

AMA Issue Brief: Expanding nurse practitioner scope of practice leads to increased utilization of health care resources

Studies have shown, nurse practitioners may end up increasing costs to the health care system due to inappropriate prescribing, unnecessary referrals to specialists, and unnecessary orders for diagnostic imaging studies such as x-rays.

Increased or inappropriate prescribing: antibiotics

A brief report by the Infectious Diseases Society of America examined NP and physician assistant (PA) antibiotic prescribing, compared with physician-only visits for both overall visits and visits for acute respiratory tract infections (ARTIs) between 1998-2011.¹ **The study found that ambulatory visits involving NPs and PAs more frequently resulted in an antibiotic prescription compared with physician visits.** Similarly, with ARTI visits, NPs and PAs prescribed antibiotics 61 percent of the time while physicians prescribed antibiotics 54 percent of the time. The authors noted that their findings were consistent with several previous studies.²

The authors suggested several reasons for this discrepancy.³ First, antibiotic stewardship programs tend to focus on physicians rather than NPs or PAs. However, the authors noted that elements of antibiotic stewardship are often included in NP and PA educational curriculum, and concluded that differences in antibiotic prescribing are more likely due to practice environment, learned clinical behaviors, or differences in patient communication rather than medical education. **While the authors hypothesized that there may be significant differences in the patient mix between physicians and NPs or PAs, the authors found that higher rates of antibiotic prescribing persisted among NP and PA visits, even when the analysis was restricted to patients with the same diagnosis.** The authors concluded that, as the proportion of outpatient visits involving NPs and PAs continues to increase, interventions to reduce inappropriate antibiotic use should target these providers in addition to physicians.

A study from Infection Control and Hospital Epidemiology similarly found inappropriate antimicrobial prescribing among advanced practice providers (APPs) in ambulatory practices.⁴ The study collected data regarding over 488,000 outpatient visits between 2014 and 2016 regarding common upper respiratory conditions that should not require antibiotics. The visits reflected urgent care, family medicine, internal medicine and pediatric providers. **The study found that adult patients seen by APPs were 15 percent**

¹ Sanchez GV, Hersh AL, Shapiro DJ, et al. Brief Report: Outpatient Antibiotic Prescribing Among United States Nurse Practitioners and Physician Assistants. Open Forum Infectious Diseases. 2016:1-4.

² Grijalva CG, Nuorti JP, Griffin MR. Antibiotic prescription rates for acute respiratory tract infections in US ambulatory settings. JAMA 2009; 302:758–66.

³ *Supra* note 1.

⁴ Schmidt ML, Spencer MD, Davidson LE. Patient, Provider, and Practice Characteristics Associated with Inappropriate Antimicrobial Prescribing in Ambulatory Practices. Infection Control & Hospital Epidemiology. 2018:1-9.

more likely to receive an antibiotic than those seen by a physician. The rate of prescribing for pediatric patients was similar. Like the authors of the IDSA study, the authors of the ICHE study recommended that future education and antimicrobial stewardship efforts should target APPs.

Increased or inappropriate prescribing: opioids

Using 2015 Medicare claims data, the authors conducted a retrospective cross-sectional analysis to determine the opioid prescribing patterns of physicians, nurse practitioners and physician assistants who worked in primary care and prescribed at least 50 prescriptions.⁵ Based on their analysis, **they found 6.3 percent of nurse practitioners and 8.4 percent of physician assistants prescribed opioids to more than 50 percent of their patients compared to just 1.3 percent of physicians.** They also **found NPs and PAs in states with independent prescription authority for schedule II opioids were 20 times more likely to overprescribe opioids than NPs and PAs in states with restricted prescription authority.** Of note, the study also found from 2013 to 2017, when almost every medical specialty decreased opioid prescribing, NPs and PAs significantly increased opioid prescribing. The authors opined on potential solutions for reducing NP and PA prescribing, such as implementing mandatory continuing education in safe opioid prescribing and restricting NPs and PAs prescribing authority.

These findings are also supported by an analysis of prescribing data from IQVIA, a worldwide data science and market research firm, which shows that between 2018 and 2019 opioid prescribing by nurse practitioners increased year-over-year in the vast majority of states, while opioid prescribing declined overall.⁶ There was also an increase in opioid prescribing by nurse practitioners in the 22 states that AANP declares as “independent” or “full practice authority.”

Unnecessary referrals

According to a 2013 study by the Mayo Clinic, inappropriate referrals to tertiary referral centers by NPs and PAs could offset any potential savings from the increased use of NPs and PAs.⁷ The study compared the quality of physician referrals for patients with complex medical problems against referrals from nurse practitioners and physician assistants for patients with the same problems. Blinded to the source of the referrals, a panel of five experienced physicians used a seven-instrument assessment to determine the quality of each referral. Physician referrals received “significantly higher” scores in six of the seven assessment areas: (1) referral question clearly articulated, (2) clinical information provided, (3) documented understanding of the patient’s pathophysiology, (4) appropriate evaluation performed locally, (5) appropriate management performed locally, and (6) confidence returning patient to referring health care professional. Physician referrals were also more likely to be evaluated as necessary than NP or PA referrals, which were more likely to be evaluated as having little clinical value.

