An option for improving access to outpatient general neurology

Stephen C. Ross, MD

Summary

Creating a team of nurse practitioner/physician assistant providers with a supervising physician is one potential model to extend limited physician resources for those medical specialties such as neurology, whose outpatient access is suboptimal. We offered new patient appointments with the access team. Monthly lead time (time to third available appointment) revealed that overall new-patient access improved from an average time-to-appointment wait of 299 days down to 10 days. Patients completed an anonymous satisfaction survey about providers before and after the launch of the new access team; the results demonstrated preserved patient satisfaction with providers in this new team-based model.

Timeliness of care is an essential element of a quality health care system.¹ The ability to provide timely outpatient appointments with a medical provider is a principal component of timely access to care and patient-centered care. Lead time (time from when a referral is placed until a patient is actually seen, measured as the number of days until the third available visit) is a standard means to quantify timely outpatient appointments. Lead time varies considerably depending on the type of medical care sought, the geography in which a patient lives, and the type of patient insurance.

Health systems are exploring a number of novel models to try to address inadequate access to outpatient care. Recent examples include the embedding of a general pediatrician within a pediatric gastroenterology practice to assist with access for low to moderate complexity referrals² and shared medical appointments for patients with kidney stones.³ Penn State University Milton S. Hershey Medical Center (PSHMC) piloted a team approach (labeled the access team) in an effort to reduce lead time. A physician–nonphysician clinician (nurse practitioners and physician assistants) team model was developed that allowed the system to extend available physician resources in an effort to improve timeliness of outpatient care.

Utilization of nonphysician clinicians (e.g., nurse practitioners or physician assistants) developed in the 1960s during a perceived shortage and maldistribution of physicians.⁴

Department of Neurology, Penn State University College of Medicine, Hershey, PA.

Funding information and disclosures are provided at the end of the article. Full disclosure form information provided by the authors is available with the **full text of this article** at Neurology.org/cp.

Correspondence to: sross2@hmc.psu.edu

Referring physicians and patients were educated regarding the concept and the role of the access team as well as alternate options; 95% of referring providers selected the access team.

Nonphysician clinician providers currently are used widely in the United States, accounting for an increasing share of outpatient care delivered.⁵ A total of 59.8% of family physicians use nurse practitioners, physician assistants, or certified nurse midwives.⁶ Nonphysician providers have been widely utilized in specialty care as well. Some of the more recent published examples include palliative care,⁷ cystic fibrosis,⁸ otolaryngology,⁹ and pediatric neurosurgery.¹⁰ A total of 31.6% of neurology practices in 2010 reported employing nurse practitioners or physician assistants, with 84.5% of them seeing follow-up patients and 32.8% seeing new patients.¹¹ The American Academy of Neurology Workforce Task Force in 2013 proposed that one strategy of helping to ensure access to neurologic services is to utilize supervised nurse practitioners or physician assistants.¹² These types of providers have been used successfully in stroke and telestroke,¹³ Parkinson disease,¹⁴ and headache management.¹⁵ There are no published examples of utilizing a physician–nurse practitioner/physician assistant team to improve outpatient general neurology access.

General neurology was chosen to pilot the Penn State access team model.

METHODS

Setting

Neurology as a specialty has long experienced demand that overwhelms supply, particularly in nonurban areas. PSHMC Department of Neurology provides primary, secondary, and tertiary care with the full spectrum of outpatient services in Hershey, Pennsylvania. Although patient referrals routinely come from a 4-state referral base, the primary service area is south central Pennsylvania.

Planning the project

Overview The PSHMC determined to pilot a novel delivery model to try to improve access to outpatient medical care and selected adult general neurology as the first project. A team was recruited and trained to evaluate new general neurology referrals. This team served as a front-line evaluation unit, evaluating patients with new neurologic symptoms or signs and providing direction for future care needs. After evaluation, the access team would direct patients to 1 of 3 directions: to the primary care physician (e.g., no neurologic disease present or diagnosis of migraine now effectively treated) or to a subspecialty clinic (e.g., diagnosis of multiple sclerosis made) or to a general neurology physician who provides ongoing care (e.g., diagnosis of Parkinson disease responding to treatment).

The access team was launched in January 2013. Referring providers were provided the option of the next available general neurology physician or the next available access team member. The team consisted of 1 neurology physician, 2 nurse practitioners, and 1 physician assistant along with a supporting nursing and medical staff. Total added full-time equivalent (FTE) employees for the pilot was 4.5 (2 nurse practitioners each 1.0 ambulatory FTE, 1 physician assistant 1.0 ambulatory FTE, medical office assistant 1.0 FTE, licensed practical nurse 0.5 FTE).

Physician

A senior general neurology board-certified physician was chosen as the team leader. This physician had been practicing neurology for 16 years. The physician served as the principal

recruiter and trainer of the nurse practitioner and physician assistant team members. In the clinic, the nonphysician clinicians evaluated new general neurology referrals while the neurologist served as supervisor and clinical resource. The physician helped the team members formulate localization, differential diagnosis, and care plan while also reviewing images/diagnostic studies and dictated notes.

