

Building a Team-Based Gastroenterology Practice With Advanced Practice Providers

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Abstract: The use of advanced practice providers (APPs), such as nurse practitioners and physician assistants, has grown substantially in gastroenterology practices in the United States. The first formal training programs appeared in the mid-1960s; however, incorporation of APPs into gastroenterology practices occurred sporadically until the early 1990s, when several large practices began utilizing APPs in both outpatient and inpatient environments. Over the next 20 years, APPs became increasingly more common. In hospital settings, they provide continuity of care, especially for practices that rotate physicians into hospital services on a periodic basis. Efficient use of APPs frees physicians to focus on new patients, procedures, and complex chronic care management. APPs who have independent, appropriately managed schedules can generate revenue that covers salary and benefits. Billing and coding for APPs can be complex, but once regulatory issues are understood, these aspects become straightforward and can be easily applied to gastroenterology practices. There is an ongoing need for more formal training and onboarding resources, which could be met by national gastroenterology and hepatology societies. This article reviews the various ways in which APPs can be incorporated into gastroenterology and hepatology care.

Advanced practice providers (APPs), including nurse practitioners (NPs), physician assistants (PAs), certified registered nurse anesthetists, and nurse midwives, are licensed professionals who bring important skills to contemporary health care delivery systems and medical practices. This article reviews the various ways in which APPs can be incorporated into gastroenterology and hepatology care, whether it is an independent, single-specialty practice; a gastroenterology practice within a multispecialty clinic; or an academic setting. In each of these instances, APPs can augment clinical care, expand the number of patients seen and managed, and allow team members to provide care that maximizes their professional scope of practice. Anesthesia care provided by anesthesiologists and certified registered nurse anesthetists is a complex care delivery system that is beyond the

Keywords

Advanced practice provider, nurse practitioner, physician assistant, shared visits

scope of this article, and nurse midwives do not generally work within gastroenterology practices. Thus, this article focuses on NPs and PAs, particularly the differences between the titles; payer regulations concerning billing and reimbursement; care delivery models that incorporate APPs into an efficient practice; and productivity expectations.

Nurse Practitioners and Physician Assistants

NPs are registered nurses who have taken advanced-, master's-, or doctoral-level training and have graduated from an accredited NP program. They are licensed by state, and, as such, their scope of practice varies by state, with more than 20 states permitting independent practice.¹ According to the American Association of Nurse Practitioners, there are approximately 248,000 NPs in the United States, with 78% working in a primary care setting.² Each year, more than 26,000 NPs complete academic programs. Approximately 50% of NPs hold hospital privileges, and 87% accept Medicare patients. NPs hold prescribing privileges, including for controlled substances, in all 50 states. In 2017, the mean base salary for an NP was \$105,546.²

PAs trace their history to 1965, when physicians and educators recognized an impending shortage of primary care physicians. That year, Dr Eugene Stead of Duke University created the first class of PAs, which consisted of 4 Navy Hospital Corpsmen who had received extensive medical training during military service. Currently, there are approximately 126,000 PAs in the United States.³ Approximately 70% of PAs work in specialties outside of primary care, although specialization patterns vary by geographic region within the United States.⁴

PAs must complete a 2-year curriculum and pass a national certifying examination. To maintain certification, PAs must pass a recertifying examination every 10 years and obtain 100 credits of continuing medical education every 2 years. During training, PAs perform over 2000 hours of supervised clinical practice distributed among numerous medical and surgical specialties. By 2020, all PA programs must award a master's degree. PAs are licensed by state and, although they practice in health care teams with physicians, they can bill for independent visits according to the Centers for Medicare and Medicaid Services (CMS). As with NPs, PAs can prescribe medications, including controlled substances, in every state. In 2017, the median annual salary for PAs working full-time in the United States was \$105,000.⁴ The American Academy of Physician Assistants provides information regarding optimal team practice and how such an approach intersects with various state regulations.⁵

As of 2016, approximately 19% of gastroenterology practices employed NPs and 14% employed PAs.⁵⁻⁷ Both types of APPs are utilized in the inpatient and outpatient settings. Until the 1990s, use of APPs in gastroenterology practices was rare, as most practices were part of a larger health care system or multispecialty clinic, or were independent, single-specialty practices with fewer than 5 physicians. In the 1990s, independent gastroenterology practices began to merge and form larger practices (eg, Minnesota Gastroenterology PA [MnGi], where senior author Dr John I. Allen served as an officer from 1991-2012).

