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

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

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
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

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)                                  | 0.002   |
| Race, n (%)                              |                            |                                             | <.0001  |
| Caucasian                                | 356 (90.6)                 | 649 (80.4)                                  |         |
| African American                         | 153 (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 (%)                         |                            |                                             | 0.0001  |
| 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 (%)                    |                            |                                             | 0.15    |
| Number of medications taking prior to visit, n (SD) | 5.4 (4.9)                | 6.1 (5.3)                                   |         |
| Current prescription medications†        | 3.8 (3.3)                  | 3.9 (3.4)                                   | 0.63    |
| Current over-the-counter medications†    | 1.4 (1.5)                  | 1.6 (1.6)                                   | 0.06    |
| Current supplements†                     | 1.2 (1.6)                  | 1.4 (1.8)                                   | 0.04    |
| 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 (%)            |                            |                                             | <.0001  |
| 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 (%) | 47 (12.0)                 | 101 (12.5)                                  | 0.78    |
| Narcotics                                |                            |                                             |         |
| 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)                                   | 0.0003  |
| 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 (%) | 11 (2.8)                  | 18 (2.2)                                    | 0.55    |
| Narcotics                                |                            |                                             |         |
| Warfarin                                 | 0 (0)                      | 0 (0)                                       | n/a     |
| Insulin                                  | 0 (0)                      | 1 (0.1)                                     | 0.59    |

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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, focusing instead on diagnoses amenable to algo-
ritmic care, such as low-back pain and sinusitis. Although
our system employs no formal triage process, physicians saw a
higher proportion of visits requiring diagnostic acumen. Phy-
sicians 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 find-
ings 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 prac-
titioner’s particular skills.

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Declarations:

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