

# Comparing Encounter Characteristics Among Advanced Practice Clinicians and Physicians for Adult Same-Day Visits in Primary and Urgent Care



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## BACKGROUND

As the population ages amid growing shortages in primary care practitioners, expanding the supply of advanced practice clinicians (APC)—nurse practitioners and physician assistants—may offer a low-cost way to increase primary care access.<sup>1</sup> Given differences in training, states have traditionally limited APC scope of practice, with 22 states requiring full physician oversight. Amid the coronavirus-19 pandemic, however, states have temporarily lifted these restrictions.<sup>2</sup>

There is debate regarding the care APCs provide. While APC visits may be associated with more diagnostic imaging than physician encounters,<sup>3</sup> studies have shown comparable outcomes in regard to quality, patient experience, low-value care, and utilization.<sup>4</sup> However, this work has focused on diagnoses amenable to algorithm-driven care.<sup>5</sup>

Little is known about the content of care physicians and APCs provide, specifically whether physicians handle more complex cases or provide additional services of value. Given changes under consideration to expand APC scope of practice and supply, it is critical to understand how this might impact care.

## OBJECTIVE

This study aims to compare the practice of APCs to primary care physicians.

## METHODS AND FINDINGS

We performed a retrospective cross-sectional analysis of adult same-day visits to primary and urgent care from December 2014 to August 2015 within our integrated health system. A total of 1200 unique patient encounters were randomly selected for chart review from 52 academic and community practice sites in urban, suburban, and rural settings. Two physicians

classified reason for visit (acute complaint, stable chronic condition follow-up, exacerbation of chronic condition, preventive care, or other), encounter complexity (simple algorithmic v. complex diagnostic), complaint acuity (acute v. chronic), number of additional problems addressed, medication changes, and diagnostic interventions, including consultations, imaging, and labs (Table 1). Patient and clinician demographics were extracted from the electronic medical record. The Cleveland Clinic Institutional Review Board approved this study.

For patient and encounter measures, we reported frequencies (percentages) and measures of central tendency by provider type. We also described differences between physicians and APCs, using chi-square and *t* tests. We modeled odds of prescription receipt, medication de-prescribing, and addressing additional concerns using mixed-effects logistic regression models, accounting for clustering by clinician. Models included provider, patient, and encounter characteristics.

Our sample included 393 physician and 807 APC visits (Table 2). Patients seeing APCs were more likely to be female (68.9% v. 60.0%,  $p=0.002$ ) and non-Caucasian (19.6% v. 9.4%,  $p<.0001$ ). APC visits were more often for simple algorithmic complaints than physician visits (67.7% v. 55.0%,  $p<.0001$ ). Physicians more frequently addressed additional problems (0.62 v. 0.38,  $p=0.0003$ ). The number of new medications prescribed was similar (1.26 v. 1.24,  $p=0.68$ ), but physicians de-prescribed more medications (0.48 v. 0.34,  $p=0.02$ ). There was no difference in the number of diagnostic interventions (2.89 v. 2.84,  $p=0.84$ ), including specialty consultations (1.24 v. 1.21,  $p=0.74$ ). There was no difference in seeing an APC v. physician by setting (data not shown).

In the adjusted models, addressing additional complaints (aOR 1.80, 95% CI 1.27–2.57) and de-prescribing (aOR 1.44, 95% CI 1.07–1.93) were associated with seeing a physician v. an APC.

## DISCUSSION

In this observational review of 1200 cases, we found small differences in practice between APCs and physicians. APCs more often saw simple, algorithmic complaints, while physicians were more likely to address additional health concerns or de-prescribe medications. Both prescribed medications and ordered diagnostic interventions at similar rates. To our

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Table 1 Classification Scheme for Acute Patient Complaints by Complexity

Minor illnesses amenable to algorithm-guided care*	Illnesses requiring diagnostic acumen
1. Skin injury	1. Abdominal pain
2. Upper respiratory symptoms	2. Chest pain
3. Sore throat	3. Dizziness
4. Lower urinary symptoms	4. Syncope
5. Acute diarrhea	5. Glycemic control
6. Low back pain	6. Joint pain
7. Increased arterial pressure (blood pressure)	7. Shortness of breath
8. Pink eye (conjunctivitis)	8. Palpitations
9. Burns	9. Edema
10. Tooth pain	10. Ulcer
11. Twisted ankle	11. Urinary incontinence
12. Emergency contraception	12. Headache/migraine
13. Anxiety attacks	13. Heartburn
14. Skinfold dermatitis	14. Arthritis
15. Influenza	15. Fatigue
16. Nosebleeds	16. Leg pain
	17. Weight gain
	18. Weight loss
	19. Depression
	20. Insomnia