As practices grew and more outpatient offices and hospitals needed daily coverage, APPs were integrated into new care delivery models that were based on provider teams as opposed to traditional, single-physician models. At MnGi, there was initial reluctance to employ APPs out of concern for referring physician perceptions. The first NP was hired to provide care for hepatitis C virus-infected patients undergoing interferon-based therapy, and the first PA was hired to provide care in partnership with a physician for a rural outreach practice. These APPs soon demonstrated their skills and financial sustainability, and more APPs were hired to provide outpatient coverage for subspecialty service lines (eg, inflammatory bowel disease [IBD], esophageal disorders, functional gastrointestinal disorders) and inpatient coverage in all of the practice's hospitals. Today, there is approximately 1 APP for every 3 doctors at this practice.

Billing and Reimbursement

Generally, APPs are reimbursed by payers for the same range of medical and surgical services as physicians, but the enrollment, billing, documentation, and level of physician supervision or collaboration requirements can vary by payer.⁸ Medicare provides 3 primary mechanisms by which APPs can be billed for evaluation and management services: independently under the APP's National Provider Identifier, as a shared/split service with a physician, or incident to a physician's professional service (Table 1).⁸⁻¹⁰

Medicare reimburses independent APP services at a rate of 85% of the Medicare Physician Fee Schedule for all inpatient and outpatient settings. Some commercial payers reimburse 100% of a physician rate for independent services rendered by an APP, although it varies by region and payer. Regardless, the APP must use his or her National Provider Identifier when billing for procedures.

Shared/split services are reimbursed by Medicare at 100% of the Medicare Physician Fee Schedule; however, there are strict rules about physician involvement in the

Table 1. Summary of APP Billing and Coding

Type of Service	Appropriate Site(s) of Service	Billable NPI	Medicare Reimbursement Level ^a
Independent	All inpatient and outpatient settings	APP	85% ^b
Shared/split	Hospital inpatient/outpatient and emergency department settings (not a procedure or critical care)	MD	100%
Delegated (incident-to)	Nonhospital office or clinic setting (established patients only)	MD	100%

APP, advanced practice provider; MD, medical doctor; NPI, National Provider Identifier.

^aRefers to the percent of the Medicare Physician Fee Schedule that Medicare will reimburse.

^bSome commercial payers reimburse APP services at 100% of the physician level, although it varies by region and payer.

visit, medical necessity, and documentation that must be adhered to. A shared/split service occurs when both the APP and the supervising physician provide face-to-face service to the same patient on the same day.^{8,10} There must be a medical reason for the supervising physician to be involved in order for CMS to pay an additional 15%. Also, the supervising physician must personally document his or her involvement and demonstrate that he or she performed all or some portion of the history, examination, or medical decision-making components of the evaluation and management service. The service must be performed in a hospital inpatient/outpatient or emergency department setting, and cannot be a procedure or critical care service. Documentation of a shared/split visit must be able to withstand a Medicare audit. Of note, most current electronic medical records can identify the specific person who enters documentation.

