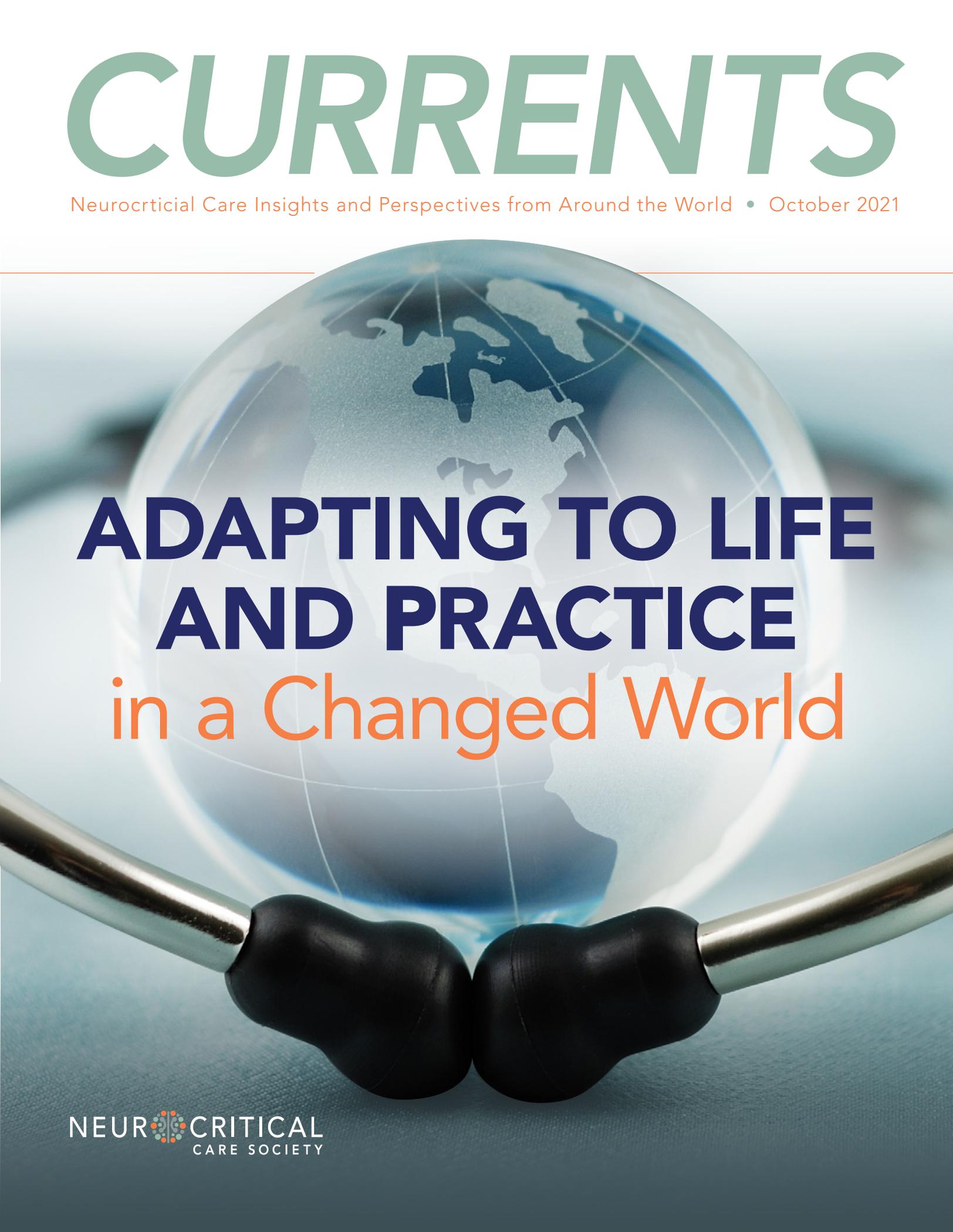


CURRENTS

Neurocritical Care Insights and Perspectives from Around the World • October 2021



ADAPTING TO LIFE AND PRACTICE in a Changed World

CURRENTS

News magazine of the
Neurocritical Care Society

October 2021

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Dear Colleagues,

Welcome to the 2021 annual issue of *Currents*, the official news magazine of the Neurocritical Care Society (NCS). I also welcome you to the NCS 19th Annual Meeting, our hybrid event taking place both in person in Chicago and online. As always, it's a pleasure to gather with the brightest minds in neurocritical care, whether that be physically or virtually. The challenges we've faced this past year have been numerous, and this meeting's theme — "Embracing the Challenge" — has reminded me how we as a society and as individual practitioners have been embracing and adapting to our ever-changing world. The COVID-19 pandemic has forced us to change our lives and our practice in so many ways, but we also have been given opportunities to better ourselves and others. Hopefully, all of these changes have served to advance our profession in a way that is more inclusive and sustainable for the future.

Some of the progress we have made has paralleled the world at large. Our society has committed to an increased focus on diversity and inclusion, prioritizing important conversations around racial, ethnic and gender diversity. Broadening our perspectives can only make us stronger as a society, more empathetic as providers for our patients, more understanding as educators for our trainees and students and more supportive as colleagues in the workplace. This issue features many noteworthy and under-recognized perspectives, including articles on sexual and gender minorities in our profession and how understanding inequities in medicine first requires us to look inward. I hope the insights gleaned from these pieces prompt us all to reflect on our practice and our roles as providers.

This issue also features highlights from some of our most popular content from over the course of the year. The "Stories of Hope" series has been uplifting patients and providers alike since we started it several years ago, and I've been pleased to pass the torch to our new Section Editor Lauren Koffman. This issue features the story of a young stroke survivor named Naema, and we hope it touches you like it did for all of us here at *Currents*. Meanwhile, in a major milestone for the society, NCS hosted its first World Coma Day earlier this year. Hear from the Curing Coma® Committee to learn how this initiative and its annual event impact the lives of our patients and push the field forward, and what you can do to help support this effort in the future. Other articles of interest include international features from our partners in the Middle East and the Philippines, a reflective piece on the barriers created by not allowing families into the ICU during the pandemic, a pharmacist's perspective from the great frontier of Alaska, and valuable new resources contributed by the NCS Trainee and Fellowship Sections.

Lastly, I encourage you to check out some of the new features we've added in 2021. From learning about the business of neurocritical care and point-of-care ultrasound to celebrating our members' creative outlets and artistic talents, these new sections touch on unique topics that should give you even more reasons to keep up with *Currents* for your professional and extracurricular needs.

This annual issue of *Currents* is the culmination of my first few months as editor-in-chief, and I am thrilled to share it with you. Congratulations to our Editorial Board and our contributors — their commitment to advancing our profession through the written word makes all of this possible, and I am proud of their achievements. All these shared experiences, insights and expertise are incredibly valuable to everyone at NCS, as well as to all our patients and families who might be reading along, too. A heartfelt thank you goes out to all our readers — we tell these stories for you. We hope you keep reading, and keep telling us what you want to read about in future issues.

As always, I look forward to hearing your comments and feedback on this issue. If you'd like to submit an article or brainstorm a topic together, please [email me](#) for details.

I wish you a safe, healthy, and happy remainder of the year, and I look forward to gathering with you at the NCS 19th Annual Meeting!

Sincerely,

Michael Reznik, MD,
Currents Editor-in-Chief

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Member Sites Module of Curing Coma®: The Journey So Far

By Chethan Venkatasubba Rao, MD, FNCS; and Briana Witherspoon, DNP, APRN, ACNP



Curing Coma® is the signature clinical, scientific and public health effort of the Neurocritical Care Society (NCS). Curing Coma is comprised of several modules, all of which share the common goal of advancing the campaign's mission^{1, 2}. The role of the Member Sites module is to create and maintain a platform that engages and facilitates multidisciplinary participation from various centers of care such as hospitals, academic institutions and healthcare systems. Following this mission, the Member Sites module has made several advancements and achieved several milestones for Curing Coma. In this article, we summarize these advancements and wins.

Structure of Member Sites

The structure of the Member Sites module is comprised of two co-chairs and various regional partners representing all major geographical locations across the globe (Figure 1). Regional partners were identified through outreach efforts and engagement invites. We included participants who represented diverse specialties who also provided care for comatose patients. As a result, the membership includes pharmacists, nurses, advanced practice providers, physical, occupational, and speech therapists, and physicians from various specialties such as neurological critical care, anesthesia critical care, physical medicine and rehabilitation, and neurosurgery. We strive for equity and diversity in representation. Lastly, our module created objectives in close collaboration with other Curing Coma modules to maximize overall outcomes.

Creating Worldwide Curing Coma Sites

A primary objective of the Member Sites module is to create a comprehensive worldwide group of collaborators. Initially, we approached the collaborators from the Neurocritical Care Research Network (NCRN) who had actively participated in other clinical research activities associated with NCS. Furthermore, we contacted the collaborators from the PRINCE and INSIDER studies, with help from Dr. Jose Suarez (PI). Finally, we reached out to the regional chapters and international partners of NCS, including the Latin American Brain Injury Consortium (LABIC), Sociedad Argentina De Terapia Intensiva (SATI), Brazilian Research in Intensive Care Network (BRiCNET), Australia and New Zealand Intensive Care

Co-Chairs of the Member Sites Module

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Society (ANZICS) and Canadian Critical Care Trials Group (CCTG), to name a few. All of our partners showed enthusiasm toward participating and agreed to publish announcements on their web platforms.

Across the spectrum of neurological studies, Africa remains under-represented. Therefore, we invested additional efforts to recruit collaborators from Africa's Northern, Eastern and Sub-Saharan regions. Through our outreach initiatives, we successfully incorporated collaborators from Ethiopia, Kenya, Zambia, Mozambique, Namibia and South Africa, creating broad representation from the African continent in NCS for the first time. Of note, we especially appreciate the Ethiopian Neurological Association (ENA) for their efforts in advancing the society's presence and outreach.

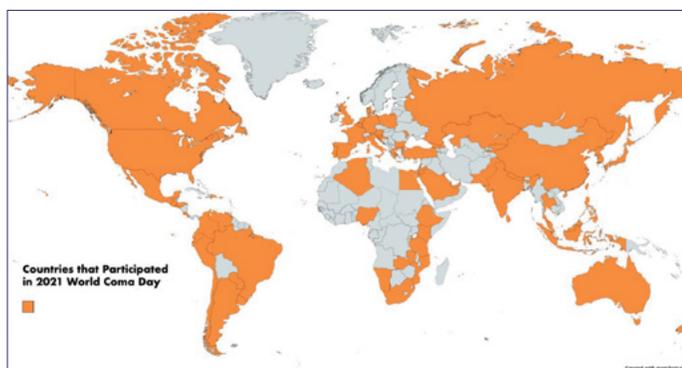
Member Sites Milestones

The First Curing Coma NINDS research conference was hosted virtually Sept. 9–10, 2021. This conference discussed important concepts of coma such as a) the definitions of endotypes and phenotypes, b) biomarkers, c) designing and conducting proof of concept clinical trials, d) challenges and limitations of prognostication and long-term recovery and e) the development and utilization of large datasets³. The proceedings are published in a recent supplement of *Neurocritical Care*, and we encourage *Currents* readers to review them⁴⁻⁸, especially since the journal is providing free access for a limited time. The Member Sites module was instrumental in recruiting 472 registrants who actively contributed to the conference and its proceedings.

World Coma Day (WCD) was the signature event where educational activities creating awareness and education for disorders of consciousness spanned the global population around the clock on March 22, 2021. The first WCD was a resounding success with 1,200 participants. This is a testament to the continued outreach efforts and ambassadorship of the advocates who work within the Member Site module. Readers can find details and recordings of the conference in the links at the Curing Coma Campaign website⁹.

