of APPs as PCPs within this ACO. Results also suggest that APP performance may vary across organizations.^{2,4}

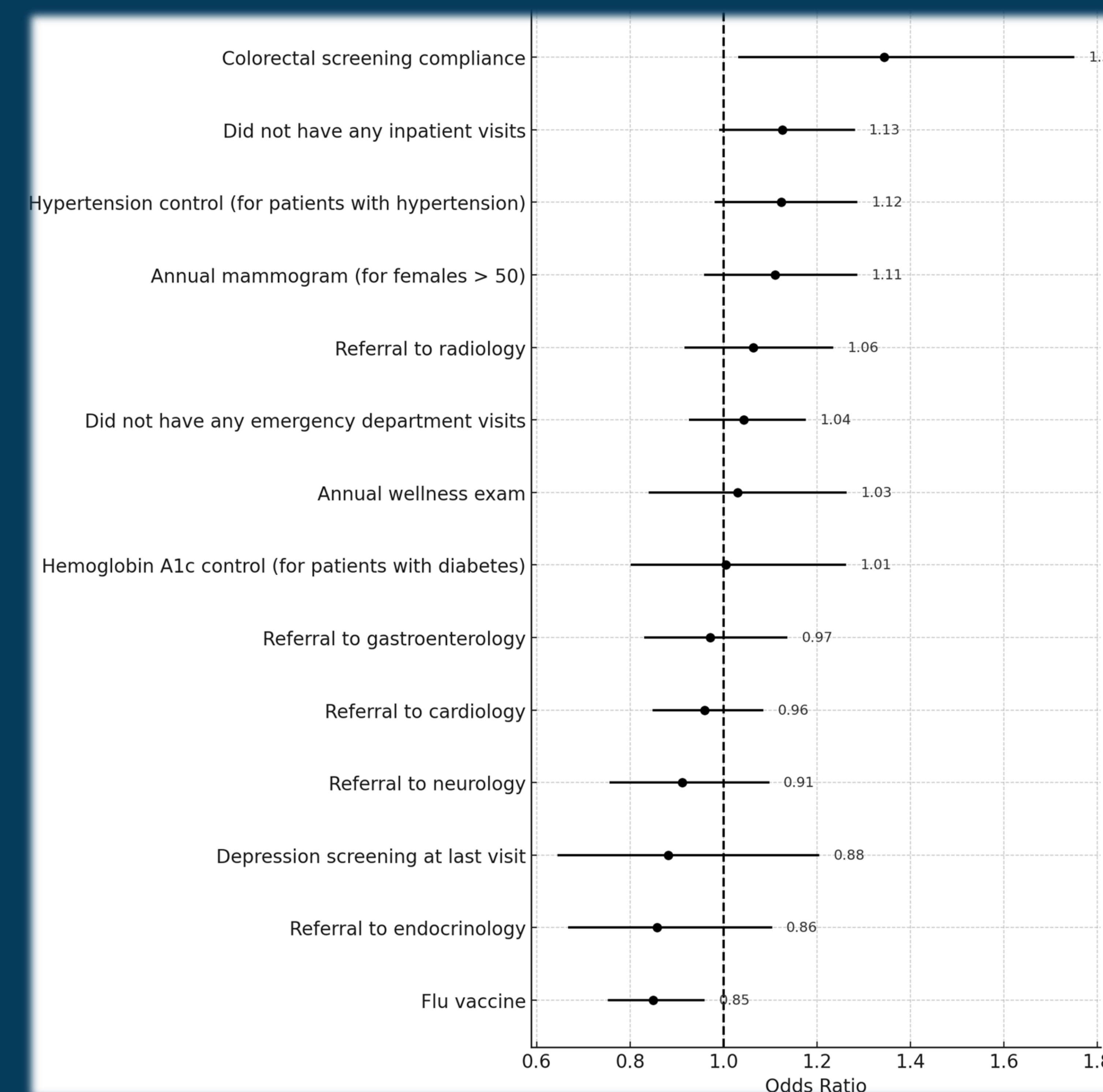


Further work should assess organizational factors, such as APP leadership, that influence APP success.⁵



Given the growing PC physician shortage¹, restricting APP roles may hinder ACO performance.⁶ Instead, analyzing outcomes by provider type and upskilling providers where gaps exist can optimize workforce potential.

Figure 1: Likelihood (adjusted odds ratio) of outcome based on whether patients saw an APP versus a physician as their 2023 primary care provider. Error bars represent 95% Confidence Intervals. Variables were selected to align with CMMS Measures Inventory for the Medicare Shared Savings Program. Results were robust to a supplemental sensitivity analysis excluding area deprivation index variables (ADI). Analyses were performed using Stata/IC 15.1. The study was approved by the IRB at Wake Forest University School of Medicine.



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This project received funding from the Wake Forest Clinical and Translational Science Institute through the Research Shark Tank Award Program.

Thank You Esita.Patel@advocatehealth.org