

Improving Interprofessional Neurology Training Using Tele-Education

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Background: Neurological disorders are a leading cause of disability and death worldwide. Their burden on the health care system has substantially increased in the past 25 years, due to more effective treatments and longer life expectancies. The Veterans Health Administration has seen increases in neurology referrals and patients with neurologic disorders.

Observations: Collaborative efforts among primary care, geriatrics, neurology, psychiatry, physical medicine and rehabilitation, social work, and other disciplines are needed to properly care for veterans with neurologic disorders. Neurology education is an important tool for clinicians to better care for

veterans with neurologic disorders. The use of technology and online resources have improved education dissemination. This article describes how an annual neurology education program has expanded its reach and availability over 4 years.

Conclusions: A small, in-person neurology symposium evolved into an annual virtual conference that included more clinicians from outside the specialty. Increased participation and survey data suggest the seminar improved neurologic knowledge in non-neurologist clinical personnel and increased their comfort level during initial evaluations of neurologic disorders in veterans.

Neurologic disorders are major causes of death and disability. Globally, the burden of neurologic disorders continues to increase. The prevalence of disabling neurologic disorders significantly increases with age. As people live longer, health care systems will face increasing demands for treatment, rehabilitation, and support services for neurologic disorders. The scarcity of established modifiable risks for most of the neurologic burden demonstrates how new knowledge is required to develop effective prevention and treatment strategies.¹

A single-center study for chronic headache at a rural institution found that, when combined with public education, clinician education not only can increase access to care but also reduce specialist overuse, hospitalizations, polypharmacy, and emergency department visits.² A predicted shortage of neurologists has sparked increased interest in the field and individual neurology educators are helping fuel its popularity.³⁻⁵

TELE-EDUCATION

Educating the next generation of health professionals is 1 of 4 statutory missions of the US Department of Veterans Affairs (VA).⁶ Tele-education (also known as telelearning and distance learning) deviates from traditional in-person classroom settings, in which the lecture has been a core pedagogic method.⁷ Audio, video, and online technologies provide health education and

can overcome geographic barriers for rural and remote clinicians.⁸ Recent technological improvements have allowed for inexpensive and efficient dissemination of educational materials, including video lectures, podcasts, online modules, assessment materials, and even entire curricula.⁹

There has been an increase in the awareness of the parallel curriculum involving self-directed and asynchronous learning opportunities.¹⁰ Several studies report knowledge gained via tele-education is comparable to conventional classroom learning.¹¹⁻¹³ A systematic review of e-learning perceptions among health care students suggested benefits (eg, learning flexibility, pedagogical design, online interactions, basic computer skills, and access to technology) and drawbacks (eg, limited acquisition of clinical skills, internet connection problems, and issues with using educational platforms).¹⁴

The COVID-19 pandemic forced an abrupt cessation of traditional in-person education, forcing educational institutions and medical organizations to transition to tele-learning. Solutions in the education field appeared during the pandemic, such as videoconferencing, social media, and telemedicine, that effectively addressed the sudden cessation of in-person medical education.¹⁵

Graduate medical education in neurology residency programs served as an experimental set up for tele-education during the pandemic. Residents from neurology

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TABLE 1. 2020 Veterans Health Administration Neurology Seminar Participant Survey (N = 204)

Prompt	Strongly disagree, No.	Disagree, No.	Neutral, No.	Agree, No.	Strongly agree, No.	Mean
Satisfied with learning activity	0	0	11	77	116	4.5
Would recommend this course	0	0	11	75	118	4.5
Learned new knowledge and skills	0	0	12	78	114	4.5
Learning activity was appropriate to professional needs	0	0	13	91	100	4.4
Can apply knowledge and skills learned to clinical practice	0	0	15	96	93	4.4
Training modality was effective for learning	0	0	13	93	98	4.4

training programs outlined the benefits of a volunteer lecturer-based online didactic program that was established to meet this need, which included exposure to subspecialty topics, access to subspecialist experts not available within the department, exposure to different pedagogic methods, interaction with members of other educational institutions and training programs, career development opportunities, and the potential for forming a community of learning.¹⁶

Not all recent educational developments are technology-based. For example, instruction focused on specific patient experiences, and learning processes that emphasize problem solving and personal responsibility over specific knowledge have been successful in neurology.^{17,18} Departments and institutions must be creative in finding ways to fund continuing education, especially when budgets are limited.¹⁹

ANNUAL NEUROLOGY SEMINAR

An annual Veterans Health Administration (VHA) neurology seminar began in 2019 as a 1-day in-person event. Neurologists at the Michael E. DeBakey VA Medical Center in Houston presented in 50-minute sessions. Nonspecialist clinical personnel and neurology clinicians attended the event. Attendees requested making the presentations widely available and regularly repeating the seminar.