One of the outcomes of WCD was the launch of the “COMa Epidemiology, Evaluation, and THERapy” (COMeToGETHER) survey, which aimed to understand variability in coma definitions, etiologies, treatment strategies and attitudes toward prognosis among clinicians who care for comatose patients. To obtain global participation in this study, the Member Sites ambassadors helped recruit 258 responders from 41 countries through their associations with various organizations and research groups as mentioned above. The responders were from diverse backgrounds of care — physicians, therapists, nurses and advanced practice providers who worked both in acute care and rehabilitation settings. This study provides insights into the variability of the understanding, definition and management of coma patients. The study results are under consideration for publication, and *Currents* readers are encouraged to stay tuned in order to obtain exciting updates following the manuscript release.

Figure 1: Countries That Participated in World Coma Day 2021



(Source: www.curingcoma.org/events2/world-coma-day)

The Second Curing Coma NINDS conference was hosted virtually May 3-5, 2021. The worldwide attendance for this event was around 300 participants. Prime research priorities addressed in this meeting can be broadly classified into defining coma and disorders of consciousness; research priorities for the biology of coma; research priorities for a coma database; research priorities for prognostication; research priorities for care of the patient in coma; research

priorities for early clinical trials; research priorities for long-term recovery; and ethical considerations for the patient in coma. Individuals from the Member Sites module contributed to this conference by serving as panelists, speakers and content generators.

Looking Forward to a Collective Future

Our module has been abuzz with activities for the last year despite all of the challenges that 2020 posed globally, and it has only served to energize our ambassadors.

We have set a charter to generate more outreach, include neuro-rehabilitative centers from all corners of the world, enhance Curing Coma visibility via representation at regional conferences, and collate a comprehensive list of every center with the necessary resources to conduct research supporting a cure for coma. And to *Currents* readers, we earnestly request that you continue supporting Curing Coma by signing on as a collaborator and encouraging your colleagues and collaborators to do the same at this [link](#). ●

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The Business of Neurocritical Care: Getting Started

By Ryan Hakimi, DO, MS, NVS, RPNI, CPB, FNCS



This series will be a running feature highlighting billing, coding, practice management and other business aspects of neurocritical care.

Although all of us received extensive education and training in the care of neurocritical care patients, few if any of us received any training on the non-patient-care aspects of our daily jobs. The goal of this series is to increase your value as a neurocritical care provider to your organization while improving regulatory compliance and hospital-based metrics.

Physician neurointensivists come from a variety of specialties and similarly are housed in a variety of hospital departments, such as neurology, neurosurgery, anesthesia and critical care. Therefore, in any given situation it is possible that a neurointensivist and another colleague in their department may be caring for the same patient on the same date. From a billing standpoint, it is important that a neurointensivist has his or her taxonomy code (how a physician's specialty is identified by CMS and third-party payers) correctly reflect that he/she is a neurointensivist (which is now a recognized specialty, utilizing code 2084A2900X) and not their original specialty, as CMS and third-party payers may perceive that two neurologists (e.g., a stroke neurologist and a neurologist neurointensivist) or two anesthesiologists (e.g., one who provided perioperative anesthesia and a separate anesthesia neurointensivist) from the same practice billed for the same patient on the same date of service, resulting in rejection of one or both provider's charges.

Providers can check their own taxonomy code through the [NPI Database](#).

It is easy and free to change it. The provider can list neurology, anesthesia, etc., as their secondary specialty, and there are no negative ramifications of practicing general neurology or another specialty when one's primary taxonomy code is listed as neurocritical care. Of note, however, there are no specialty codes for advanced practice providers.

Once a physician's taxonomy code has been confirmed as correct, he or she must notify their hospital credentialing department to re-register the physician with every insurance carrier as a neurointensivist, which will likely take a couple of months.

From a practical standpoint, this simple change will allow for two providers in the same department to bill for the same patient on the same date of service provided their care does not overlap. To illustrate this point, a common case scenario is described below:

An intubated patient is brought to the emergency department by EMS as a stroke alert. The stroke neurologist evaluates the patient and identifies that the patient has an intracerebral hemorrhage, is hypertensive and is on an anticoagulant. The stroke neurologist orders prothrombin complex concentrate (PCC), puts the patient on nicardipine and notifies the neurointensivist to assume care and admit the patient to the ICU.

For this case, the stroke neurologist can bill critical care for the decision-making needed to evaluate this patient with a life-threatening neurological condition, as well as reviewing the neuroimaging and initiating the treatment needed to prevent the patient from dying or having worsening brain injury (i.e., ordering PCC and nicardipine).

“Increase your value as a neurocritical care provider while improving regulatory compliance and hospital-based metrics.”

The neurologist/neurointensivist can now come evaluate the patient, document a history and physical, and bill for acute respiratory failure as their admission diagnosis as they optimize the ventilator settings. Both physicians can bill 99291 (30-74 minutes of critical care) and each will be credited for 4.5 work relative value units (wRVUs) by ensuring that they bill for a different primary diagnosis even if the secondary diagnoses are the same. This fiscally mindful approach should be the starting point for designing care teams and delineation of duties at the hospital.

It is important to note that most electronic medical record systems can now integrate with reporting systems to reflect only the wRVUs which resulted in a charge collection. In other words, they can exclude provider work which was rejected by the insurance company despite the physician's documentation. Moreover, nearly every health system tracks provider wRVUs and uses them in some form or another to justify full-

time equivalents (FTEs), salaries, bonuses, etc. Therefore, neurocritical care providers must also become masters of documentation to capture all appropriate billing and wRVUs.

To bill for critical care, one must start with the definition of critical care.

- The patient must be critically ill, with an illness or injury that acutely impairs one or more vital organ systems such that there is a high probability of imminent or life-threatening deterioration in the patient's condition.
- The provider must treat the critical illness using high complexity decision-making to assess, manipulate and support vital systems to treat single or multiple vital organ system failure and/or prevent further life-threatening deterioration of the patient's condition.
- The care requires the personal attention of the provider. Care must be provided at the bedside or on the floor/units where the patient is housed.
- The care must be medically necessary. Treatment or management of the patient's imminent deterioration is required.

From a practical perspective, critical care can be thought of as any situation in which there is a risk of organ damage or death if the provider were not standing at the bedside manipulating medications, treatments, therapies or interpreting complex data and diagnostics.

What counts as critical care billing?

- Time at the bedside spent examining the patient. Time spent in the unit reviewing the patient's history, images, medications, labs, etc.
- Time spent obtaining history from the patient's family (in person, not via telephone) if the patient is unable to provide it
- Time spent documenting if it is done on the unit where the care was provided (i.e., not from home later that evening)
- Time discussing the plan of care or subsequent medical decision making (e.g., discussing the possibility of intubation, PEG tube, comfort care), but **not** including updating the family

What does not count as critical care billing?

- Time associated with a procedure (e.g., sedating a patient for intubation) is bundled into the procedure's CPT code
- Time spent caring for a patient in the ICU who no longer meets the definition of critical care
- Any time that involves speaking on the telephone with family or other providers (encounters must be face-to-face or via telemedicine)
- Time spent **updating** the family on a patient's condition without discussing goals of care, treatment options, etc.

“Neurocritical care providers must become masters of documentation to capture all appropriate billing and wRVUs.”

Additional documentation pearls

- Care does not have to be provided in the ICU
 - » **Example No. 1:** A patient admitted to the floor develops respiratory distress, is nasotracheally suctioned, placed on BiPAP and transferred to the ICU (if care was provided by the provider at bedside, **not** just ordered for RT to do it) with total time of at least 30 minutes.
 - » **Example No. 2:** A patient with a high NIH Stroke Scale presents to the emergency department and the provider evaluates the patient for tPA and the possible need for intubation/pressors (which can be done in the ED).
- Buzzwords and phrases to avoid in critical care documentation. Appropriate word or phrases listed in parentheses.
 - » “Update” (instead: “discussed options of care, including...”)
 - » “Stable” (instead: “unchanged”)
 - » “History of” (instead: “with ... [list active problems as appropriate]”)
 - » “Unable to assess” (instead: “unable to assess as the patient is unconscious”)

Given most neurocritical care units utilize a multi-disciplinary care team, it is important to understand how a given provider can bill. Understanding the concept of split-shared visits is fundamental to this process. For critical care, the provider is billing for the work done by him or her only. In the case of attending physicians, do not acknowledge the APP's note if you are attesting an APP's note. Based on local practice guidelines, a physician's note may be separate or part of the same document as the APP's or resident's when only one charge is being submitted. Critical care is an example of when split-shared visits are not allowed. Therefore, it is recommended that the provider document in the first person using “I” to clearly state what he or she did.

In contrast, Evaluation and Management (E&M) charges used for non-critical care patients on the floor do allow for split-shared visits. In other words, if a non-critical care floor patient received most of their care on a given date of service and an attending physician briefly re-examines the patient and confirms the APP's plan of care, the attending physician can bill for the cumulative work done by both the APP and him or herself. ●

Expanding POCUS in Neurocritical Care Through Educational Initiatives

By Bryan Boling, DNP; Jennifer Mears, PA; Aarti Sarwal, MD; Judy Ch'ang, MD



Bryan Boling, DNP



Jennifer Mears, PA



Aarti Sarwal, MD



Judy Ch'ang, MD

Point-of-care-ultrasound (POCUS) is an indispensable tool used in the diagnosis, screening, procedural guidance and management of critically ill patients across the world. Unlike other imaging modalities, POCUS is performed and interpreted by the intensivist at the bedside, enabling real-time management decisions while being cost-effective and safe. Literature increasingly supports POCUS use in

intensive care, necessitating its use as a neurocritical care skill.

Beside cardiac ultrasound, lung ultrasound and POCUS-guided assessment of shock are some of the specific applications that benefit neurocritical care providers. Additionally, transcranial doppler imaging is frequently used to screen for potential cerebral vasospasm in patients with subarachnoid hemorrhage or for ICP assessment. Optic nerve sheath diameters can be

measured to monitor intracranial pressure if an invasive ICP monitor cannot be placed and midline shift and hydrocephalus can be detected through cranial POCUS.

Despite its value, POCUS use among neurointensivists is highly variable. Dr. Aarti Sarwal led an initiative to create the Ultrasound Section of the Neurocritical Care Society to provide access to resources, educate the NCC community, foster research collaboration and engage all providers with a shared interest in ultrasound.

The NCS Ultrasound Section is creating a POCUS Webinar Series and recurring case studies in *Currents* to increase education and involvement of the neurocritical care community. Every month beginning in 2022, we will offer webinars by qualified POCUS users who will explore different topics that range from how to perform and interpret different ultrasound exams to building a POCUS program in your neurological ICU. The recurring ultrasound case studies published here in *Currents* will showcase how NCC providers are currently using ultrasound in the diagnosis, screening and management of our patients. The goal of these educational initiatives is to engage and excite the neurocritical care community by creating a foundation of knowledge of important ultrasound techniques and their applications.

For providers of all ultrasound-competency levels, we hope through these education initiatives to empower you to use POCUS to improve patient care. ●



POCUS Case: Evaluation of Hypoxia in a Patient With Traumatic Brain Injury

By Jon Rosenberg, MD; Laura Chen, DO; Judy Ch'ang, MD



Jon Rosenberg, MD Laura Chen, DO Judy Ch'ang, MD

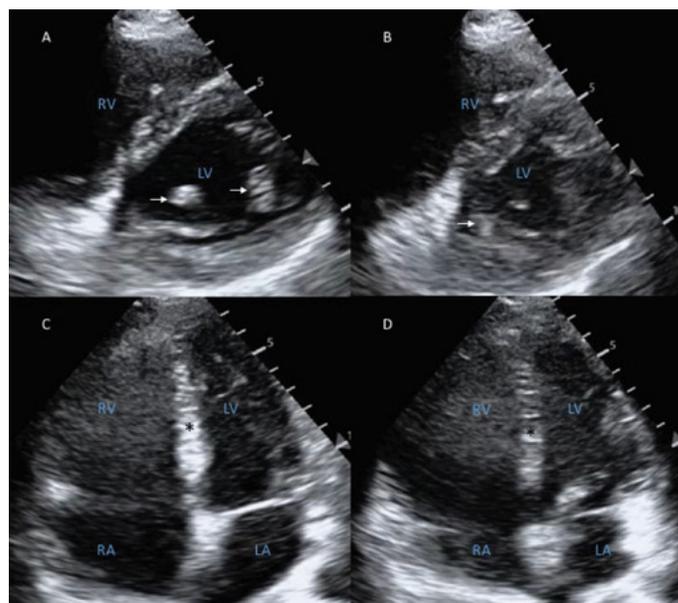
A 34-year-old man presented with a high-grade traumatic brain injury (TBI) after being struck by a motor vehicle. In the emergency department he had a GCS of 3 and was intubated for airway protection. His initial CT showed bilateral frontal subarachnoid hemorrhage, left subdural hematoma and temporal contusion with effacement of his basilar cisterns, and 9mm of midline shift. He was given mannitol and taken to the OR for a left hemisectomy, followed by placement of a continuous ICP and PbtO₂ monitor in the contralateral hemisphere and admission to the neurological intensive care unit (ICU).

