The feasibility of establishing a free clinic for uninsured patients with neurologic disorders

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Summary

The Dream Center Neurology Clinic (DCNC) is a free specialty clinic associated with the Medical University of South Carolina that provides health care for uninsured patients with neurologic disorders. Routine neurologic care is often neglected by free primary care clinics, leaving indigent and uninsured patients to suffer from treatable neurologic ailments. The DCNC was established by supplementing existing resources from a free primary care facility called the Dream Center. Our strategy of building a high-need specialty service into a preexisting primary care infrastructure may provide a blueprint for neurologists who are eager to address the neurologic needs of the underserved in their local communities. According to local charge estimates, the DCNC has provided roughly \$120,000 worth of outpatient neurologic care over the past year. The clinic runs through the collaborative effort of medical students as well as academic and private health care providers. Donated services such as EEG, diagnostic lab work, botulinum toxin, supplies, and imaging are also critical to clinic operations. In addition to providing the uninsured with services that are normally inaccessible to them, the DCNC provides a unique educational opportunity for medical students, residents, and all volunteers who are eager to help and learn.

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Free medical clinics are one way for the medical community to address insurance-based health care disparities.

Underinsured and uninsured patients have difficulty accessing health care services and frequently experience poor outcomes relative to insured patients.^{1–4} These disparities may be particularly pronounced for specialty services like neurology because of issues with access and coverage. According to the American Academy of Neurology (AAN) Task Force, uninsured patients with neurologic disorders have fewer outpatient appointments and receive fewer tests and referrals than insured patients with neurologic disorders.⁵ Compared to those with private health insurance, patients with inadequate health insurance coverage are more likely to seek emergency services for chronic neurologic conditions,^{6,7} to present with acute life-threatening neurologic conditions,⁸ and to experience postacute neurologic care complications.^{9,10} Patients without private health insurance also exhibit higher rates of all-cause mortality when they seek emergency services for a neurologic complaint.⁸

Free medical clinics are one way for the medical community to address insurance-based health care disparities. Although they do not solve the critical problem of health care disparities, these free medical clinics provide temporarily relief for patients who cannot wait for future health care solutions to be developed and implemented. Frequently staffed by faculty, staff, and students from local academic medical centers, volunteer medical clinics serve the dual purpose of enhancing health care access and augmenting medical education.^{11,12}

The vast majority of the free medical clinics discussed in the medical literature focus on primary care.^{13–19} There are few reports of free medical clinics that offer specialty services and seemingly none that exclusively focus on neurologic care. The purpose of this manuscript is to demonstrate the feasibility of creating a free neurology clinic for indigent patients who lack medical insurance.

Clinic overview

In 2013, a group of faculty, staff, and students from the Neurosciences Department at the Medical University of South Carolina (MUSC) was inspired to expand the services offered by the Dream Center, a free clinic established in 2009 to provide outpatient ophthalmologic, dental, and primary care to local underserved patient populations. Our goal was to create a free clinic dedicated to addressing neurologic conditions in uninsured patients. By expanding an established primary care clinic, we were able to quickly fill the clinic roster while repurposing existing infrastructure, policies, and human resources. A few months after its conception, the Dream Center Neurology Clinic (DCNC) opened its doors.

Patients are referred to the DCNC from a variety of sources, including free primary care clinics, charity organizations, homeless shelters, nonprofit organizations, academic and community hospitals, outpatient neurologists, and social workers. Upon referral, each patient undergoes a screening process consistent with established guidelines for charity clinics. Patients must (1) be between 18 and 65 years of age, (2) live within a predetermined geographical area, (3) be below 200% of the poverty line according to the United States Census Bureau, and (4) lack private or governmental health insurance. Once eligibility is confirmed, patients are able to schedule monthly appointments on an as-needed basis by calling the part-time volunteer support staff for the Dream Center.

Clinic logistics

Patients check in between 8:00 AM and 10:00 AM and are seen on a first-come, first-served basis. First, patients verify their eligibility at a reception desk staffed by volunteer support staff. Next, patients wait in the gymnasium until they are called for triage. During the triage process, first- and second-year medical students, physician assistant students, nursing students, nurses, or certified nursing assistants take vital signs and outline an abbreviated history

of present illness (HPI). Any patients who present with signs or symptoms of an undiagnosed seizure disorder are triaged to a separate room where they receive an EEG that is performed by trained volunteer EEG technicians and interpreted by board-certified neurologists. Patients without undiagnosed seizure disorders are asked to sit in a separate waiting area until they are escorted to an examination room.