The second neurology seminar took place during the COVID-19 pandemic. It was conducted online and advertised across

the Veterans Integrated Services Network (VISN) 16. The 1-day program had 204 participants who were primarily nurses (59%) and physicians (21%); 94% agreed with the program objectives (Table 1). Participants could earn CME credits for the 7 presentations primarily by VHA experts.

Based on feedback and a needs assessment, the program expanded in 2021 and 2022. With support from the national VHA neurology office and VHA Employee Education System (EES), the Institute for Learning, Education, and Development (ILEAD), the feedback identified topics that resonate with VHA clinicians. Neurological disorders in the fields of stroke, dementia, and headache were included since veterans with these disorders regularly visit primary care, geriatrics, mental health, and other clinical offices. Updates provided in the diagnosis and treatment of common neurological disorders were well received. Almost all speakers were VHA clinicians, which allowed them to focus on topics relevant to clinical practice at the VHA.

Attendance has increased annually. In 2021, 550 clinicians registered (52% nurses) and 433 completed the postseminar survey (Table 2). In 2022, 635 participants registered and 342 completed evaluations, including attendees from other federal agencies who were invited to participate via EES TRAIN (Training Finder Real-time Affiliate Integrated Network). Forty-seven participants from other federal agencies, including the US Department of Defense, National Institute of

Health, and Centers for Disease Control and Prevention, completed the feedback evaluation via TRAIN (Table 3). Participants report high levels of satisfaction each year (mean of 4.5 on a 5-point scale). Respondents preferred conventional lecture presentation and case-based discussions for the teaching format and dementia was the most requested topic for future seminars (Table 4).

The content of each seminar was designed to include ≥ 1 topic relevant to current clinical practice. The 2020 seminar covered topics of cerebrovascular complications of COVID-19 and living well with neurodegenerative disease in the COVID-19 era. In 2021, the seminar included COVID-19 and neurologic manifestations. In 2022, topics included trends in stroke rehabilitation. In addition, ≥ 1 session addressed neurologic issues within the VHA. In 2020, the VA Deputy National Director of Neurology presented on the VHA stroke systems of care. In 2021, there was a presentation on traumatic brain injury (TBI) in the military. In 2022, sessions covered long term neurologic consequences of TBI and use of telemedicine for neurologic disorders. Feedback on the sessions were positive (eAppendix, available at doi:10.12788/fp.0545).

At the request of the participants, individual presentations were shared via email by the course director and speakers. In collaboration with the EES, each session was recorded and the 2022 seminar was made available to registrants in TMS and EES TRAIN and via the VHA Neurology SharePoint.

DISCUSSION

The annual VHA neurology seminar is a 1-day neurology conference that provides education to general neurologists and other clinicians caring for patients with neurologic disorders. It is the first of its kind neurology education program in the VHA covering most subspecialties in neurology and aims at improving neurologic patient care and access through education. Sessions have covered stroke, epilepsy, sleep, amyotrophic lateral sclerosis, neuropathy, dementia, movement disorders and Parkinson disease, headaches, multiple sclerosis, neurorehabilitation, and telehealth.

TABLE 2. Professional Specialty, Veterans Health Administration Neurology Seminars 2020–2022

Specialty	2020, No.	2021, No.	2022, No.
Chiropractor	0	3	0
Dietitian	0	5	0
Kinesiotherapist	1	1	0
Nurse	120	226	198
Occupational therapist	0	2	0
Pharmacist	5	7	12
Physical therapist	0	3	0
Physician	43	79	81
Physician assistant	1	4	5
Psychologist	1	10	0
Radiologic technologist	0	2	0
Social worker	15	49	8
Speech pathologist	1	0	1
Other	17	42	28
Total	204	433	333

TABLE 3. 2022 Seminar Participants From Outside Veterans Health Administration

Setting	Responses, No. (%)
Academic institution	8 (17)
Health care services	19 (40)
Military Health System	1 (2)
Nonprofit (except health care)	2 (4)
Health agencies	9 (19)
Government agencies (nonmilitary)	3 (6)

^aCategories report by the Veterans Health Administration Employee Education System.

The seminar has transitioned from an in-person meeting to a virtual format, making neurology education more convenient and accessible. The virtual format provides the means to increase educational collaborations and share lecture platforms with other federal agencies. The program offers CME credits at no cost to government employees. Recorded lectures can also be asynchronously viewed from the Neurology SharePoint without the

TABLE 4. 2022 Participant Recommendations for Future Seminars

	Responses, No. (%)
Topics	
Dementia	234 (19.8)
Multiple sclerosis and related disorders	176 (14.9)
Stroke	175 (14.8)
Headache	165 (14.0)
Neuromuscular disorders	151 (12.8)
Movement disorder	140 (11.8)
Epilepsy	114 (9.6)
Learning format	
Case-based discussion	244 (41.9)
Conventional lecture	239 (41.1)
Breakout session with expert	75 (12.9)
Flipped classroom	22 (3.8)

ability to earn CME credits. These recordings may be used to educate trainees as well.