Two days after admission, the patient developed a worsening oxygen requirement without significant change on chest X-ray. The neurocritical care fellow performed bedside POCUS of the patient's lungs and heart to assess the etiology of his hypoxia. Lung ultrasound showed a predominant A-line pattern with normal lung sliding bilaterally. Bedside echocardiography revealed a dilated right ventricle (RV) on multiple views with flattening of the interventricular septum during diastole and systole, indicative of RV strain (Figure 1 and Videos 1 & 2). These POCUS findings were concerning for an acute pulmonary embolus (PE), which was promptly confirmed with CT imaging. Given the patient's evolving contusions, subsequent negative lower extremity duplex and hemodynamic stability, therapeutic heparin was deferred for five days. The patient's multimodality monitoring was

discontinued and he was extubated and following commands 10 days following his injury.

Application of the POCUS skill set is particularly useful in evaluating unstable patients for whom transport for imaging may be precarious. Bedside ultrasound can be used to evaluate RV function with modest sensitivity and

Figure 1



Bedside echocardiography in the parasternal short axis (A&B) where the probe is positioned at the left sternal border around the second intercostal space, perpendicular to the chest wall with the indicator to the left shoulder. In the parasternal short axis, imaging at the level of the papillary muscles (white asterisks) allows for accurate assessment of ventricular function. The interventricular septum flattens during diastole (A) and systole (B), indicative of right ventricular (RV) volume and pressure overload, respectively. Images C&D depict the apical four chamber views where the probe is positioned at the xiphoid level in mid clavicular line, angled towards the patient's right flank, with the indicator to the patient's left. In the apical 4 chamber view as shown, the interventricular septum should be midline (black asterisk) and the free wall of the left ventricle (LV) should be visible to allow one to correctly estimate ventricular size. The RV:LV ratio (measured at the base) is greater $>1:1$, with the RV dominating the apex (C&D), both of which are suggestive of RV strain. Normal RV:LV ratio is $\sim 0.6:1$.

Application of the POCUS skill set is particularly useful in evaluating unstable patients for whom transport for imaging may be precarious.



“Bedside ultrasound can be used to evaluate RV function with modest sensitivity and moderate-to-high specificity for the diagnosis of PE in the appropriate clinical context.”

moderate-to-high specificity for the diagnosis of PE in the appropriate clinical context. In a meta-analysis examining the utility of ultrasonography in patients who presented with a clinical picture concerning for PE, an elevated RV end-diastolic diameter ($>3.0\text{cm}$) and a reduced tricuspid annular plane systolic excursion (normal >1.60) in the apical four-chamber view had the greatest sensitivity (86% and 61%, respectively) with moderate specificity (80% and 60%, respectively) for PE.¹ Other bedside derived echocardiographic assessments, such as McConnell’s sign (RV dysfunction with akinesia of the mid free wall and hyperkinesia of the RV apex), abnormal interventricular septal motion, defined as bowing of the septum into the left ventricle (LV) on apical four-chamber or flattening of septum on parasternal short axis, and a RV:LV ratio >1 , were shown to have poor sensitivity (22-55%) but high specificity (89-97%) for PE.¹

It is important to note that POCUS identifies right heart dysfunction, which can be a surrogate for PE. Moreover, the above findings are more likely to be seen in patients

with larger, hemodynamically significant PEs.¹ Thus, echocardiography should never be used in isolation to rule out a PE. Clinicians must consider the patient’s pre-test probability when performing POCUS, as echocardiography has limited sensitivity, and multiple factors, such as chronic lung disease, can cause pre-existing right heart strain. However, trauma patients are at an increased for venous thromboembolic events (VTE)^{2, 3} and the incidence of post-traumatic PE in TBI has been reported to range from 0.1-6.0%.² Though the pathophysiology is incompletely understood, experts suspect a combination of endothelial injury, enhanced inflammatory state and prolonged immobility contribute to VTE in TBI and trauma.⁴ Given the increased incidence of PE in TBI, providers should maintain a high index of suspicion for this condition. ●

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Welcome to the NEW Currents NCS Arts Corner!

By Shivani Ghoshal, MD

Currents is excited to launch a new Arts Corner to recognize visual, performing and creative artworks pertaining to neurocritical care, as well as makers within our own community. The practice of neurocritical care is as humbling as it is rewarding, and requires mindfulness both of oneself and one's peers. We hope this corner will be a step toward recognizing creative outlets for NCS members and bringing our community closer together even while we are apart.



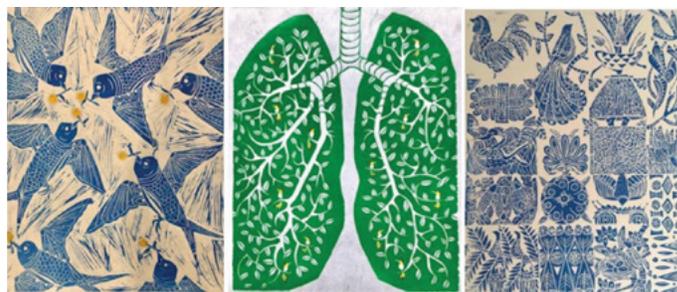
I first learned how to draw from my mother and grandmother. My grandmother never learned how to read or write, but even with severe dementia at her later stages of life would draw the Bengali folk art patterns she remembered from childhood. I learned first by watching and imitating her style.

From my mother, a civil engineer and expert storyteller, I learned about composition along with the Indian folk tales and mythology I draw upon now.

I stumbled on carving as an outlet halfway through my first year of fellowship. Many of my close friends weren't in medicine. Though training kept us from spending as much time together as I would've liked, I wanted to make them something special. I noticed a hardware store on my walk to work had cheap shelf wood — cut pieces leftover from older jobs, and some soft enough to carve. My first carvings became prints, sent as cards to my friends. As I started carving more, I circled back to my grandmother's folk art and myths I remembered from growing up.

I now live in western North Carolina, where Greater Appalachian and Southern culture meet on the skids. People here have lived for generations, a region once famous for Camel and Winston cigarettes (our nearest town over is called Tobaccoville), now peppered with broken tobacco mills along with unsurprisingly bustling cancer and stroke centers. It's not uncommon to see patients suffering their first strokes in their thirties, or to walk into rooms with people looking 20 years older than their stated age. It's a poor part of the country, with high rates of food insecurity. Neighbors live evenly divided along political and social lines. And yet, what people make here — in music, art, crafts — is stunning. It's a region steeped in folk art which carries a sense of belonging — to the region and the generations that came before. Friends can find their family names on streets their grandparents once lived on, and household quilts carry scraps and feedsack spanning decades before the current owners.

All this makes me think of what folk art means for first-generation immigrants like me. What is folk art, when I belong neither fully to Indian nor American culture? What did it mean for mothers like mine, to create and nurture



Top row (left to right): "Starlings" (Woodcut); "One year later (shelter in place)" (Linocut); "Summer quilt" (Linocut)

Bottom row (left to right): "Chulitna 2" (multi-block, Linocut); "Rain shower" (Linocut)



"Mothers were called out for, everywhere (George Floyd)"

About the piece: One part, how as George Floyd was dying, he didn't call out for God, or his lover, or his father or any other person. But he called out for his mother. I keep thinking about this. Imagining when he called out to one mother, maybe all mothers (with children or without) heard him — all of us for a moment growing from the same body.

I also think of Kali, her dark skin — what is divine rage in its feminine form, what is grace within rage? I grew up seeing goddesses painted with many arms, branching in a way that reminded me of trees. I wanted to show that here. Something feminine, dark and waking, branching and blossoming red.

a sense of home and beauty in a country that wasn't theirs, and where they were not always welcome? A culture to which my parents and their peers would never feel they completely belonged, while the children they raised became assimilated to varying degrees, with the hope that one day they could thrive. What is the folk art that shows my own history and that qualifies as my belonging?

I have been lucky to live here in Winston among a large, diverse community of woman printmakers — each with their own styles and techniques, and each as proud of each other's work as they are of their own. With their encouragement, in September 2020 I began selling my prints at our neighborhood's first "Ardmore Artwalk" — a masked outdoor street and yard fair organized by the artists to promote pride in our neighborhood's creativity and community during the pandemic. All of my art sales have gone directly to nonprofit organizations and charities — most recently to our town's foodbank, Winston-Salem art programs and the NCS Run for Research fundraiser.

Ever since that first Artwalk, it has continued to surprise me that those in Winston and beyond have asked about my prints,

along with the stories that go with them. I continue to be surprised when I see a print of mine hanging on a stranger's wall, which shows that — despite differences in political, social or cultural beliefs — there is some love to be shared among us all. From our first Artwalk of 20 artists, the next Ardmore Artwalk grew to showcase 60 visual artists and neighborhood musicians, with greater inclusion of Black and minority artists.

I now teach linocut techniques at our town's community art school in my non-medical time, and more recently have worked with the school to offer discounted linocut classes on Zoom for Winston-Salem's healthcare professionals as part of their "Art and Wellness Series." I have been lucky to serve on the board of directors of the Southeastern Center for Contemporary Art (SECCA) over the last year, working with others to promote diversity and inclusion in its community programs. I continue to make prints for myself and friends. More recently, I've had the pleasure of designing the cover for a friend's patient-centered neuro-oncology textbook, as well as the logo for the upcoming "Murphy to Manteo" record label showcasing historic and overlooked North Carolina music. I hope to start a series of illustrations for a children's book of Indian folk tales later this year. ●

Hybrid 2nd Neurocritical Care Regional Meeting in the Middle East and Africa

By Yasser B. Abulhasan, MBChB, FRCPC, FNCS



It was a great pleasure organizing the 2nd Neurocritical Care Regional Meeting in the Middle East and Africa in conjunction with the 17th edition of the Emirates Critical Care Conference (ECCC). The meeting got delayed by over a year due to the COVID-19 pandemic, ultimately taking place in a hybrid format (both in person and virtual) on June 18–19, 2021.

This was a challenging yet exciting event from the start. We wanted to exceed expectations after the success of the **First Regional Meeting**. But after finalizing the scientific content, speakers, workshops, venue and logistics of holding the meeting on April 2–4, 2020, the spread of a new coronavirus causing a mysterious pneumonia was announced by the World Health Organization a few weeks before the event. The early reports were alarming and anticipated a pandemic, which forced us to delay the meeting in unprecedented fashion. We were among the first international critical care conferences to do so as the conference was only weeks away, a decision that was tough but ultimately correct, especially in the early phases of an unknown, transmissible, potentially fatal disease.

After hearing from the organizing committee in Dubai, I remember announcing this postponement in person during the Neurocritical Care Society (NCS) Board of Directors' meeting in Chicago on March 10, 2020. This was followed by side discussions with other members of the NCS Board of Directors on early reports of this "puzzling" entity and its pathophysiology. I doubt anyone then would have anticipated the events that unfolded and caused a global standstill within days of the World Health Organization's global pandemic declaration.