Nonphysician clinicians

Two nurse practitioners and one physician assistant were recruited. Education of the nonphysician clinicians was informal and adapted to the individual provider's background and knowledge base. The process entailed 4 stages of training: stage 1: didactic and reading instruction (core neurology topics, e.g., identification and evaluation of stroke, differentiation of primary vs secondary headache, evaluation and diagnostic workup for gait dysfunction), 4–6 weeks; stage 2: observation and clinical hands on training, 2–4 weeks; stage 3: direct patient care with direct supervision, 2 weeks; stage 4: ongoing review and feedback, 8 months and still training.

Scheduling

All incoming new general neurology referrals were offered an appointment with an access team member (nurse practitioner or physician assistant with physician supervision) or with the next available physician. During the course of the pilot, there was an average of 52 new referrals per week, with a peak of 80 per week during June. The overall trend as to number of referrals was unchanged. During this pilot, the access team was never advertised or promoted. As consult requests arrived, referring providers were given the option of the access team. Referring physicians and patients were educated regarding the concept and the role of the access team as well as alternate options; 95% of referring providers selected the access team.

The nonphysician clinician weekly clinic template allowed for 6 half-day (4-hour) clinics of new patients and 3 half-day clinics of follow-up patients (1 new patient per hour or 1 return patient per half hour). At full capacity, the access team was able to see 72 new consults per week and 72 follow-up visits per week.

Assessment

We sought to analyze whether this model would succeed in reducing new patient wait time for general neurology while maintaining patient satisfaction with the care provider.

Measures

Lead time Lead time for general neurology (access team or physician) was collected and recorded for 8 months prior to the onset of the pilot and for the 8 months of the pilot. Although not collected prospectively, the access team clinic fill rate was noted to remain constant during the pilot period. Although there were unfilled appointments due to late cancellations or no shows, there were no gaps in clinic schedules in advance.

Patient satisfaction

Press Ganey anonymous patient satisfaction surveys were utilized to assess patient acceptance of access team providers. General neurology nurse practitioner/physician assistant total provider scores were collected before and after the pilot study. Before the study, there was a single physician assistant who had been providing outpatient general neurology services. The June and September 2012 quarterly care provider total raw scores for this individual were collected. The March and June 2013 quarterly care provider total raw scores for the access team, 2 nurse practitioners and 1 physician assistant, were collected.

Outcome and analysis

Lead time For the year prior to launching the access team, lead time averaged 299 calendar days. During the pilot period, 1,441 new consult patients were evaluated and 722 follow-up patients seen. For the 8 months of the pilot, lead time averaged 10 calendar days (figure) for the access team. By the end of this pilot, lead time for physicians was 58 days. The majority of referring providers continued to choose the access team.

Figure Lead time (pre-access team = 2012, access team = 2013)

Patient satisfaction

Patients' grading of the general neurology nonphysician provider before the launch of the access team was an average of 89.25. The average nonphysician provider score at the end of the first 6 months of the access team was 89.25.

DISCUSSION

New patient referrals to general neurology were offered the access team or next available physician appointments. Of those selecting the access team, there was a 30-fold reduction in lead time without any major decline in patient satisfaction with providers.

Interpretation and relevance

Inadequate outpatient access to medical care is a challenge for specific types of providers especially in nonurban regions. Future demand for neurologists will be fueled by the aging of the US population, the higher health care utilization rates of neurologic services, and a greater number of patients gaining access to the health care system due to the Patient Protection and Affordable Care Act.¹² There was an 11% shortfall of neurologists in the United States in 2012 and an anticipated 19% shortfall by 2025.¹⁶

The 2010 Pennsylvania Department of Health report shows only 414 board-certified neurologists in Pennsylvania, and of all neurologists in Pennsylvania, 49% anticipate they will no longer be practicing in Pennsylvania in 10 years.¹⁷ According to personal communication with the Pennsylvania Department of Health, preliminary data from the 2012 Physician Licensure Survey shows that there are 4.8 neurologists per 100,000 Pennsylvania population and only 3.6 in the PSHMC primary service area (compared to 5.2 per 100,000 nationally¹⁶ and a state high of 12.1 per 100,000 in Massachusetts¹⁶). Given the current undersupply of physicians, the geographic maldistribution of physicians, the projected increased demand, and the lack of a unified plan to address this mismatch, alternate models of care delivery are needed. The physician–nurse practitioner/physician assistant model is one potential option that can accomplish this.

Limitations

This team-based model only addresses one aspect of the access challenge—that of timely evaluation of new outpatient consultation. It does not address the need for ongoing care. There continues to be the challenge of identifying who will manage the ongoing care for more complex patients. This also does not address that some physicians and some patients prefer to be evaluated by a physician. For example, the average Press Ganey care provider total score for physicians during the access pilot was 92.24 (compared to the nonphysician clinician average of 89.25). Reason for referral and diagnosis made was not collected and tabulated. Most of the referrals were for symptoms (e.g., headache, dizziness, memory dysfunction, gait dysfunction, numbness, weakness, pain, involuntary movements). Complexity of cases evaluated by

Of those selecting the access team, there was a 30-fold reduction in lead time without any major decline in patient satisfaction with providers.

the access team was the same as those evaluated by physicians. This pilot also did not evaluate and compare quality of care for the team compared to physician-only models. Analysis of each one of these would be helpful to better assess value of this model.