The seminar aims to educate all health care professionals caring for patients with neurologic disorders. It aims to eliminate neurophobia, the fear of neural sciences and clinical neurology, and help general practitioners, especially in rural areas, take care of patients with neurologic disorders. The seminars introduce general practitioners to VHA neurology experts; the epilepsy, headache multiple sclerosis, and Parkinson disease centers of excellence; and the national programs for telestroke and teleneurology.

Education Support in the VHA

The EES/ILEAD provides a wide variety of learning opportunities to VHA employees on a broad range of topics, making it one of the largest medical education programs in the country. Pharmacists, social workers, psychologists, therapists, nurses, physician assistants, and physicians have access to certified training opportunities to gain knowledge and skills needed to provide high-quality, veteran-centered care.

A review of geriatrics learning activities through the EES found > 15,000 lectures from 1999 to 2009 for > 300,000 attendees.²⁰ To our knowledge, a review of neurology-related learning activities offered by the EES/ILEAD has not been completed, but the study on geriatrics shows that a similar review would be feasible, given the integrated education system, and helpful in identifying what topics are covered, formats are used, and participants are engaged in neurology education at the

VHA. This is a future project planned by the neurology education workgroup.

The EES/ILEAD arranged CME credit for the VHA Neurology Seminar and assisted in organizing an online event with > 500 attendees. Technology support and tools provided by EES during the virtual seminar, such as polling and chat features, kept the audience engaged. Other specialties may similarly value a virtual, all-day seminar format that is efficient and can encourage increased participation from practitioners, nurses, and clinicians.

Future Growth

We plan to increase future participation in the annual neurology seminar with primary care, geriatrics, neurology, and other specialties by instituting an improved and earlier marketing strategy. This includes working with the VHA neurology office to inform neurology practitioners as well as other program offices in the VHA. We intend to host the seminar the same day every year to make it easy for attendees to plan accordingly. In the future we may consider hybrid in-person and virtual modalities if feasible. We plan to focus on reaching out to other government agencies through platforms like TRAIN and the American Academy of Neurology government sections. Securing funding, administrative staff, and protected time in the future may help expand the program further.

Limitations

While a virtual format offers several advantages, using it removes the feel of an in-

person meeting, which could be viewed by some attendees as a limitation. The other challenges and drawbacks of transitioning to the virtual platform for a national meeting are similar to those reported in the literature: time zone differences, internet issues, and participants having difficulty using certain online platforms. Attendance could also be limited by scheduling conflicts.¹⁶ Despite a large audience attending the seminar, many clinicians do not get protected time from their institutions. Institutional and leadership support at national and local levels will likely improve participation and help participants earn CME credits. While we are still doing a preliminary needs assessment, a formal needs assessment across federal governmental organizations will be helpful.

CONCLUSIONS

The annual VHA neurology seminar promotes interprofessional education, introduces neurology subspecialty centers of excellence, improves access to renowned neurology experts, and provides neurology-related updates through a VHA lens. The program not only provides educational updates to neurology clinicians, but also increases the confidence of non-neurology clinicians called to care for veterans with neurological disorders in their respective clinics.

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Disclaimer

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Ethics and consent

This project is exempt from institutional review board and research and development approval as no human subjects were involved.

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APPENDIX. 2022 Veterans Health Administration Neurology Seminar Participant Feedback**Selected participant testimonials**

Not only does treatment rest with physicians and [nurse practitioners] but also with the work of rehabilitation staff. Parkinson [disease], [myasthenia gravis], stroke, and [traumatic brain injury] have direct needs with supportive staff—working to strengthen, improve or provide compensatory treatments. I am most intrigued by the devices for migraines.

Although I am not a medical staff member, but a supportive therapy, the knowledge presented gave me great insights into the intricacies of many neurological disorders, treatments both pharmacological and [nonpharmacological]. As I work with veterans I have a little better understanding. Thank you, excellent presenters.

Some of the references mentioned are useful for my internal medicine and neurology learners.

Excellent to hear of things that are happening across the whole VA.

The use of telemedicine, especially teleneurology to get rapid integrated care for patients

Telehealth session offers some additional opportunities.

I can't say I am at the diagnostic level of these fine clinicians, but when presented in team meetings or face to face with veterans, I will have a basic understanding of their diagnoses, and of the medical interventions, so I can complement the work of the team.