In the ensuing days and weeks, we had an open dialogue with the editor-in-chief of *Neurocritical Care* about when to best publish accepted abstracts (which would usually coincide with the actual conference dates), while debating how such a delay in publication of accepted scientific work would translate to authors. Ultimately, the Regional Meeting was further postponed until June 18–19, 2021, in order to accommodate the Hybrid Emirates Critical Care Conference Series, which I am proud to say that NCS actively participated in. This single-track lecture series took place on Nov. 14, 28, and Dec. 12, 2020. It was the first experience in organizing a hybrid conference dedicated toward COVID-19 in the region.

As part of the COVID-19 hybrid conference series, the neurocritical care session took place on Nov. 28, 2020, with five pre-recorded talks: (1) Cerebrovascular Complications of COVID-19, (2) Non-Vascular Neurological Manifestations of COVID-19, (3) Neurocritical Care in the Era of the COVID-19



Pandemic: Abu Dhabi's Experience, (4) Crisis Management During the COVID-19 Pandemic and (5) Research in Neurocritical Care During the COVID-19 Pandemic. There were more than 1,000 virtual attendees at the neurocritical care session (and more than 1,700 for the day overall), and the live Q&A session was a huge success, with kudos to all speakers and attendees who joined worldwide. This success was the driving force behind the decision to proceed with the Second Regional Meeting in a hybrid format.

This time around, the experience felt different. The few months leading up to the meeting were unique, as the multiple waves of the SARS-CoV-2 pandemic revealed the vulnerability of most healthcare workers worldwide. Colleagues and loved ones suffered from the sequelae of the pandemic physically and mentally, and by then more than 3 million deaths worldwide had been attributed to COVID-19.

Offline, healthcare workers expressed fatigue from virtual conferences and meetings. Still, we aimed to defy these challenges and actively enter a "partially normal" phase of living for healthcare workers by moving forward with the Regional Meeting in a two-day hybrid format instead of the original three-

day in-person meeting. This was done in conjunction with the multitrack ECCC and 16th World Federation of Critical Care Nurses (WFCCN) World Congress.

On day one, the full-day, multidisciplinary, neurocritical care track was divided into four sessions: (1) practice updates in neurocritical care, (2) neuro-nursing and neuropharmacology, (3) a pros-and-cons session and (4) a subarachnoid hemorrhage expert's discussion. Presentation topics covered a selected spectrum of neurocritical care topics. Topics included updates on the UAE guideline on declaration of death by neurological criteria, thrombectomy after acute ischemic stroke up to 24 hours and beyond, neurological complications after COVID-19, gizmos and gadgets in the neuro-ICU, reversal of anticoagulation and neuro-mediated pathophysiological stresses affecting the nervous and cardio-respiratory systems. Conducting a hybrid pros-and-cons session proved to be technically challenging, as we expected a swift "hybrid" vote after each debate (i.e., combined vote counts from in-person and virtual audiences). However, the speakers stood up to the challenge and contributed to spirited debates. The SAH expert discussion, meanwhile, included presentations on current evidence-based practice, the use of milrinone after DCI and updates on SAH research. All of these were met with great enthusiasm and were followed by an informative 20+ minutes Q&A session with the experts.

Day two included hybrid poster presentations and a full-day ENLS® hybrid course, for which NCS graciously offered 100 free registrations preferentially to nurses and pharmacists attending the meeting. Of note, a number of abstracts presented at the meeting had to be withdrawn from the *Neurocritical Care* publication due to copyright reasons, as many were published in full elsewhere during the prolonged delay between scientific abstract acceptance and publication. The **remaining abstracts** were published online in *Neurocritical Care* shortly after the meeting.

Overall, the conference was attended by more than 1,000 delegates (both in person and virtually). Of the 198 speakers (almost evenly split between in person and virtual), 48% were international, 34% local and 18% regional, representing a total of 45 countries. There were five workshops including ENLS, three of which were hands-on, with appropriate social distancing and safety measures to reduce the spread of COVID-19.

Acknowledgements

I would like to acknowledge the partnership between the International Pan Arab Critical Care Medicine Society (IPACCMS) and NCS, especially the role of leadership from both societies in making this meeting a reality. Additionally, I would like to acknowledge the voluntary efforts of our esteemed group of speakers and moderators from both the Neuro-COVID-19 session and Regional Meeting, and sincerely thank them for their role during these meetings.

Neuro-COVID-19 and beyond session of the Hybrid Emirates Critical Care Conference (Nov. 28, 2020) speakers and

moderators (virtual): Yasser Abulhasan, Mary Kay Bader, Sherry Chou, Jamil Dibou, Majid Mokhtari, Jose Suarez, Katja Wartenberg.

Regional Meeting (June 18–19, 2020) track/ENLS speakers and moderators (in person and virtual): Yasser Abulhasan, Pravin Amin, Mark Angle, Aimee Aysenne, Hosam Al-Jehani, Mary Kay Bader, Gretchen Brophy, Jamil Dibou, Michael Diringer, Saef Izzy, Farah Kablaoui, Kalpana Krishnareddy,

“This was a challenging yet exciting event from the start. We wanted to exceed expectations after the success of the First Regional Meeting.”

Sarah Livesay, George Lopez, Dea Mahanes, Majid Mokhtari, Sarah Peacock, Venkatakrisna Rajajee, Gisele Sampaio Silva, Othman Solaiman, Jose Suarez, Michel Torbey, Chitra Venkatasubramanian, Katja Wartenberg and Khalil Yousef. Additionally, I would like to acknowledge Ramy Satti and Hasan Hadad for coordinating the NCC track, and Katja Wartenberg for directing the ENLS course. Sincere thanks go to Hussain Al Rahma (conference chairman) and team and Katja Wartenberg for co-organizing this meeting.

Overall, despite this unprecedented pandemic year, the partnership between the IPACCMS and NCS remained strong with the active support and participation of all involved. Critical Care representation of neurosciences in our regional remains vital.

Global Partnership Milestones

Since 2011, the NCC-MENA chapter of IPACCMS has been one of the first global partners of NCS. NCS leadership has been invited to sit during the open annual NCC-MENA chapter meeting. Over the years, the neurocritical care track of the ECCC has continued to grow. ENLS was first offered in 2016, then in 2018, 2019 (in person) and 2021 (hybrid). In October 2018, NCS confirmed the first Mid-East/Africa member to represent the region on its Board of Directors. In April 2019, the 1st NCC Middle East/Africa Regional Meeting was conducted in person in Dubai, and in June 2021 the hybrid format 2nd Regional Meeting was conducted in conjunction with the 15th and 17th edition of the ECCC.

For now, if things stay on track, save the date for May 12–14, 2022, when we will look forward to welcoming you all in Dubai for the 3rd Neurocritical Care Regional Meeting of the Middle East/Africa. ●

Adapt, Grow, and Evolve — The Age of Neurocritical Care in the Philippines

By Jose Miguel Medrano, MD, FPNA; Joanne Robles, MD, FPNA; Isabelita Rogado, RN, MAAN; Geraldine Siena Mariano, MD, FPNA, FPCP, FNCS, FPSCCM



C OVID-19 has put a spotlight on the importance of excellent, holistic, multidisciplinary critical care; despite this pandemic, there remains a steady influx of patients with cerebrovascular disease, traumatic brain injury and other severe neurological diseases. It is during this era that neurocritical care continues to adapt, grow and evolve, addressing the ever more complex needs of these most critical patients, especially in a resource limited country like the Philippines.

The Philippines is a low-to-middle income country in Southeast Asia, an archipelago with 7107 islands and a growing percentage of the population living in urban areas. Our health system is still dealing with the burden of infectious diseases and now emerging illnesses, while simultaneously experiencing a significant rise in lifestyle-related illnesses. Health care expenditure is primarily individual out-of-pocket spending, only partially subsidized, if at all, by private and national health insurance programs.

The Philippine Neurocritical Care Society (PNCS) is a non-profit organization with a dedicated team of physicians,

nurses, pharmacists, therapists and other allied medical professionals that strive to elevate the level of neurocritical care in the Philippines despite all these healthcare challenges. The PNCS was founded on May 10, 2017 at St. Luke's Medical Center in Quezon City, Philippines which marked the first meeting presided by Dr. Geraldine Siena Mariano, Dr. Lina Laxamana and Dr. Abdias Aquino. The society soon became an affiliate of the Neurocritical Care Society (NCS) International Affiliates Program, reflecting the mission statement of the NCS.

Local collaboration is one of the key strengths of the PNCS, having formed a tight partnership with the Critical Care Nurses Association of the Philippines, Inc. (CCNAPI). One of the flagship programs borne out of this union is a unique adaptation of the ENLS that includes simulation workshops, small group discussions, and checklist-based evaluations of multidisciplinary teams consisting of physicians, nurses, and pharmacists. The first implementation of this pioneer project was held at the Asian Hospital and Medical Center on October 12 and 13, 2018 with guest speaker and ENLS ambassador Dr. Romergyko Geocadin from the Neurocritical

Care Society. This 2-day ENLS certification course focused on the theme “Save the Brain, Save a Life!” with the 77 participants during the face to face session and about 25 participants attending the simulation workshop. In the months that followed a series of workshop-lectures were carried out, also in partnership with CCNAPI, in the provincial urban and regional medical centers entitled Neurocritical Care 101.

The PNCS continues to strengthen its relationships with international partners and forge new ones by reaching out to our ASEAN neighbors through the active participation and advocacy of its members. In 2019, Dr. Joanne Robles, the secretary of the PNCS, served as NCS ambassadors in the first 3 ENLS live courses conducted in Jakarta, Indonesia, initiated by various local medical groups and institutions. Dr. Mariano was an invited speaker during the KNCS Winder Symposium in 2018, discussing “Severe Brain Injury — ICP lowering strategies.” Various PNCS members have attended regional meetings in Korea (2018) and Japan (2019).

The efforts of the different members of the PNCS have also been recognized by the NCS, with President Geraldine Siena Mariano becoming the first Philippine-based physician to be recognized as a full fellow of the Neurocritical Care Society and Vice-President Ma. Isabelita Rogado has also received a presidential citation award from the NCS.

The PNCS conducted its first Congress from April 30 to May 2, 2019. Dr. Romergryko Geocadin, Dr. Gene Sung, Dr. Kiwon Lee and Dawai Olsen were among the notable speakers during the convention, aptly themed “AGE of Neurocritical care — Adapt, Grow and Evolve,” a recurring mantra for the society. Members of the Asian Chapter

(especially Southeast Asian countries) flew to Manila to participate in the 3-day event, sharing their experiences in navigating the difficulties of neurocritical care in resource limited settings. The 2nd PNCS congress was originally set in August 2020, however, the COVID-19 pandemic challenged us to forge new ways to continue our mission.

“The PNCS continues to strengthen its relationships with international partners and forge new ones by reaching out to our ASEAN neighbors through the active participation and advocacy of its members.”

Innovation is indeed borne of need, and amidst the restrictions of the pandemic, where some saw a challenge, we saw opportunity. Leveraging the ever growing connectivity within the Philippines, the PNCS in partnership with Pfizer Philippines, conducted a webinar entitled “Liberation: Managing Pain, Delirium and Immobility.” The webinar was conducted on September 5, 2020 with the theme on ICU Liberation, a quality improvement program geared towards optimizing strategies to improve patient outcomes by addressing pain, agitation, delirium, immobility and sleep interruption in the ICU, especially in the ICU patients with COVID-19 infections. The speakers during this virtual activity were Kathleen Vollman, Treasurer of the World Federation of Critical Care Nurses, Dr. Joanne Robles, Dr. Miguel Medrano, Dr. Manolo Kristoffer Flores and Mr. Edward Tolentino of the PNCS. The activity was attended by 1,076 participants from multiple specialties, exemplifying the PNCS advocacy of multidisciplinary neurocritical care.