Although incident-to billing allows for a 100% reimbursement rate, the specific requirements can be challenging to implement, and, if done incorrectly, can result in compliance risk and sanctions.⁸ A physician must see a patient initially, establish the diagnosis, and initiate the course of treatment. The APP can then see the patient in a return visit for the same medical issue (but not a new issue) and follow or adjust the treatment plan. The physician must be present on the premises for immediate consultation but does not need to see the patient directly for each visit, and he or she must maintain active participation in the course of treatment. The physician and APP must be employed by the same medical group. Billing is applicable only for nonhospital, clinic-based services. It is recommended (but not universally required) that the physician review and cosign incident-to notes in order to demonstrate regulatory compliance in the case of an audit. Incident-to billing cannot be used for new patients or new conditions in an established patient. If all incident-to requirements are not met, the service

must be billed as an independent service under the APP's National Provider Identifier. These rules may make it impractical for many practices to utilize incident-to billing in a compliant manner.

Further information and specific rules can be found on the CMS website.^{9,10} The American Academy of Physician Assistants also provides a comprehensive guide to billing and reimbursement for APPs.⁸

Care Delivery Models

Advanced Practice Providers in Independent Gastroenterology Practices

Since the late 1990s, many gastroenterology practices have employed APPs in various roles, partly due to expanding coverage demands, but also because of the patient-centered, high-value care that APPs can provide in a variety of practice settings.¹¹⁻²⁸

Successful gastroenterology practices rely on a steady infusion of new patients into their ambulatory clinics and the ability to schedule gastroenterologists into procedural units. Typically, the majority of new patient referrals that are seen in an ambulatory setting will require endoscopy of some type, presenting a substantial scheduling burden for physician partners. Certain patients require ongoing management of a chronic condition, such as IBD, a functional gastrointestinal disorder, chronic liver disease, or gastroparesis. APPs who are initially hired with general medical training can be mentored over a 3- to 6-month period to gain specialized expertise in the management of each of these chronic conditions. Using the MnGi experience as a guide, approximately 75% of return patients can be managed in a team-based situation, with APPs providing continuity of specialized care in partnership with a patient's identified attending physician. Quality, clinical outcomes, and patient satisfaction can remain high with this model.^{7,11,12}

This team-based model can be designed such that APPs can bill for independent services for the majority of visits, with the attending physician briefly visiting the patient if needed or if converting to a shared/split service. Another model involves an attending physician working with 2 or even 3 APPs in a fully shared visit during a clinic session. With this method, some community physicians see and supervise 20 to 30 patients in a 4-hour period. Because all revenue accrues to the practice, this form of team-based care is financially beneficial, although the practice must remain mindful of the Medicare rules for shared/split billing so as to avoid compliance risk. This may not be the case when the physician and APP are employed by a health care system or within an academic practice, and will depend upon the funds flow model. Importantly, both CMS and commercial payers have noted that augmented payments for patient visits billed under a physician's National Provider Identifier, when both the physician and APP participate in providing care, occur frequently and may not be justifiable using the criteria of medical necessity. There have been some informal discussions of commercial payers possibly eliminating these augmented payments. Practices should take this into account as they model their revenue expectations and should pay attention to regional payer trends.

Gastroenterology practices have incorporated APPs successfully into subspecialty clinical service lines not only in the ambulatory setting, but also in inpatient care delivery. APPs can learn the intricacies of gastrointestinal disorders that present to the inpatient service and manage new patient consults and follow-up care when they are partnered effectively with attending physicians. APPs provide the first point of contact for hospitalists and referring physicians because they are always present and can develop close working relationships with referring services. Moreover, because attending physicians rotate through services, APPs can provide continuity of care. With appropriate triage and algorithms, they can evaluate the need for endoscopic or physiologic procedures and schedule for physicians. In some services, they may even perform endoscopic procedures for routine screening colonoscopy and flexible sigmoidoscopy.^{7,15,16,29-34} As noted previously, APPs working in the inpatient setting have certain restrictions on their ability to bill independently, and careful attention should be paid to CMS and commercial regulations in this area.