Third- and fourth-year medical students, neurology residents, and advanced practice providers (nurse practitioners, physician assistants) serve as the initial care providers. Each initial provider is assigned to 1 of 3 formal examination rooms complete with examination tables and donated equipment such as wall-mounted ophthalmoscope units. Additional rooms are converted to examination rooms on an as-needed basis. The initial providers review vitals and HPI before proceeding with a physical examination of the patient. Volunteer medical translators are available for Spanish-speaking patients. After this process is complete, the initial provider leaves the room and presents the patient to a board-certified neurologist serving as an attending physician. The assignment of neurologist to patient is sometimes based on the neurologist's area of expertise (e.g., a movement disorder specialist for tremor), but all physicians are prepared to see any neurologic diagnosis. After presenting the patient, the initial provider and the attending physician reexamine the patient and proceed with a diagnostic workup and treatment plan.

At the end of their visit, patients proceed through a checkout process that enables them to schedule follow-up visits and meet with additional support staff such as social workers, office managers, and pharmacists. These critical staff members help patients understand their treatment plan and navigate logistical issues such as scheduling referral services (e.g., imaging, blood work, physical therapy) or applying for free prescription programs (e.g., Welvista). They may also provide simple services such as identifying which local pharmacies provide certain prescriptions at the most affordable prices. Without this guidance, patients are unlikely to reap the full benefit of the provided clinical care.

One of the aftercare services that the DCNC uses often is the CARES clinic, a nonprofit organization initiated and managed by medical students that provides free medical services to underserved and uninsured patients. CARES can provide services that are not currently available at the DCNC, from primary care to physical and occupational therapy. Growing the connections between free clinics like the DCNC and CARES will further empower patients to receive the comprehensive care that they need.

Volume and scope of practice

The DCNC operates one half-day each month. Patient volume fluctuates but on average falls just above 20 patients per clinic day. In its inaugural year, the DCNC received 117 new patients with 224 total visits. According to local charge estimates, the DCNC provided roughly \$120,000 worth of outpatient neurologic care. These charges included routine costs associated with office visits as well as specialized services such as EEG and botulinum toxin injections. The estimate would grow tremendously if the time cost of technicians, nurses, students, residents, attending physicians, and other volunteers was taken into account.

There are no restrictions on the range of outpatient conditions addressed at the DCNC. The most common disorders are seizure and headache disorders, but other diagnoses such as conversion disorders, nonepileptic seizure events, dystonia, essential tremor, neuropathy, multiple sclerosis, and Parkinson disease are also prevalent. The clinic also offers follow-up visits for TIAs and strokes. There have been occasions when less common disorders present, such as rare ataxia syndromes, Huntington disease, and hemosiderosis.

Like many free clinics, the DCNC focuses exclusively on outpatient care and is not equipped to handle emergency situations. Thus, the DCNC refers all emergent neurologic conditions to the nearest emergency department.

Educational experience

The DCNC maintains no formal affiliation with MUSC or any other hospital system. Thus, all clinical volunteers are acting as unaffiliated providers. This arrangement offers a number of

logistical and educational benefits. As a distinct entity outside of an academic medical center, the DCNC encourages students and trainees to optimize the insights derived from their patient interviews and physical examinations rather than relying on expensive imaging or advanced technological studies. Students also work as part of interprofessional teams. The coordinated effort of medical students with attending physicians, administrative assistants, nurses, physician assistants, social workers, and pharmacists is critical for ensuring that underserved patients receive the best care possible.

In addition to learning resourcefulness and interprofessionalism, students also benefit from the unique opportunity to form personal relationships with neurology residents and attending physicians. This personalized early career access has the potential to simultaneously grow interest in and understanding of neurology as a field. Students are not currently able to schedule electives at the DCNC, in part because it only runs one half-day per month. Select clinical rotations, however, offer students short call credits for volunteering at free clinics like the DCNC.

There has been a tremendous amount of support for the DCNC from students at MUSC. In the span of 1 year, more than 100 preclinical and clinical medical students signed up to volunteer at the clinic. The overwhelming majority of first-time volunteers become repeat volunteers. In fact, the number of students interested in volunteering regularly exceeds the number of available volunteer positions. This interest is cultivated in the Student Interest Group in Neurology (SIGN), a local chapter affiliated with the AAN.

Residents and attending physicians have also been consistently supportive of the DCNC. These volunteers gain perspective on the extent to which culture and socioeconomic status affect patient care. Aside from treating patients with limited resources, residents and attending physicians also enjoy the challenge of treating conditions that may lie outside of their subspecialty focus within the field of neurology. Finally, residents and attending physicians learn about the practice of medicine outside of academia. While the DCNC began with academic neurologists, private practice neurologists have also made major contributions to the ongoing success of the clinic. This intersection of academic and private neurology helps to establish a dialogue about patient care and builds a sense of community among local neurologists.