This however, is merely the beginning. The society is slated to launch another webinar this year entitled “Neurocritical Care at the End of the Line,” with the objective to provide an understanding of the ethical dilemma existent in neurocritical care, the art of prognostication, and the diagnosis of brain death and its many nuances. In addition, 2022 marks a significant milestone in PNCS history as the society hosts the 2022 Meeting for the Asian Chapter of the Neurocritical Care Society, with a planned focus on neurocritical care in low-resource settings.

Since the last months of 2019, the paradigm of critical care, and continuing health professional education has changed, but the Philippine Neurocritical Care Society is poised and eager to thrive in this new age — by adapting, growing, and evolving. ●



Stories of Hope: Naema

By Bindi Parikh, MD; and Christine Yeager, MD; Section Editor: Lauren Koffman, DO, MS



Bindi Parikh, MD



Christine Yeager,
MD



Lauren Koffman,
DO, MS

One Thursday, amidst the peak of the COVID-19 pandemic, Naema had been working from home as a student advisor and was carrying out her usual activities. Though she did not feel quite herself, she drove herself to take care of errands and later went outside for a run. She recalls, “I was feeling off, my appetite was off. I didn’t know at the time that I was walking off to the left.” Naema recalls a visit with an ENT for ear pain the week prior and states “they offered steroids and I didn’t think anything of it, I just agreed.”

The date was May 28, 2020, and Naema had been a healthy 29-year-old up until that point. Sometime after her run, Naema began vomiting and developed dizziness and a relentless headache. Zuhira, Naema’s aunt, called 911 when she found Naema lying on the floor, dizzy and vomiting. “This entire time both Naema and I, and everyone else, thought it’s just a headache — it’s nothing more.” Little did they know that this was the start of a long journey that would change Naema’s life forever, and that she wouldn’t return home for two months.

Not Just a Headache

Naema’s memory of subsequent events is limited. “I just remember being in the Southdale ER. I don’t know exactly how long I was there, but I remember someone coming in and giving me a new vomiting bag. That’s it. I just remember that and then blacking out.” When trying to recall what happened at this point, she describes it as “this weird, out of body experience I had. I just remember — this sounds cheesy — my body just going out into some dark sky that was lit up with stars and no sense of time. I remember voices but not faces. I remember hearing “There is nothing we can do for this girl.” I don’t know if that was actually said or I imagined it. I just remember praying to god like — “OK they can’t do anything, you gave this to me, please take it away. I’m not ready to die. I’m not ready to die. I don’t want to die now.”

The Diagnosis

In the hospital, a head CT was obtained around 2:15 a.m., which was suggestive of bilateral transverse sinus thromboses. Though Naema had initially been awake and alert, shortly after her CT

at approximately 2:30 a.m., the ED provider returned to inform Naema of the results and found her unresponsive, posturing with sluggish and dilated pupils. She was emergently loaded with antiseizure medications, a heparin infusion was initiated to begin thinning her blood, and she was given mannitol to reduce the swelling in her brain. Fortunately, her exam improved and she started talking again and following some commands. Naema was admitted to the ICU for close monitoring, but her family was unable to be with her due to pandemic visitor restrictions.

Head CT Prior to Surgery



Head CT prior to surgery

The diagnosis was confirmed with an MRI/MRV scan that looked at her brain and blood vessels and revealed the development of a new left cerebellar hemorrhage. Her doctors attributed these findings to being most likely the result of hypercoagulability, or a higher tendency to form clots. In her case, this higher clotting tendency was most likely related to oral contraceptive use. At this point, she was drowsy but following commands. While Naema’s family vividly recalled the moment they were informed of the diagnosis, Naema did not recall being told about the stroke or talking to her family on the phone. Zuhira recalls, “The nurse told me Naema had a stroke and the way she explained it, it was just a minor stroke and within a few days, she was going to be out of the hospital.” She recalls being in disbelief. “I said I want to talk to Naema because I want to make sure she is actually there and what they’re telling me is actually true. My niece is only 29 years old, how is she going to have a stroke? She was exercising, she is living a healthy lifestyle, she is one of the healthiest human beings I know. How is this happening? Strokes happen to 70 year olds, not 30 year olds.” She goes on to share, “It was the most stressful time of our lives. Naema’s mom and dad were in shock. Her dad couldn’t believe it — that his healthy daughter had a stroke.”

By the end of her first day at Southdale hospital, in light of the new cerebellar hemorrhage, Naema’s anticoagulation was switched to a lower intensity and she was transferred to the University of Minnesota Medical Center in anticipation of possible endovascular therapy.

Feeling in the Dark During the Pandemic

That night, her cerebellar hemorrhage increased further in size and she developed hydrocephalus as a result — a buildup of cerebrospinal fluid due to an obstruction of flow. This prompted the emergent placement of an external ventricular drain (EVD)

to drain the excess fluid that was building up in her brain, and the pressure was found to be dangerously high — more than twice the higher range of normal (40cmH2O)! Within 12 hours, Naema was emergently intubated and taken for a thrombectomy to remove the clots from her venous sinuses. Further, because the hemorrhage had already expanded and there was a continued risk for worsening brain swelling, a suboccipital craniectomy was performed to remove a piece of the back of her skull to allow her brain to decompress.

As Naema's family processed the first 24 hours of her hospitalization, her aunt took on the role of being the main point of contact for Naema's family. Her aunt remembers, "Every time I called the hospital, they kept telling me things are worse. Not once did they say things are getting better — up until she started waking up from the coma. Sometimes you see things are getting worse, but you see there is a light at the end of the tunnel. But at that point, there was no light, everything was so dark. All we kept hearing was she is going to die. And on top of that, Naema's parents couldn't come in to see her."

While things were expected to improve, she developed refractory intracranial hypertension later that night, in which the pressures in her brain refused to come down despite medical treatment. The left cerebellar hemorrhage had expanded even more, and there was now a new right cerebellar hemorrhage along with intraventricular hemorrhage. Based on these new findings she returned to the OR for a second decompressive craniectomy to remove additional parts of her skull to make more room for further swelling. Once again, there was hope for improvement.

Unfortunately, Naema's intracranial pressures remained persistently elevated despite these surgeries, and on the sixth day after her hemorrhage the decision was made to initiate a medically induced coma using pentobarbital, a powerful anesthetic medication. From June 4–11, Naema remained in a medically induced coma, and we, as her medical team, patiently waited for her body to weather the storm. While her ICPs had improved, the uphill battle continued as she encountered many other complications: signs of cortical irritability on EEG that bordered on seizure activity and prompted additional anti-seizure medications; infections; sympathetic storming, in which her body experienced surges of uncontrolled hyperactivation; and severe tongue biting and teeth clenching that intermittently required paralytic medications. Nevertheless, despite her mounting problems and growing concerns for whether she would survive during this rough patch, Naema managed to weather the storm. On June 11, it was time to wake her up from the medically induced coma.

Waking Up

As we slowly weaned off sedation, Naema showed seemingly small but meaningful improvement. Her aunt Zuhira always looked forward to hearing from our team — but now, more than ever, she awaited some good news. "I was waiting for your call all the time. I would call her dad and say, 'Your daughter moved her fingers!' I didn't know what it really meant but I was excited because you were excited." She recalls the overwhelming happiness and relief Naema's family felt when we called to let them know that Naema was now moving all of her extremities. "I remember telling the

whole family and her mom feeling so thankful and excited — a little while later, she [Naema's mom] came back to me and said, 'OK, wait, what does that mean though?!' I said, 'I don't know but the doctors were happy, so I'm happy!'"

A week later, Naema underwent placement of a tracheostomy and gastrostomy tube to facilitate her prolonged period of recovery. She also received a shunt to continue draining the fluid from her brain in the long-term, after her EVD was taken out. After a long and arduous course, which Naema is still piecing together, the first thing she recalls is waking up with a breathing tube and with restraints and mitts on her hands. She recalls using her eyebrows to communicate: "I couldn't talk and I remember using my eyebrows for yes-no questions. I remember feeling frustrated."

“After a long and arduous course, which Naema is still piecing together, the first thing she recalls is waking up with a breathing tube and with restraints and mitts on her hands.”

The Road to Recovery

Naema improved so much over the next few weeks that, on July 1, she had her tracheostomy removed forever and was discharged to an acute rehabilitation facility, where she began the next chapter of her journey. Naema shares, "The thing I struggled with still the most was independence. It's good I can go to the bathroom and do my own thing. It started out with people lifting me from the toilet. Now I can lift myself up with both of my arms."

On July 29, Naema was discharged home with continued physical therapy and a home nurse. She was relieved and happy to be going home after a two-month-long course. When asked what she was most looking forward to doing at home, she says, "I missed food. In rehab, there was a TV and I started craving weird things ... like Taco Bell. I don't even like Taco Bell!" But when asked if she ever got some, she says, "Not once!"

While she still required a gastrostomy tube when she was sent home due to continued dysphagia, Naema has since progressed with her diet and is looking forward to having her feeding tube removed next month. "In rehab was the first time hearing that I had to keep the feeding tube and I figured it was for life. There was no light at the end of the tunnel, it was like all right, I have to keep this forever. But I got cleared for soft foods and I'm eating now!"

Life After Rehab

Today, Naema and her aunt Zuhira laugh during a call, as they reflect on both the good and bad days she had during the last year despite all the obstacles along the way. "Now we are here smiling at her and we can laugh as we look back," Zuhira says.

Naema admits that initially, she didn't feel like all these things had actually happened to her. "Last summer, subconsciously I didn't want to know what happened. I was in this weird, blissful state where all I kept thinking [was] that I am grateful and I am going to recover. October 2020 [was] when I started asking questions. I'm sure at some point, people explained this to me," Naema says, "but it just didn't register in my head." She continues to learn about her hospitalization every day through stories she is told, and she has gained an understanding of the gravity of her illness from the way her family and medical team react to each little victory.

"In October, my neurosurgeon came into my room when someone was walking me to the bathroom. He said, 'It's so nice to see you up and going to the bathroom'. And then in January, I was writing in my journal and he wanted to see me write. In my head I thought, 'Oh my god, what is he talking about?!'" She laughs. "I'm like, 'So you were really expecting the worst!'"

While Naema's main focus initially was her physical health, she is now learning to face the mental and emotional impact her hospitalization has had on her. "Right now, I'm five weeks from my last hospital stay and I'm touching the back of my head and it feels flatter. But I keep thinking what if something crazy happens, something I'm not aware of? I don't have a CT or MRI scanner in my house, and even if I do, how am I going to save myself? Maybe that's anxiety coming up. I still struggle with that fear. A year ago, I didn't think a stroke would happen. How do I adjust and become comfortable with the unknown now?"

She has found one way to cope with this through her new Instagram account, where she can connect with stroke survivors while sharing her story and recovery process to inspire others. "What's helping me now is when I look at other people's stories. It's so important not to feel alone in all of this. Even though I'm surrounded by family and friends, it's different when I hear someone else talking about their story. There are so many resources and people out there who have been through this and can talk about it."

Her advice to anyone who goes through this is: "Recognize that every person's experience is different. I'd let them know the medical changes and rehab that they'll go through. Being patient is important. What I used to consider small goals became big goals, like breathing on your own or swallowing. Just think about how many times we swallow per hour and how we take that for granted. I was patient with myself [early on] but it's hard to stay motivated, especially because of the loss of independence. But I'm getting better at it. My aunt [Zuhira] is always taking pictures and videos and I'm grateful for that, because who knows where I'll be in a year? And those things help to put things into perspective. There really is no timeline for these things."

Zuhira says, "It's been amazing watching day by day how far Naema has come. It's insane how things were, what we were expecting, what we were told, and how surprised we — friends, family and even doctors — are with how well you're doing. I think for me and Naema's mom, you guys were literally our heroes — you, the other physicians and the nurses."



Photos from Naema's road to recovery..

Looking Ahead

Naema was a high school math teacher a few years ago, and more recently became a student advisor — a job she had to quit in light of her ongoing rehabilitation. "Last week I went in to clean out my work office, a place I never thought I would go back to clean up my things. I always thought things would be on my time."