In addition to providing direct patient care during visits, APPs can be utilized for specialized teaching, especially for injection-based biologic therapies and cognitive behavioral care for functional gastrointestinal disorders.¹¹⁻¹⁴ Use of an NP or a PA that has the capability of generating bills for nonbillable services should be scrutinized carefully from a financial standpoint. Several

practices have discussed how APPs might be developed into practice leaders, including becoming partners and assuming positions in governance.

Advanced Practice Providers in Health Care Systems and Academic Practices

Governance, financial funds flow, care delivery, and employment status are often quite different between an independent, community-based practice and a nonacademic health care system or academic practice model. Often in a multispecialty clinic, health care system, or academic medical center, both APPs and physicians are employees of the medical center. Compensation and funds flow are constructed in various ways, but usually the shared model of practice becomes financially unsustainable because 2 providers who are capable of billing clinical services are simultaneously involved with a single patient, thus generating only a single bill.

The most common team-based, academic practice model uses APPs to augment care within specific clinical service lines. APPs can be onboarded and trained to deliver high-quality care for IBD patients, patients with functional gastrointestinal disorders, hepatology patients, patients pre- and post-liver transplantation, and others. Typically, an attending physician provides an initial consultation and ongoing management is shifted to a trained APP, with the physician seeing patients every second or third return visit and supervising care between visits. (If desired, the APP can perform between-visit care.) As mentioned previously and similar to community practice, approximately 75% of return visits can shift to an APP, freeing up faculty schedules for new patients and increasing access to the health care system. Success of this model depends on several factors, summarized in Table 2.

A number of medical and academic centers are using APPs in ways that vary compared to the more common models discussed previously. For example, Johns Hopkins Medical Center and the University of Oregon have developed APP educational programs that usually last 1 year and involve close mentoring and even training in routine endoscopic procedures.⁷

The use of nonphysicians to perform upper and lower endoscopy dates back more than 20 years. Multiple studies have reported success in training APPs to perform endoscopy, monitoring their ongoing performance and publishing their clinical outcomes.²⁹⁻³⁴ Most published studies originate in academic training centers, and several publications emphasize the effective use of APPs for extending the reach and impact of colorectal cancer screening using both flexible sigmoidoscopy and colonoscopy in areas underserved by physician endoscopists.^{32,33} Countries or communities that use flexible sigmoidoscopy as a primary colon cancer screening tool have

Table 2. Factors That Determine Successful Utilization of APPs

Factor	Impact(s)
Patient triage and schedule management	Directs patients to appropriate care, correct person, and right location; facilitates access
Team-based care	Physician endorsement of care model and validation of APPs as integral members
Active sharing with written policies	Helps all staff understand scope of practice and triage rules, and validates APP role
Shifting of established patients to APPs	Usually 75% of returning patients can be shifted to APPs in a gastroenterology practice, freeing up access to new patients
Independent schedules for APPs	Efficient patient flow and utilization of APPs
Careful onboarding, training, and quality assurance	Fully develops professional knowledge, status, and contribution of APPs who did not receive gastroenterology-specific schooling during training
Monitoring of patient satisfaction	Alerts practices to potential problems of communication and care

APP, advanced practice provider.

reported success when APPs provide screening as part of a structured cancer prevention program.^{32,33} Development of new endoscopic technologies that ease insertion of the endoscope into the cecum can lead to new ways to use APPs in the endoscopy suite.³⁵ For example, several APPs (or technicians) might work in an endoscopy unit and initially pass a self-propelled colonoscope, calling in a gastroenterologist to perform polypectomy as required. To date, such a model has not been widespread in the United States, but with an evolution toward value-based reimbursement and risk-based contracting, this model might become financially beneficial if quality and value remain high.