This model is cost-effective only in the context of a health system where downstream effect of the access team is factored in (e.g., resultant diagnostic studies, admissions, surgical referrals).

CONCLUSION

The access team model successfully improves outpatient access to general neurology (reduces lead time). The physician–nurse practitioner/physician assistant team serves as one potential model for extending the utilization of a limited resource (physicians) and addressing inadequate outpatient access to medical care.

REFERENCES

1. Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, DC: National Academy Press; 2001.
2. Di Guglielmo MD, Plesnick J, Greenspan JS, Sharif I. A new model to decrease time-to-appointment wait for gastroenterology evaluation. *Pediatrics* 2013;131:1632–1638.
3. Jhagroo RA, Nakada SY, Penniston KL. Shared medical appointments for patients with kidney stones new to medical management decrease appointment wait time and increase patient knowledge. *J Urol* 2013;190:1778–1784.
4. US Congress, Office of Technology Assessment, Nurse Practitioners, Physician Assistants, and Certified Nurse-Midwives. A Policy Analysis, Health Technology Study 37. Washington, DC: US Government Printing Office; 1986.
5. Hing E, Uddin S. Physician assistant and advance practice nurse care in hospital outpatient departments: United States, 2008–2009. *NCHS Data Brief* 2011;77:1–8.
6. Peterson LE, Phillips RL, Puffer JC, Bazemore A, Petterson S. Most family physicians work routinely with nurse practitioners, physician assistants, or certified nurse midwives. *J Am Board Fam Med* 2013; 26:244–245.
7. Smith AK, Thai JN, Bakitas MA, et al. The diverse landscape of palliative care clinics. *J Palliat Med* 2013;16:661–668.
8. Brown RF, Willey-Courand DB, George C, et al. Non-physician providers as clinical providers in cystic fibrosis: survey of U.S. programs. *Pediatr Pulmonol* 2013;48:398–404.
9. Bhattacharyya N. Involvement of physician extenders in ambulatory otolaryngology practice. *Laryngoscope* 2012;122:1010–1013.
10. James HE, MacGregor TL, Postlethwait RA, Hofrichter PB, Aldana PR. Advanced registered nurse practitioners and physician assistants in the practice of pediatric neurosurgery: a clinical report. *Pediatr Neurosurg* 2011;47:359–363.
11. Adornato BT, Drogan O, Thoresen P, et al. The practice of neurology, 2000–2010: report of the AAN Member Research Subcommittee. *Neurology* 2011;77:1921–1928.
12. Freeman WD, Vatz KA, Griggs RC, Pedley T. The workforce task force report: clinical implications for neurology. *Neurology* 2013;81:479–486.
13. Demaerschalk BM, Kiernan TE, Investigators S. Vascular neurology nurse practitioner provision of telemedicine consultations. *Int J Telemed Appl* 2010;2010.
14. Stewart RM, Desaloms JM, Sanghera MK. Stimulation of the subthalamic nucleus for the treatment of Parkinson's disease: postoperative management, programming, and rehabilitation. *J Neurosci Nurs* 2005;37:108–114.
15. Blumenfeld A, Tischio M. Center of excellence for headache care: group model at Kaiser Permanente. *Headache* 2003;43:431–40.

16. Dall TM, Storm MV, Chakrabarti R, et al. Supply and demand analysis of the current and future US neurology workforce. *Neurology* 2013;81:470–478.
17. Bureau of Health Planning. 2010 Pulse of Pennsylvania's Physician and Physician Assistant Workforce: A Report on the 2010 Surveys of Physicians and Physician Assistants, vol 4. 2012. Harrisburg, PA: Pennsylvania Department of Health; 2012.

STUDY FUNDING

No targeted funding reported.

DISCLOSURES

S.C. Ross has received travel reimbursement from Penn State University, the American Academy of Neurology, and the Pennsylvania Neurological Society; served as a consultant for Impact Network; and has provided independent medical review for Horizon Healthcare Consultants. Full disclosure form information provided by the authors is available with the **full text of this article at Neurology.org/cp**.

Related articles from other AAN physician and patient resources

Neurology® ● Neurology.org

Shared medical appointments improve QOL in neuromuscular patients: A randomized controlled trial

Published online before print June 18, 2014.

Education Research: Case logs in the assessment of medical students in the neurology outpatient clinic

April 22, 2014;82:e138–e141.

Neurology Today® ● Neurotodayonline.com

AN INNOVATIVE CARE MODEL: Individual vs. Group Visits: New Study Compares Quality of Life Outcomes for Neuromuscular Patients

July 3, 2014;14:1,5–8.

In Parkinson Disease, Group Patient Visits May Offer Unique Benefits

May 5, 2011;11:60–61.