She remains optimistic, though. "I'm glad to think about what I'm going to do next. This has pushed me to think about things I didn't think about before the stroke. I want to go back to school. I've been saying that for a while. I used to think if I go back to school, I would do something that would make me some more money and live more comfortably. Now, whatever I decide to do career-wise, I definitely want to do something I enjoy — like art. I did enjoy teaching math but when I became a math teacher, I was thinking 'logic, logic'. Now I want to do something more for myself." Naema also emphasizes the importance of family in her life and hopes to move closer to her parents.

Although Naema has experienced a few setbacks since being discharged from rehab, including malfunction and infection of her shunt, she looks forward to learning more about her hospitalization and continuing her recovery process as a young stroke survivor. "If anything bad happens, I'm like, 'OK, I survived this, I could do anything, I could get through anything.'" Naema's story and optimism in the face of adversity gave our team at the University of Minnesota a sense of hope as we faced the first wave of the COVID-19 pandemic, and we hope that her story and tenacity will inspire others, too. ●

What Did We Do? Was It Unwise to Ban Family From the ICU?

By Peter J Papadakos, MD, FCCM, FCCP, FAARC, FNIV



During the worldwide COVID-19 pandemic, critical care practitioners throughout the United States and the world were instructed by health agencies, government leaders and hospital administration to ban family members from visiting critically ill patients.

The question I ask, along with many of my critical care peers, is — did we do more harm than good to our patients and their families? How did the rush to deal with this pandemic and flatten the curve affect our bedside care? Did what these leaders suggest and mandate create a new standard of care that was followed by us, without weighing the accumulated data, variables and time-honored ways we care for and deal with critical illness and recovery? Should we have stepped back and evaluated the risks and benefits of these ideas prior to following them? Should we have held our ground and supported science and humanity versus fear and panic? These and many other questions need to be addressed.

Since the dawn of medicine, we as practitioners have understood the importance of family in the curative process of healing. Families have always provided support and comfort at the bedside to encourage recovery through all levels of illness. They have helped feed and comfort the sick and provided aid and a respite for the healers. In many ways, family has participated in the healing process through unyielding support and the projection of hope since the dawn of time. But things changed with this pandemic. We have all been exposed to the avalanche of stories of people dying alone, with families being pushed into the vortex of depression because they were unable to see the sick and help in their care. Staff also has been affected by losing the ability to interact with families and receive their support and feedback. The massive increase in burnout and depression in our bedside staff may in part have been due to the loss of this important interaction with grateful families.

We recognize that as practitioners working in the ICU we should base our care and practice on evidence, so I begin by reviewing the data we had available prior to this life-changing pandemic. We all work in ICUs, taking care of critically ill patients with complex diseases, many of which have higher mortality indexes

than COVID. I first look at what our “work home” looks like, the familiar place where we spend our days. I have practiced in the ICU since the 1980s and I can state, along with others, we no longer have cold open cold wards. ICU design has greatly moved forward to now having spacious individual rooms with both patient privacy and family interaction as a goal. Critical Care Societies now give out awards for ICUs that provide space for families so they can have comfort as they help with the care of the patients. As I look around my newly built ICU, I see rooms built to provide comfortable couches that convert to beds and ensuite bathrooms. Many times I can remember families spending the night to reorient the head injured patient and prevent them from hurting themselves, and thus providing support to the bedside nurse so she can focus on her other patients. This is not unique to my unit, as I have visited similarly designed units around the world. Since 2001, the Joint Commission and many hospital associations around globe have provided guidance on allowing family at the bedside in the ICU and protocols for visitation practices. This is an ever-growing positive trend in improving the ICU experience.

All of our professional societies — be they medical, nursing or respiratory — educate us on the importance of family visitations and how it impacts healing. Through the Advocacy Committee of our own society many years ago, we developed educational materials in all the major languages to aid families with the ICU experience. We all use variants of these every day in our daily practice. The published evidence in hundreds of papers has shown that flexible visitation decreases anxiety, confusion and agitation, reduces cardiovascular complications, decreases length of stay, aids with vent weaning, makes patients feel more secure, aids in sleep, increases patient satisfaction and increases quality and safety. The data also supports that visitation does not increase infection with proper family education and protocols.

“Since the dawn of medicine, we as practitioners have understood the importance of family in the curative process of healing.”

Hospitals have developed protocols for visitation for many highly infectious diseases and protocols to protect immune-suppressed patients from family-carried infections. This has been pioneered by our colleagues in cancer units.

We clearly know from the care of patients how delirium impacts our patients. Over the last decade, we have made great progress in the reduction of delirium and its complications. It is common knowledge how it impacts mortality of critically ill patients. Worldwide, we now evaluate it through numerical scales on our flow sheets and act on it with carefully designed protocols. Many published studies and our daily observations

“What we did not see is how inpatient care was affected by the removal of humanity on the patient as a whole.”

have clearly shown that family visitation can diminish delirium by over 20%. Family participation has especially been shown to decrease delirium in the elderly who are hospitalized in the ICU. Prior to COVID, family was used commonly as a part of critical delirium reduction practice. Why did we suddenly believe that removing patients’ families from the bedside due to COVID, where the vast majority of patients were elderly, was a good idea? Did you all observe the increase in delirium that is now being reported in facilities throughout the U.S.?

I believe we were all affected by the rush to fight the pandemic and were fixated by the concern to modulate the disease and decrease the spread. We all saw the ongoing tally of the number of cases shared regularly by our leaders and cable media, and issues of number of ventilators and treatment of ARDS were the primary concern. What we did not see is how inpatient care was affected by the removal of humanity on the patient as a whole.

I think we can now reflect back and view these actions as the most important learning experience by modern medicine and use it as a call to action. We need to study how family isolation affected our patients, families and ourselves. Did we increase mortality, delirium, complications, length of stay and other variables due to the ban? Did it affect decision-making such as goals of care? Was it a contributor to staff burnout?

If we rushed into this care model of isolation and did harm, we need to prepare for the future. Our society and other professional organizations must discuss this event and use it to lead in the development of practice guidelines. We must make a point to share them with our governments and hospital leadership. We must put into place more robust protocols and family education to allow for safe and supportive visits that will not affect the spread of infectious disease. Training families in proper hygiene and PPE use, testing visitors and placing them in isolation with patients in the hospital room may be an easy starting point. We need to educate governments, the media, administration and the public at large that what medicine has learned over the centuries in healthcare should not be suspended in the panic of the moment.

We, as humans, are a social species that need the support, comfort and physical contact of loved ones to give us hope and the will to fight disease and optimize our physical and mental recovery. Google Meetings and Zoom cannot replace this core fact of humanity — the interaction and support of loved ones. ●

Emergency Department Boarding of Neurocritical Care Patients

By J. Spencer Dingman, PharmD, BCCCP; and Brian W. Gilbert, PharmD, BCCCP, BCPS; With Sean Di Paola, PA-C, MPAS; and Christopher D. Cassidy, MD



J. Spencer Dingman, PharmD, BCCCP



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Time-to-intervention has become well-recognized as an important quality measure in numerous areas of medicine, including acute coronary syndromes, sepsis, trauma and acute ischemic stroke. An increased demand for hospital beds

during the COVID-19 pandemic has brought many hospitals to maximum occupancy, bringing to attention the issue of prolonged boarding in the emergency department (ED) as a potential barrier to optimized care. Delayed transfer to neurology intensive care units (ICUs) has been associated with worse outcomes in ischemic and hemorrhagic stroke patients, but there remain fewer data examining the impact of ED boarding on a broader neurocritically ill patient population. Multidisciplinary teams of specialized staff trained in neurocritical care provide more optimal care and have demonstrated improved patient outcomes, including reduced rates of infection and mortality, as well as increased rates of favorable discharge disposition. It is reasonable to assume that some of the most impactful care is provided in the acute phase of treatment in the ED. Here we aim to highlight under-recognized obstacles to high-quality care for these patients and to propose suggestions for improving care for specific populations.

Changes in Neurological Exam

In patients with ischemic and hemorrhagic stroke, the importance of acute changes in neurological exam should be emphasized as a possible indicator of worsening stroke, early hemorrhagic conversion, hydrocephalus or increased intracranial pressure. In these cases, early recognition may be the trigger for interrupting thrombolytic therapy, initiating hyperosmolar treatment or proceeding to emergent surgical intervention. Nursing education on the proper performance of the NIH Stroke Scale score in the ED is crucial, especially for patients who are intubated or in other circumstances in which assessment becomes more difficult or changes are subtle.

Assessment and Management of Elevated Intracranial Pressure

For patients with acute stroke or brain injury, awareness of the risk for elevated intracranial pressure (ICP) is essential



From left-to-right: Christopher Cassidy, J. Spencer Dingman, Sean Di Paola and Brian Gilbert

for ED providers. Any patient with concern for acutely elevated ICP should have their head of bed elevated as tolerated, and attention should be paid to the position of cervical spine collars to avoid impinging venous outflow. Timely placement of ICP monitoring devices in appropriate patients can facilitate the administration of life-saving hyperosmolar therapy in the ED, although staff must be trained in the safe use of both the devices and the medications. When ICP monitoring is not available for patients at risk for elevated ICP, empiric treatment should be considered based on neurological exam, imaging and an assessment of risks and benefits. Given the time-sensitive nature of treating an ICP crisis, urgent orders for hypertonic saline or mannitol should be expedited, with careful attention paid to the rate of infusion and type of intravenous access available. As most patients in the ED will lack central venous access, rescue administration of highly concentrated products (e.g., 23.4% sodium chloride) may be considered contraindicated, though a growing body of literature supports the peripheral administration of 3% sodium chloride and mannitol through medium- and large-bore intravenous sites.

Early Recognition of Seizure Activity

In patients admitted with seizures or at high risk for the development of seizures, early recognition of seizure

activity in the ED is critical. While electroencephalography capabilities will be limited in many EDs, consideration for nonconvulsive seizure activity as an explanation for altered mental status in a postictal or otherwise encephalopathic patient may prompt faster reevaluation and treatment. Emphasizing the importance of airway protection may also identify respiratory failure in a deteriorating patient and allow for timely intubation when needed.

Blood Pressure Management

Timely blood pressure control is foundational to the acute treatment of many neurological emergencies, including intracerebral hemorrhage, subarachnoid hemorrhage and traumatic brain injury. Its importance should therefore be emphasized among ED providers, with a focus on appropriate medication selection based on individual patient-level factors, titration according to national and institutional guidelines, and close monitoring for safety events, especially considering the dynamic nature of patients with neurocritical illness.

“It is of utmost importance that ED personnel be cognizant of appropriate sedation strategies as they pertain to neurocritically ill patients.”

Targeted Temperature Management

In patients undergoing targeted temperature management (TTM) after cardiac arrest, achieving temperature control can be difficult in the ED, especially with more aggressive targets of 32-34 degrees Celsius used in some centers. Some therapies described in the NCS guideline for implementation of TTM may translate easily to the ED (e.g., chilled saline, cooling blankets and fans), while others may require special education or training (e.g., use of advanced non-invasive systems such as Arctic Sun™, intravascular cooling systems and pharmacotherapies intended to reduce shivering). Neurocritical care ICU nurses and pharmacists may be useful resources for assisting with device setup or providing education on the purpose and safe use of these medications when a delay in ICU transfer is anticipated. Additionally, providing ED staff with access to advanced training such as Emergency Neurological Life Support (ENLS)® certification may bolster the quality of care provided to neurocritical care patients in the ED.

“Nursing education on the proper performance of the NIH Stroke Scale score in the ED is crucial.”

