

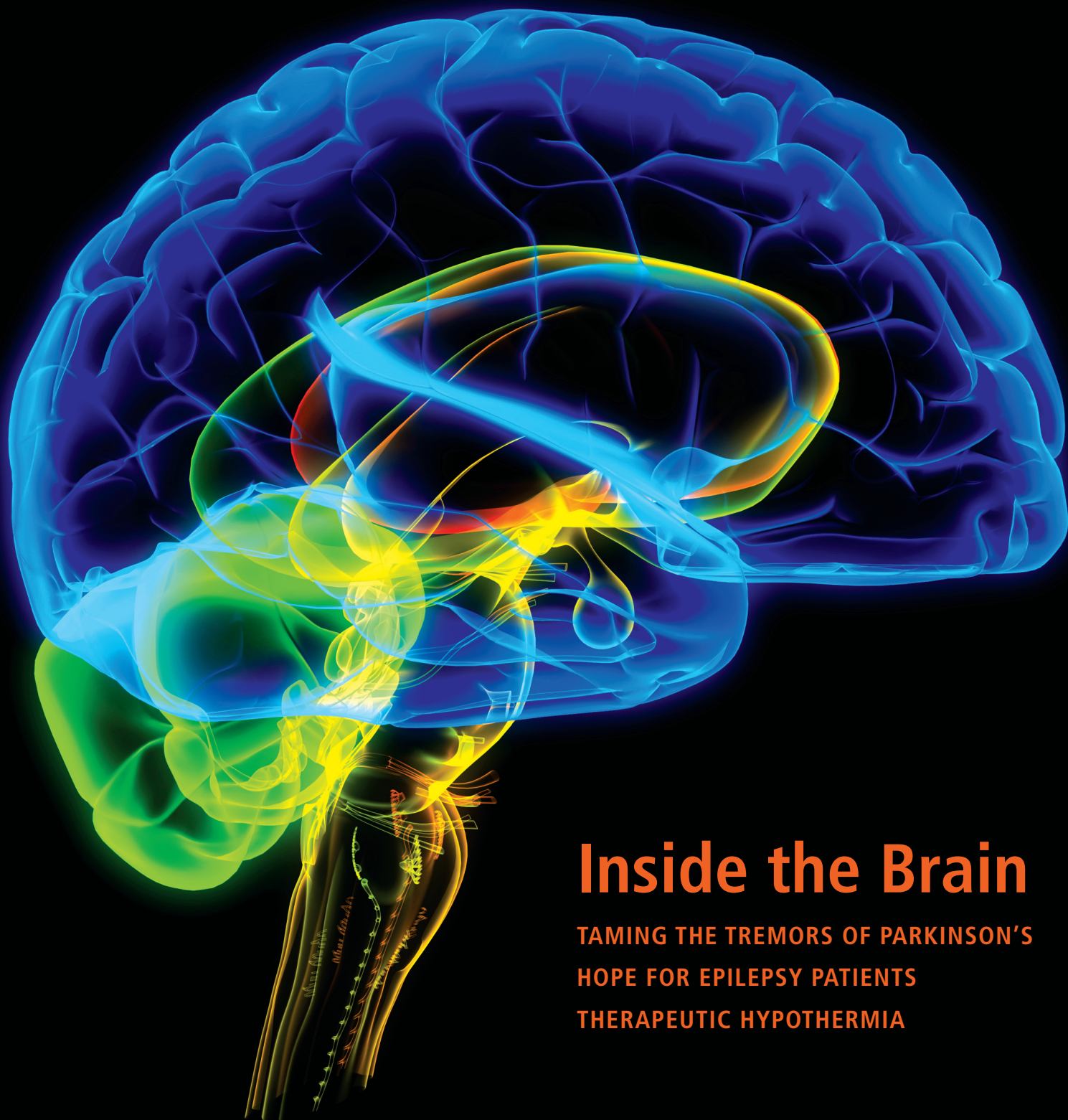
NURSE

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From the Chief Nursing Officer

NANCY J. LEE, RN, MSN,
CHIEF NURSING OFFICER, VICE PRESIDENT, PATIENT CARE SERVICES



This issue of *Stanford Nurse* tells the stories of our many journeys. First we learn about the journey that a new graduate professional registered nurse takes to Kenya to make a difference in the lives of the people she meets. Next we hear about the journey patients take when living with various neurological disorders, and the journey from one unit to another, and finally we receive some insight into our own journey towards a more robust and comprehensive shared governance structure.