New patients are traditionally seen first by physician consultants, but models that direct certain patient groups to APPs have also been implemented. Open-access endoscopy, in which patients can be referred directly for a procedure without prior consultation, is a common practice in numerous parts of the United States. Many patients have comorbid conditions or factors—including opiate use, obesity with obstructive sleep apnea, antiplatelet or anticoagulant medication use, diabetes, and hypertension—that require consultation before an endoscopic procedure can be scheduled. Patients needing preprocedure counseling, medication adjustment, or special consideration of their respiratory status now are often directed to an APP-managed consultation. Other patients with conditions that are less complex, or for which a straightforward diagnostic algorithm exists, can be managed initially by an APP with good patient satisfaction and acceptance by referring physicians when stakeholders are educated about a well-defined programmatic approach.

APPs often are used in bridge clinics during transitions of care from an inpatient to an ambulatory setting.

This model is used in primary care and in multiple specialties, including hepatology. Dr Allen helped develop such a model at Yale New Haven Hospital for the large volume of patients with advanced liver disease.³⁶ One in 7 discharges from the hospital involve patients with chronic liver disease, and a detailed analysis identified over 2300 patients with decompensated cirrhosis whose primary health care was within the Yale system.³⁶ Of those patients, approximately 70 (3%) accounted for 85% of hospital 30-day readmissions after discharge.³⁶ Many readmissions occurred because of patients' confusion about their medications or because they could not garner needed support in the immediate discharge period. The gastroenterology and hepatology division developed a system whereby the inpatient APP, who rounded on hepatology patients, had a weekly ambulatory clinic where discharged patients could be seen within 7 days. The readmission rate for patients seen in the follow-up clinic was lower than for patients who were not seen in the clinic (unpublished observation).

APPs can provide urgent appointments for established patients whose condition worsens or who experience new symptoms. For example, patients with IBD who are undergoing a flare or patients with decompensated cirrhosis who regain ascites often must be seen quickly to avoid either an emergency room visit or a hospital admission. Reasons for urgent care can be related to medical, behavioral, or social factors.³⁷ The need for practices to provide after-hours access, same-day appointments, and response to alerts generated by remote monitoring of patients' conditions is an emerging trend, especially as the health care system moves to value-based reimbursement and financial risk contracting. These issues have been discussed in detail in several recent publications and are beyond the scope of this paper.³⁷⁻³⁹

As new patient care tools emerge, especially in the areas of telehealth, remote patient monitoring, video visits, electronic consults, and video on demand, use of APPs will likely expand.^{40,41} Recently, CMS has issued a final rule that identifies billing codes and reimbursement for video visit check-ins and electronic consults.⁴²

Social determinants of health (behavioral issues, food insecurity, and opiate use) are emerging as important factors in predicting health status and resource use for health systems.³⁷ Developing a methodology to risk-stratify patients according to their social determinants of health and then defining referral sources for either internal or external management are critical for some patients. These issues can be managed by APPs in a team-based approach.

Advanced Practice Provider Productivity and the Impact of Supervision Requirements

Productivity and efficiency of APP work depends, in large part, on supervision requirements in the work setting. Supervision requirements for both NPs and PAs are dependent on license requirements (usually dictated by state regulations), institutional requirements, payer regulations, and individual physician requirements.⁴³ Legally required supervision (by state or payer regulations) refers to situations in which one professional is required to supervise another as a condition of service delivery. Regulations might include terms such as supervise, delegate, collaborate, or consult⁴³; thus, it is important for each practice to carefully review specific regulations that apply locally. Collaborative practice agreements are often utilized. These are written agreements that codify the relationship between APPs (or other nonphysician professionals) and the supervising physician. Depending on the state and institution involved, requirements may vary between NPs and PAs. In practices or states where requirements for supervision are more restrictive, there is considerable evidence that productivity and patient access suffer.⁴³⁻⁴⁵ A systematic literature review demonstrated that care provided by APPs is equivalent in quality to care provided by physicians when the scope of practice and the practice setting are well constructed and defined.⁴⁶ When APPs are restricted from entering orders, prescribing medications (including controlled substances), designing care plans, and performing other standard care processes, delays in treatment inevitably result, and reduction in the number of patients seen can impact access. Disruptions in the clinic flow for both the APP and the supervising physician often occur, as specific services that might require supervision cannot always be anticipated during scheduling or previsit planning.