Management of Sedation in Mechanically Ventilated Patients

The ability to rapidly assess a patient’s neurological exam is vital in patients with neurocritical sequelae. However, rapidly deteriorating patients frequently require intubation and subsequent sedation. It is of utmost importance that ED personnel be cognizant of appropriate sedation strategies as they pertain to neurocritically ill patients. In many instances it is advantageous to select analgesic or sedative agents that allow for frequent interruption to obtain serial neurological exams: medications such as propofol, ketamine and fentanyl offer predictably rapid onset and offset with minimal accumulation over short durations. Dexmedetomidine, which confers a light depth of sedation and fairly short duration of effect, does not offer the same pharmacodynamic profile as sedatives such as propofol or benzodiazepines, and therefore may not be the agent of choice in patients requiring a decrease in cerebral metabolic demand or ICP reduction. Lastly, agents with more prolonged half-lives, such as benzodiazepines, should be utilized only after direct consultation with the neurocritical care team to ensure that deep levels of sedation are warranted and more frequent neurological exams will not be needed while boarding in the ED.

Other ED Considerations

- Among patients with neurocritical illness, minimization of stimulation may be indicated but made more difficult in the fast-moving environment of the ED. Such patients should ideally be admitted to private rooms with doors rather than semi-private rooms with curtains and placed in quieter areas of the department, while visitation should be limited as necessary.
- Nurses caring for patients with suspected CNS infections should clarify the intended timing of antibiotic and steroid administration in relation to plans for lumbar puncture to avoid unnecessary delays. Adapting hospital policy to allow for intravenous push administration of antibiotics such as beta-lactams can reduce time to administration and overcome compatibility issues with the limited intravenous access present in many ED patients. Finally, if an ED typically utilizes one-time rather than standing medication orders, doses can be missed or delayed if a patient is held for a prolonged time before ICU transfer.
- Incorporation of ED pharmacists with neurocritical care training may help with prevention of medication errors,

appropriate medication reconciliation and facilitating time-sensitive therapies. Additionally, a multidisciplinary evaluation of existing institutional practices to reduce operational barriers to pharmacotherapy can be helpful. Emerging data support the safety of minimally diluted intravenous push administration of antibiotics and anti-epileptic medications, and adding time-sensitive medications to the inventory of automated dispensing cabinets can reduce the delay between order and administration.

“Numerous ED personnel, including physicians, pharmacists and nursing, have all become ENLS-certified, improving the overall care provided to the neurocritically ill patients even during times of extreme boarding.”

Our Local Experience

Locally, our institution has felt the impact of increased hospital census and has made use of a variety of personnel and practice changes to accommodate this demand. Operationally, the introduction of push-dose antibiotics and antiepileptic medications has reduced hands-on nursing time requirements and made more infusion pumps available for other medications or other patients. ED stroke alert response has been spearheaded by neurocritical care advanced practice providers, as well as remote teleneurologists evaluating patients via real-time video services. Nurse educators have played a critical role in developing new staff or cross-training resource ICU nurses to provide care in the ED when critical patients require it.

Prolonged boarding has also introduced the opportunity to reassess disposition after a patient's initial hours in the ED and to determine if a different level of care may now be more appropriate (potentially reserving an ICU bed for another patient or allowing for more optimal staffing ratios). Multidisciplinary collaboration across departments and an open mind to new practice models has yielded improved results for our clinicians and our patients at a time they need it most. Lastly, prior to the COVID-19 pandemic, ENLS courses were offered biannually to staff within our institution. Numerous ED personnel, including physicians, pharmacists and nursing, have all become ENLS-certified, improving the overall care provided to the neurocritically ill patients even during times of extreme boarding.

Conclusion

In summary, delivering optimized patient care while a patient awaits transfer to the neurocritical care unit can be difficult. Multidisciplinary efforts and coordinated education can help prioritize and navigate the variety of challenges encountered during prolonged emergency department stays. While a general consensus exists that prolonged boarding puts patients at risk for worse outcomes, more data are needed to evaluate the true impact this has amongst neurocritically ill patients. Once barriers are identified, institutions can take appropriate process-oriented steps to optimize care for boarding neurocritical care patients. ●

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Pride in Neurocritical Care: Sexual and Gender Minorities and Neurocritical Care Health Professionals

By Zachary Threlkeld, MD; Ahmad Riad Ramadan, MD; Sara Hefton, MD; Starane Shepherd, MD; H.E. Hinson, MD

As part of broader diversity, equity and inclusion efforts within NCS, the Sexual and Gender Minority (SGM) subcommittee of the Inclusion in Neurocritical Care Committee (INCC) aspires to raise awareness about and mitigate health disparities in SGM individuals, support development of culturally sensitive neurocritical care and promote the recruitment and retention of SGM individuals who are historically under-represented in neurocritical care and in medicine more broadly.

Sexual and gender minority people include not only many patients treated by NCS members, but many NCS members themselves. As in other minority communities, understanding health and health disparities among SGM people is critical for healthcare professionals to deliver the best possible care to patients. Furthermore, an appreciation for SGM health issues is crucial to fostering an environment of inclusion in our profession — an environment which will bolster the diversity of our society, attract the most talented future neurocritical care health professionals and ensure that the composition of our society more closely resembles the populations we treat.

The history of SGM health is beyond the scope of this article, but we hope that a survey of terminology, disparities and best practices related to SGM health will be of interest to our colleagues. Critically, identity is personal and diverse, and we do not intend to speak to the experience of all SGM individuals, but instead hope to offer information, guidance and a call to action.

Terminology

Identity is complex and multifaceted, and individuals describe their identities in different ways (Figure 1). We present common SGM terminology below (Table 1). This list is hardly exhaustive, and more expansive glossaries are easily found online.¹ Such terminology is also dynamic and changes with time. For example, terms like “homosexual” or “male-to-female” have fallen out of use and may be viewed as “overly clinical,” antiquated or pejorative.²

“An appreciation for SGM health issues is crucial to fostering an environment of inclusion in our profession.”

Figure 1. Personal identity represents a complex intersection of gender identity, gender expression, sexual orientation and sex assigned at birth.

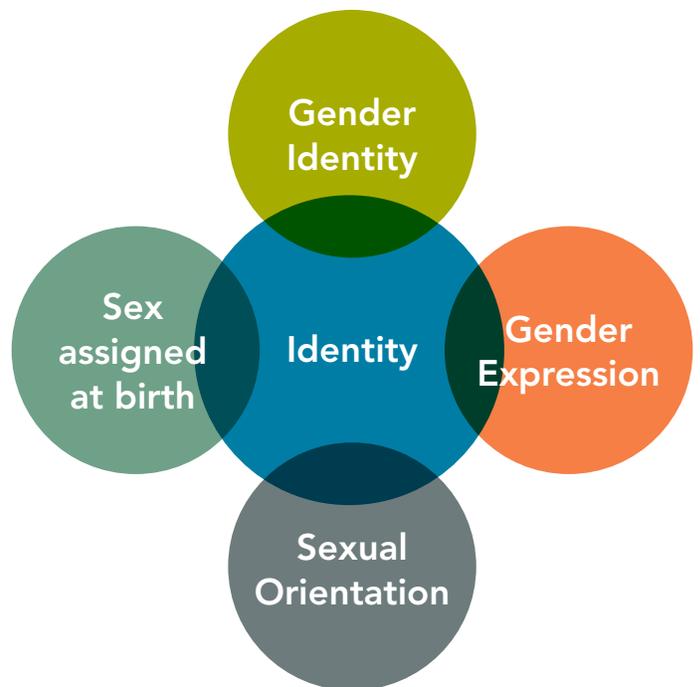


Figure courtesy of Nicole Rosendale, MD.

Disparities

SGM individuals are subject to understudied health disparities across their lifespans, including higher all-cause mortality.³ SGM youth are more likely to attempt suicide. SGM adults have higher rates of certain types of cancer, higher rates of smoking and substance abuse, are less likely to have health insurance, and are more likely to be victims of hate crimes. SGM elderly experience higher rates of poverty and may have less access to partner benefits.⁴ More research is urgently needed to better understand SGM health inequities in neurocritical care specifically, and use of exogenous hormones, higher rates of smoking, substance abuse, HIV, depression, anxiety and poorer access and utilization of care all likely modulate the risks of neurologic disease.⁵

One in every six SGM individuals reports experiencing discrimination when accessing medical care (Figure 2).⁶ In a 2009 survey of SGM individuals, 56% of LGB and 70% of transgender respondents cited at least one instance in which they experienced discrimination in a healthcare setting.⁷ Examples of discrimination cited include being refused needed care, having healthcare professionals refuse to touch them, use of abusive or harsh language, being blamed for their health status, or physical roughness or abuse.

“One in every six SGM individuals reports experiencing discrimination when accessing medical care.”

Best Practices

SGM individuals represent a community whose very identity has historically been considered pathologic by the medical establishment. For this reason, it is all the more important that health professionals actively cultivate an inclusive environment in which to engage patients, families and colleagues. Furthermore, better understanding our patients allows health professionals to more appropriately screen, form differentials and counsel.

Even simple efforts can be meaningfully consequential. The use of gender-neutral and non-heteronormative language (e.g., asking about a patient or colleague’s “partner” rather than “husband” or “wife”) immediately creates a more inclusive interaction. Similarly, proactively asking about an individual’s preferred name or pronouns rather than assuming their pronouns avoids misgendering an individual (using the pronoun of the gender with which they do not identify).

While individual efforts are important, systems-level interventions are essential to ensure equitable care for SGM people. Intake forms, materials in clinical spaces (posters, brochures, etc.), the presence of gender-neutral restrooms and hospital nondiscrimination policies all influence the inclusivity of the patient care environment.⁸ Transgender individuals face unique challenges in inpatient care. As primarily inpatient health professionals, we should ensure that conversations about gender identity are private and recognize the additional stress that transgender inpatients may experience due to use of inaccurate pronouns, description by sex instead of gender, and replacement of personal clothing and other means of gender expression.⁸

Health professionals would benefit from further education in SGM health disparities during and after their training. A survey of American Academy of Neurology members found that about half believed sexual orientation and gender

Table 1: Common terminology used to describe SGM identity.

Gender Terminology

Gender: A social construct encompassing roles, behaviors and attributes that a given society uses to classify an individual as a man, woman or other.

Sex: A biological description assigned at birth based on a person’s external anatomy.

Sexual and gender minority (SGM): An umbrella term encompassing individuals who identify across a broad spectrum of sexual orientation, gender identity, gender expression and reproductive development.

Gender identity: An individual’s internal conception of one’s own gender

Transgender: An individual whose gender identity or expression differs from the gender associated with their sex assigned at birth.

Transgender man: An individual who identifies as a man and was assigned female sex at birth.

Transgender woman: An individual who identifies as a woman and was assigned male sex at birth.

Gender non-binary: An individual whose gender identity does not fit the binary classification of male or female. Non-binary individuals may or may not also identify as transgender. Non-binary may also be used as an umbrella term inclusive of other identities such as gender non-conforming, genderqueer or gender-fluid.

Gender expression: The external manifestation of gender identity, typically through clothing, mannerisms, etc.

Cisgender: An individual who is not transgender.

Sexual orientation: An enduring, emotional, romantic or sexual attraction, which may be fluid.

Lesbian (L): A woman whose primary sexual orientation is toward people of the same gender.

Gay (G): An individual whose sexual orientation is toward people of the same gender.

Bisexual (B): An individual whose primary sexual orientation is toward people of the same and other genders, or toward people regardless of gender.

Queer (Q): Originally a pejorative term, more recently reclaimed by the SGM community as a self-affirming umbrella term expressing a spectrum of identities and orientations that are counter to the mainstream.

Figure 2. Percentage of LGBTQ Americans Saying They Have Ever Been Discriminated Against in Each Situation Because They Are LGBTQ



Survey results of 489 US adults identifying as lesbian, gay, bisexual, transgender or queer.⁶ Note that 16% report discrimination based on their SGM status when seeking healthcare.

identity to be social determinants of health, and less than half felt SGM status had any bearing on neurologic illness.⁹

The dearth of understanding and training about SGM health reflects to some extent a dearth of SGM health-focused research. Research data specific to SGM people are limited, and most research is based on smaller observational studies and case series.¹⁰ Future research efforts should collect data about sexual orientation and gender identity in order to identify and understand SGM health disparities, and the most appropriate way to frame such data collection is well-described.^{2,11}

“We are uniquely positioned to study and mitigate health disparities and to use our roles as community leaders to create inclusive environments for SGM and other minorities.”