\*Classification scheme adopted from a program of nurse algorithm-guided care for adult patients<sup>5</sup>

Table 2 Patient and Encounter Characteristics for All Same-Day Visits, 2014–2015

Variables	Physicians (n=393 visits)	Advanced practice clinicians (n=807 visits)	p value
Patient characteristics			
Male, n (%)	157 (40.0)	251 (31.1)	<b>0.002</b>
Race, n (%)			<b>&lt;.0001</b>
Caucasian	356 (90.6)	649 (80.4)	
African American	15(3.2)	113 (14.0)	
Other	22 (5.7)	45 (5.6)	
Age, y (SD)	48.7 (17.7)	49.1 (17.3)	0.72
Insurance, n (%)			<b>0.0001</b>
Commercial	244 (60.1)	559 (69.3)	
Medicare	74 (18.8)	141 (17.5)	
Medicaid	58 (14.8)	57 (7.1)	
Other*	17 (4.3)	50 (6.2)	
Marital status, n (%)	229 (58.3)	435 (53.9)	0.15
Number of medications taking prior to visit, n (SD)	5.4 (4.9)	6.1 (5.3)	<b>0.02</b>
Current prescription medications <sup>†</sup>	3.8 (3.3)	3.9 (3.4)	0.63
Current over-the-counter medications <sup>‡</sup>	1.4 (1.5)	1.6 (1.6)	0.06
Current supplements <sup>‡</sup>	1.2 (1.6)	1.4 (1.8)	<b>0.04</b>
Encounter characteristics			
Setting, n (%)			0.76
Primary care	199 (50.6)	401 (49.7)	
Urgent care	194 (49.4)	406 (50.3)	
Reason for visit, n (%)			0.40
Acute condition/symptom	330 (84.0)	703 (87.1)	
Preventive care	1 (0.3)	2 (0.3)	
Chronic condition/follow-up	46 (11.7)	83 (10.3)	
Exacerbation	13 (3.3)	17 (2.1)	
Other	3 (0.8)	2 (0.3)	
Primary complaint type, n (%)			<b>&lt;.0001</b>
Simple/algorithmic problem	216 (55.0)	546 (67.7)	
Complex/diagnostic problem	177 (45.0)	261 (32.3)	
Encounters with patients taking high-risk medications, n (%)			
Narcotics	47 (12.0)	101 (12.5)	0.78
Warfarin	14 (3.6)	17 (2.1)	0.14
Insulin	14 (3.6)	30 (3.7)	0.89
Oral hypoglycemic (except metformin)	15 (3.8)	35 (4.3)	0.67
Number of additional problems addressed, n (SD)	0.6 (1.2)	0.4 (0.8)	<b>0.0003</b>
Number of new medications prescribed, n (SD)	1.3 (0.8)	1.2 (0.8)	0.68
Encounters involving starting new high-risk medications, n (%)			
Narcotics	11 (2.8)	18 (2.2)	0.55
Warfarin	0 (0)	0 (0)	n/a
Insulin	0 (0)	1 (0.1)	0.59

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Table 2. (continued)

Variables	Physicians (n=393 visits)	Advanced practice clinicians (n=807 visits)	p value
Oral hypoglycemic (except metformin)	0 (0)	2 (0.3)	0.32
Number of medications stopped, n (SD)	0.5 (1.0)	0.3 (0.9)	<b>0.02</b>
Total number of interventions ordered, n (SD)	2.9 (2.9)	2.8 (2.9)	0.84
Number of consults placed	1.2 (0.5)	1.2 (0.5)	0.74

\*Other includes TRICARE, self-pay, and worker's compensation

<sup>†</sup>Mean number of current medication subtypes or supplements provided for those patients endorsing taking at least one medication prior to encounter  
 Bold values are statistically significant at  $p < 0.05$

knowledge, our study is the first to examine differences in APC and physician practice content.

Prior studies finding similar quality of care between APCs and physicians did not assess the complexity of decision-making,<sup>6</sup> focusing instead on diagnoses amenable to algorithmic care, such as low-back pain and sinusitis. [1-6] Although our system employs no formal triage process, physicians saw a higher proportion of visits requiring diagnostic acumen. Physicians also added value by de-prescribing and addressing additional complaints.

Limitations include the single institution sample, which may not be representative. We also did not assess diagnostic accuracy or longitudinal outcomes.

Given primary care shortages and rising care demand, it may be tempting to replace physicians with APCs. Our findings suggest that they often do similar work, but physicians may add value in unmeasured ways. Systems are needed to ensure that work is divided between physicians and APCs in ways that maximize efficiency through the use of each practitioner's particular skills.

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#### Declarations:

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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