Training, Onboarding, Quality Assurance, and Productivity Expectations

Once APPs are fully trained and begin working with a full schedule of patients, they should be capable of generating sufficient revenue to fully cover their salary and benefits. There are few, if any, formal training and onboarding documents specific for gastroenterology or hepatology APPs available in the literature or from national gastroenterology societies. There are some options for coursework available from national societies.⁴⁷ A number of specialty review courses (intended mostly for certification maintenance) are available each year, usually as a 3- to 4-day course; these serve as foundations for learning gastroenterology and hepatology basics.

Large practices and health systems develop their own onboarding process. Some institutions develop mini-fellowship programs to train APPs in specific clinical fields (eg, the University of Michigan has developed a year-long coursework in psychiatry and palliative care). Because these are not certified training programs, there is no central source of information. Typically, initial onboarding takes 6 to 12 months and usually is designed as an apprenticeship with a faculty or practice partner.

During the onboarding process, independent productivity typically does not occur. APPs accompany physicians into the physician clinic or on hospital rounds, and there are no (or few) independent billing episodes. Dr Allen developed a 3-month-long onboarding process at MnGi, with an additional 3 months of subsidized work. By 6 months, APPs in the practice were expected to have independent schedules and work toward full productivity by their 1-year anniversary. MnGi employs more than 20 APPs, divided between clinic- and hospital-based practice. Mean work relative value unit (RVU) production for clinic-based APPs is 2350 (full-time) with a range of 1500 to 3400. Work RVUs for hospital-based APPs range from 2300 to 2800 annually. There are some well-established NPs with fully developed, independent gastroenterology practices that generate over 4500 work RVUs annually.

Schedules for APPs mirror those for physicians once the APP is fully trained and productive. Visits for established patients typically are scheduled for 30 minutes; thus, in a 4-hour session, the APP can see 6 to 8 patients, coding at levels similar to those of physicians. Frequently, APPs are used for other types of care, such as postdischarge urgent visits and teaching self-injections to patients, so their schedules tend not to be as full or efficient as those of physicians. Hospital-based APPs in many practices are the first to see new patient consults and also follow patients during subsequent visits. Local traditions dictate the level of supervision needed for inpatient services.

Using a practice or health care system average reimbursement rate and the work RVUs assigned to clinical services (ie, new patient consultation, established patient visits) allows calculating the average daily production requirements for each APP to be straightforward. A well-trained and experienced APP should be able to see patients at nearly the same rate as a physician, although many practices define APP visit durations that are longer than those of physicians as a patient satisfier. The overall goals of a team-based model are to shift new patient visits to physicians, shift established visits to APPs (to the extent possible), and allow gastroenterologists to provide needed endoscopic services that meet practice demands.

Quality indicators for APPs should mirror those of nonprocedural physicians. Routine collection of patient satisfaction surveys now is a must. Metrics that reflect on-time performance, coding levels, overall productivity, and referral satisfaction are the most frequent indicators of overall quality. Other than patient survey results, there are very few metrics for cognitive gastroenterology practice for physicians.

Summary

APPs such as NPs and PAs have become important team members for gastroenterology practices in almost all settings, including independent practices, multispecialty clinics, and nonacademic and academic health care systems. Reasons for bringing APPs into a practice are occasionally based on financial considerations, but also include improving access, enhancing patient experience, managing patients with chronic conditions who require medication management, staffing bridge clinics during transitions of care, and providing preprocedure consultations. There is an impending shortage of physicians in primary care and in specialties such as gastroenterology⁴⁸; therefore, improving access and extending preventive care to underserved populations have become reasons to expand the professional partnerships between physicians and APPs. Acceptance by referring physicians and patients can be high when managed well and with appropriate expectation-setting and education.

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