Challenges and limitations

There are a number of challenges and limitations that are inherent to the process of running any type of free clinic. Logistical issues such as scheduling and compliance, for example, can be taxing. There are also practical issues related to space that limit the capacity to expand clinic services. One issue that is a critical consideration for any free clinic is the cost of follow-up studies. Blood draws and blood testing, for example, are typically performed at a local branch of a national laboratory that has generously donated services, time, and resources. The blood work ordered by the DCNC ranges from routine analyses (e.g., complete blood count, basic metabolic panel) to more specific antibody testing.

Some limitations and challenges are unique to a neurology free clinic. Imaging of the brain and spinal cord is frequently indicated yet prohibitively expensive. The DCNC has agreements with local imaging providers who perform testing such as CT, MRI, and Doppler ultrasound. These scans are normally limited to 2 per month. The extent to which imaging tests are needed varies per clinic, but in general the DCNC does not need to order more than one scan per month. Imaging scans and interpretations are typically carried back to the clinic by patients who present for follow-up visits.

Managing the implementation of various onsite diagnostic and therapeutic neurologic procedures is another unique challenge. The DCNC currently offers EEGs through a donated, used EEG unit and has also offered botulinum toxin injections to patients who have diagnoses such as dystonia. These resources are readily available but are time-consuming and difficult to integrate into the flow of a free outpatient clinic. In the future, it may be possible to perform additional onsite procedures such as lumbar punctures, EMG, nerve conduction studies, and interventional pain procedures such as steroid injections or nerve blocks. In addition, it would

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be helpful to expand onsite or offsite referral services such as physical therapy. There are future plans to more effectively incorporate physical therapy students and faculty members into the clinic in order to supplement the existing core of care providers.

Another challenge pertains to limiting the legal liability of the clinic and its health care providers. This challenge has a number of manifestations. For example, the DCNC does not normally give patients copies of their medical records. The primary purpose of this policy is to reduce the extent to which the DCNC becomes involved with disability claims. Another example of legal limitations on the clinic pertains to pain control. The health care providers at the DCNC do not prescribe controlled substances such as opiates. The primary purpose of this policy is to reduce the extent to which the DCNC becomes involved with problems of addiction.

There are 2 final challenges worth noting. One challenge is to ensure the viability of the DCNC now that it has become a temporary medical home to those in need of neurologic care. As students graduate, residents become faculty, and faculty change locations, it is imperative that there is a steady stream of volunteers to support clinic operations on a regular basis. As the core group who launched the DCNC, we are committed to ensuring its survival. One of the best ways to accomplish this goal is to embed it into the culture and curriculum of MUSC. We have already connected the DCNC to volunteer programs like MUSC Gives Back and to interest groups like SIGN. In the future, we will continue to think of innovative ways to grow interest in this worthy cause.

The other final challenge is to integrate research into the DCNC operations. From evaluating the educational experience for students to tracking health outcomes for patients, there are myriad opportunities to improve and strengthen the DCNC and its mission.

DISCUSSION

The DCNC grew steadily over its inaugural year and is now closing in on its second year of existence. In total, the DCNC has helped more than 250 patients who might have otherwise gone untreated or presented for emergent care.

Free neurology clinics can serve a number of purposes. First, free neurology clinics may help students meet learning objectives set forth by the Association of American Medical Colleges and the Liaison Committee on Medical Education. For example, students experience interprofessional collaboration and learn how socioeconomic circumstances contribute to health care utilization and disease progression.^{20–22} Second, free neurology clinics may encourage a sense of community among academic and private neurologists by providing them with a shared mission of patient care as well as student education. Finally, and most importantly, free neurology clinics may assist in the equitable distribution of health care in local communities. The Congressional Budget Office estimates that more than 30 million people will remain uninsured after the complete implementation of the Affordable Care Act.^{23,24} Neurologists have a tremendous opportunity to help those in need simply by volunteering their time and expanding on the infrastructure of preexisting

primary care clinics. It is our hope that the DCNC will inspire neurologists at other academic institutions to create their own free neurology clinics that can play a small but important role in addressing health care disparities.

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AUTHOR CONTRIBUTIONS

J.J. Taylor was part of the conceptualization process for this manuscript and made significant contributions to the writing and submission process. T. Larrew played a key role in the conceptualization process for this manuscript. He made significant contributions to the writing process. A. Omole contributed to the manuscript preparation. M. Roberts contributed a student perspective on how this free specialty clinic enriches medical education. A. Kornegay contributed to drafting/revising the manuscript. K. Kornegay assisted with the preparation of this manuscript. L. Yamada made significant contributions to the writing and submission process for this manuscript. G. Revuelta was part of the conceptualization process for this manuscript and made significant contributions to the writing and submission process. M. Sohn has made significant contributions to the writing and submission process for this manuscript. T. Hughes contributed to the writing process. J.C. Edwards was part of the conceptualization process for this manuscript and has made significant contributions to the writing and submission process.

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