Sexual and gender minorities face unique health disparities driven by complex social determinants of health. As a historically stigmatized group, SGM people face ongoing individual and systemic discrimination that perpetuates these inequities. As health professionals, we are uniquely positioned to study and mitigate health disparities and to use our roles as community leaders to create inclusive environments for SGM and other minorities. Ultimately, we can only achieve our goal to deliver the best care of our patients when we continually advocate for inclusion in neurocritical care of all individuals — when we embrace the full diversity of our patients, our colleagues and ourselves. ●

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INCC on DEI: A Look at the Inequities in Medicine First Requires a Good Look at Ourselves

By Tommy T. Thomas, MD, PhD; Ebonye Green, MNSc, ACNPC-AC, CNRN, SCRNP, APRN; Deepa Malaiyandi, MD; and Hana Nobleza, MD

Some of us watched the videos. A **doctor's cry for help** from the very medical establishment to which she belongs. A **CEO expresses contrition** by saying that there were "good people" on both sides. A man cries out for his mother as he was robbed of breath.

We ask the question, "How we can avoid this situation?" The answers lie far beyond this isolated incident. They are buried in the awareness and analysis of a long history of inequity. To reconcile this, we must become aware of the biases that each of us holds. Regardless of our intent.

It's not simply about what the team did in that one moment. It's about every step that led to it.

Nothing that has happened in the last year is new. We have lived in and supported a system that was built upon the back of inequality.

DEI efforts through INCC can help to level the playing field. First and foremost, by opening our own eyes to the realities of injustice in which we have become unknowingly complicit. Such initiatives will need to focus on pushing the conversation further by asking bolder questions that require community dialogue to answer. Such questions include:

- Why does one human determine the pain threshold of another?
- Why haven't we affected change? What about the system, the education, the personality of the individual?
- Does a system that teaches empathy inherently teach compassion? Compassion especially for something or someone that you can't identify with; you can't mirror? A situation where you will never walk a mile in their shoes?

While empathy refers to our ability to take the perspective and feel the emotions of another person, compassion is when those feelings and thoughts include the desire to help and the willingness to relieve the suffering of another without the necessity of complete understanding of it.

“Look within your organization and yourself, remove the blinders and begin asking the questions that will lead to long-term, sustainable change.”



How do we uncover the biases within ourselves that lead to the discrepancy? Institutionalized or structural racism, personally mediated racism and internalized racism exist within us all. This along with social determinants of health lead to insidious and paroxysmal health effects.

When faced with a "sentinel moment to accelerate" their work, systems and leaders who truly take up the mantle of racial equity do not shift responsibility to the individual harmed or society at large, even in the context of a pandemic. They ask, "How could racism be operating here?" and explore, "Why was a Black woman and physician with valid concerns not heard and understood?"

Equity is both a process and an outcome. It is a measure by which we align our egalitarian values with our attitudes and behaviors, requiring us to stretch beyond ingrained and outdated notions of healthcare, which contribute to persistent inequities rooted in disparate access, quality and outcomes. True equity does not merely ask whether the people within a health system are well-intentioned but instead whether the policies, practices and institutional norms promote healthcare justice.

We encourage you to look within your organization and yourself, remove the blinders and begin asking the questions that will lead to long-term, sustainable change across institutions. Let's not simply talk about Dr. Moore's tragic and unnecessary death, let's do the work from the ground up so that we aren't still asking the same question next year and the year after.

Right now, this is who we are. But it doesn't have to be. ●

Neurocritical Care in the Last Frontier — A Pharmacist’s Perspective

By Dyan Fleming, PharmD, BCPS, BCCCP



Treating neurocritical care patients in Alaska, land of the midnight sun, comes with unique geographical, environmental and seasonal challenges. Navigating these challenges requires careful planning coupled with complex coordination of medical care to minimize delays and optimize patient outcomes as much as possible through all transitions and levels of care.

Alaskans are resilient when it comes to dealing with crises in the harsh elements and sometimes “wild” remoteness. Can you imagine for a minute — it’s January and 15° F. You only have four hours of daylight, and you live in Akun, Alaska, an island that has no real road access. You begin to have right-sided weakness and slurred speech. You struggle to pull yourself onto your snow machine (“snow mobile” to those in the lower 48 states) and somehow manage to drive it to the nearest village health aide center for triage that is located miles away.

Village health aides are rural community members armed with comprehensive manuals and guides, developed and certified for use by Native Tribal leaders and Native Health Service officials. Health aides participate in four sessions of training, each lasting 3–4 weeks, and they may obtain certification by the Community Health Aide Program Certification Board. They are critical to ensuring appropriate patient care and referral in remote parts of Alaska. Health aides are tasked with not only managing chronic issues, but also emergent conditions in their rural communities. They connect natives to medical care by filling the gaps when traditional medical centers are unavailable.

Imagine again — at the urgency of the village health aide, it is recommended that you transfer by flight over 700 miles away to Anchorage, Alaska, for escalated neurocritical care. However, there is a winter storm moving in. You are now in a holding pattern due to a weather delay, as the aircraft is unable to land.

Weather delays in rural Alaska can often last upwards of hours to days. With no other means of nearby transport, you’re at the weather’s mercy. Other environmental-related harshness leading to delays include powerful earthquakes. Large seismic shifts in the frozen tundra can cause erosion or instability of common “roadways” and trails used by residents. Such destruction can lead to significant delays in medical evacuations and care. Environmental challenges in Alaska often lead to delays in accessing acute medical care, which in the case of an acute ischemic stroke, diminishes a patient’s eligibility for reperfusion therapies.

Imagine again — as the weather delay lifts, you manage to drive your snow machine to the nearest airstrip, 50 miles away, where aerial medical transport can safely land and then transport you to Anchorage for stroke treatment. Fortunately there is a neurocritical care bed available for you. Anchorage hospitals have a limited number of neurocritical care beds available among all area hospitals, and at certain times of the year, beds are limited.

“As a critical care pharmacist in Alaska, I am poised in a unique position to appreciate the challenges of harsh environments and the added complexities of patient care.”

The tourist season brings additional challenges for neurocritical care in Alaska. Tourism remains a quintessential part of an Alaskan summer — fishing excursions, wildlife adventures, cycling/ATV riding and hiking adventures are all frequented tourist activities, but these activities remain potential sources for traumas that fill local ICUs. Tourists participating in these outdoor activities are at risk for neurotraumas. Patient care coordination in these circumstances involves medical evacuations and transport to our mainstream area hospitals from the accident site, which might be in a rural town, mountain range or coastal region.

Cruise ship patrons are another large source of tourism in Alaska, a population for whom it is challenging to coordinate ongoing care. Can you imagine for a minute — you are on a family vacation aboard your dream cruise through Alaska when you begin to have the worst headache of your life. All the usual

“Navigating these challenges requires careful planning coupled with complex coordination of medical care to optimize patient outcomes as much as possible.”



Turnagain Pass, part of the Chugach Mountain range

measures for relief aren't working, and your wife is even more concerned because you seem less "with it" than you were before. You just left Skagway, Alaska, headed for Whittier, Alaska, when your family brings you to the ship doctor for evaluation.

Medical emergencies can occur in the middle of the ocean, and cruise ships are prepared for this. When a severe medical emergency happens, patient medical evacuations via air, sea and land are critical. Imagine again — you arrive at an Anchorage hospital. After being quickly triaged in the ED, you are whisked away to the interventional suite where you receive a stabilizing procedure, and then are transferred to the neurocritical care unit. After a week of ICU care, your doctor tells your family you are going to be discharged soon, but you will need rehabilitation. The option of local rehabilitation is considered but may be too far away from your loved ones for support. Hometown area rehabilitation is considered, but depending on the ongoing care needed, medical transportation preparation would need advanced planning.

Either of these rehabilitation options poses a challenge for patient care coordination within or from Alaska.

As a critical care pharmacist in Alaska, I am poised in a unique position to appreciate the challenges of harsh environments and the added complexities of patient care. During multi-disciplinary rounds, patients' ongoing care is thoroughly discussed and planned, and pharmacists have an important role in assisting with emergent drug needs, providing pharmacotherapy recommendations and planning for advanced medical transports of complex patients. We also help anticipate and supply medications necessary to sustain long transports. Ensuring appropriate alternatives during drug shortages is equally important, because overnight restocking may not be feasible in Alaska. As a clinical pharmacist, the work itself is rewarding by seeing a critically ill patient improve, but as a clinical pharmacist in Alaska, I count myself lucky to treat neurocritical patients in The Land of the Far North. ●

Trainee and Fellowship Sections Collaborate to Upgrade Fellowship Resources on the NCS Website

By Shweta Goswami, MD; and Sasha Yakhkind, MD



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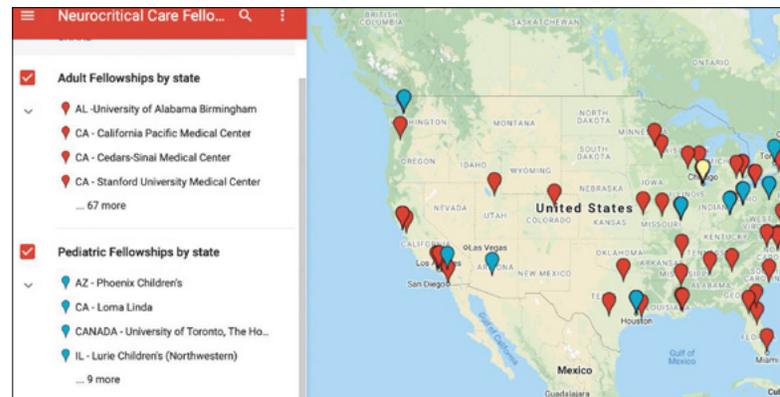
Every year, neurology residents combine the wisdom of their mentors, their experience, their passion, and their personalities to guide them in the decision of sub-specialization. In 2017, 90% of neurology

residents planned to complete fellowship before going into practice¹, and the process of application into subspecialty training is nuanced and evolving. Neurocritical care fellowship is part of the United Council for Neurologic Specialties (UCNS), and the match process has been completed through the San Francisco Match (SFMatch) since 2009², a year after the first program was accredited³.

As members of the Trainee Section leadership, we are asked how to apply and where to look for fellowships by residents every year. In answering these questions, we identified several flaws in the current system. UCNS and the SFMatch listed not only different contact information for programs, but also different programs altogether. In attempting to find accurate information on each specific program's website, we found that most of the information, including program director/coordinator names and contact information, had not been updated in several years.

“The goal is to have the NCS website serve as the go-to conduit between neurocritical care fellowship programs and future trainees as the field continues to grow and evolve.”

Together with the NCS fellowship committee and executive team, we resolved to address this gap by creating NCS's own comprehensive list of every neurocritical care fellowship program. Even in the setting of the imminent transition to ACGME accreditation, we still wanted to be the go-to resource for FAQs from residents deciding to go into the field.



With the help of additional members of the NCS trainee section, we created a survey that we sent to every fellowship program and included basic questions such as “What does a typical ICU team consist of in your facilities?” and “From which residency backgrounds do you accept fellows?” The purpose of this survey was two-fold: to allow future neurocritical care fellows to have up-to-date access to basic information regarding each fellowship program, and to allow fellowship programs the opportunity to more accurately advertise themselves. The survey was ultimately completed by 42 fellowship programs, something that became a priority as the pandemic surged and paused in-person fellowship interviews.

The answers to the surveys currently reside within the NCS website section for trainee resources as a document link under each fellowship on a map. NCS is actively working on upgrading the website to a cleaner and easier to navigate web space. The goal is to have the NCS website serve as the go-to conduit between neurocritical care fellowship programs and future trainees as the field continues to grow and evolve. ●

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