The study’s authors suggested that these differences be considered with respect to interacting patient, health care professional, and system-related factors. The authors observed that patients who require

⁵ MJ Lozada, MA Raji, JS Goodwin, YF Kuo, Opioid Prescribing by Primary Care Providers: A Cross-Sectional Analysis of Nurse Practitioner, Physician Assistant, and Physician Prescribing Patterns. Journal General Internal Medicine. 2020; 35(9):2584-2592.

⁶ Source: IQVIA Xponent market research services. (c) IQVIA 2020. All rights reserved.

⁷ Lohr RH, West CP, Beliveau M, et al. Comparison of the Quality of Patient Referrals from Physicians, Physician Assistants, and Nurse Practitioners. Mayo Clinic Proceedings. 2013;88:1266-1271.

referral to a tertiary medical center are typically more complex and undifferentiated in terms of a diagnosis. Although there is evidence that NPs and PAs can deliver effective primary care, the authors found little research on the ability of NPs and PAs to independently manage patients with undifferentiated and complex problems. However, the authors found many examples of excellent care of patients with complex medical problems within multidisciplinary teams in which NPs and PAs had immediate access to physician support—a level of support not necessarily available in all outpatient practice settings. The authors also noted that their survey of referring NPs and PAs indicated that they usually did not consult with a physician colleague before referring a patient.

Based on these results, researchers concluded that there is an opportunity to improve the quality of patient referrals from NPs and PAs in primary care practices by involving integrated health care teams that combine the skills of physicians, NPs, and PAs.

Inappropriate Diagnostic Imaging

A recent JAMA Internal Medicine study investigated diagnostic imaging, such as medical imaging, by NPs and PAs compared to primary care physicians, after office-based encounters.⁸ The study controlled for imaging claims that occurred after follow-up care such as specialty referrals.

The study's authors noted that previous research⁹ found that in 34 percent of emergency department cases, NPs and PAs recommended imaging studies when physicians had not, and offered a reminder that overuse of diagnostic imaging may expose patients to unnecessary radiation and offset some savings otherwise achieved by the expanded use of NPs and PAs.

The JAMA Internal Medicine study found that NPs and PAs were associated with more ordered diagnostic imaging than primary care physicians following an outpatient visit.¹⁰ The difference was more pronounced for radiographs – a test for which larger numbers of NPs and PAs are authorized to order – than non-radiographs. Further, NPs and PAs were associated with more imaging than primary care physicians on both new and established patients, though results were more pronounced with new patients, where NPs and PAs were not found to order differently for advanced imaging examinations, but were associated with higher rates for radiography orders.

The findings suggest that expanding the authority and use of NPs may alleviate physician shortages, but the increased imaging may have ramifications on care and overall costs. While the authors could not discern whether the difference in ordering represented overuse by NPs, rather than underuse by primary care physicians, efforts to expand access to care by simply substituting NPs for physicians without careful imagining appropriate mechanisms may further elevate health care costs and potentially increase unnecessary radiation exposure.

In the end, the study's authors noted that their results do not mean that NPs and PAs cannot serve an important, growing role in primary care access. **Rather, the authors warned that any such expansion**

⁸ D.R. Hughes, et al., A Comparison of Diagnostic Imaging Ordering Patterns Between Advanced Practice Clinicians and Primary Care Physicians Following Office-Based Evaluation and Management Visits. *JAMA Internal Med.* 2014;175(1):101-07.

⁹ Seaberg DC, MacLeod BA. Correlation between triage nurse and physician ordering of ED tests. *Am J Emerg Med.* 1998;16(1):8-11.

¹⁰ *Supra* note 6.

must be mindful of the additional cost, safety, and quality implications it may incur. Greater coordination in health care teams may produce better outcomes than merely expanding NP scope of practice alone.

Similarly, a new study published in the Journal of the American College of Radiology found that skeletal x-ray utilization among Medicare beneficiaries increased among non-physicians, particularly NPs and PAs. The study, which analyzed Medicare Part B fee-for-service claims from 2003 to 2015, calculated utilization rates per 1,000 Medicare beneficiaries. While skeletal radiology is a basic and “low tech” form of imaging, it is the largest single category of imaging examinations, comprising 22.8 percent of all noninvasive diagnostic imaging performed in the Medicare population in 2015.

The study found that skeletal x-ray ordering increased substantially – by 441 percent – among non-physician providers, primarily nurse practitioners and physician assistants. Orders among primary care physicians decreased by 33.5 percent, which the authors hypothesized may reflect a tendency for PCPs to delegate NPs and PAs who work with them to take on the responsibility of interpreting x-rays. Still, the authors suggested that interpretations by NPs and PAs may warrant further scrutiny.

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