The Neuroscience Center here at Stanford Hospital & Clinics (SHC) has a long and gratifying history of providing innovative care to challenging patients with complex neurological disorders. As with all of our programs, we build on the strength, talent, and skills of our nursing and faculty staff to sustain these programs, and to achieve excellent patient outcomes. In this issue we find highlighted the journey that patients with Parkinson's disease and epilepsy patients take from diagnosis to the decision to undergo an invasive procedure or a surgical intervention. Unlike other clinical specialties, the neuroscience patient cannot segment or isolate their health challenges; their disease processes may impact their very abilities as sentient beings.

I am very proud of how our nursing staff perceive their role in their community, and how they choose to engage in community partnerships. I believe that being so solidly focused on what we can give back to that community is a part of being a successful professional nurse.

As you all know, Magnet™ status is not a destination but a journey. We are actually still in the very early stages of this journey, however the direction is firmly set. One of the hallmarks of a Magnet organization is a mechanism whereby clinical staff have autonomy over their professional practice and input into broader decisions that impact the practice of nursing. Shared governance is the model that we have selected and I hope that this review will enhance your understanding of our process. We took this summer to critically assess the success and challenges we have faced in our shared governance system, and this is the first of several installments that will engage you in the process and evolution of this important tool for professional nursing at Stanford Hospital & Clinics.

A handwritten signature in black ink that reads "Nancy J. Lee". The signature is written in a cursive, flowing style.

H O P E

SEIZING



Treating Patients with Epilepsy

VAN BELLEW, BSN, CMSRN, ASSISTANT PATIENT CARE MANAGER F3
MIMI CALLANAN, RN, MSN, EPILEPSY CLINICAL NURSE SPECIALIST
STANFORD COMPREHENSIVE EPILEPSY CENTER

People of all ages can be affected by epilepsy, and it touches all aspects of people's lives, from their self-worth to their family and work life. The science of treating people with epilepsy has changed over the years, offering a renewed sense of hope. Successful treatment no longer is defined solely by the number of seizures, but encompasses the prevention of secondary complications of seizures and anti-epilepsy medications, and improving the quality of life of the patient by reducing the burden of the disease.

Evaluating epilepsy

Patients in the Epilepsy Program at Stanford Hospital & Clinics are usually identified as candidates for prolonged video EEG (electroencephalogram) monitoring during a visit to the outpatient clinic. The clinical nurse specialist or the nurse practitioner coordinates the admission, and the education process and patient preparation begins. Patients typically approach admission with mixed emotions. They are often excited that there may be a treatment option for their medically refractory seizures, but at the same time, they are hesitant because the evaluation induces seizures, which can be very frightening and uncomfortable. Some patients prefer to speak to other patients who have been through the evaluation and/or to visit the nursing unit before making the final commitment. Once the commitment is made, patients are admitted to F3, the neurology inpatient unit. Five rooms on

this 25 bed medical-surgical nursing unit are fully equipped to record neuro-behavioral events.

Patients are admitted for different reasons. Some are admitted for differential diagnosis. These are individuals who experience seizure-like behaviors but whose diagnosis is in question. Others are admitted because their seizures have not been controlled by medications. Admission is necessary to determine the exact seizure type or to quantify the seizure frequency to adjust treatment. Finally, some are admitted to localize the seizure focus in the brain. For those patients surgery may be the best treatment option for seizure control. All of these patients journey through three phases in the Epilepsy Program.

In Phase I, external electrodes that are placed on the scalp record electrical discharges to pinpoint the origin of the seizure. Methods of seizure induction include sleep deprivation, hyperventilation, photic stimulation, tapering anti-epileptic drugs and exercise using a stationary bicycle. The number of seizures that need to be recorded depend on the individual patient, but usually at least two typical seizures are recorded and sometimes more. Once the seizures are recorded patients are discharged with a plan in place for further testing and follow-up.

For patients undergoing a surgical evaluation, the Epilepsy CNS coordinates numerous additional studies. These include but are not limited to high resolution MRI scans, PET scans, neuropsychological tests, the Wada test or Intracarotid amobarbital study, and a neuropsychiatric evaluation. In Phase II, intracranial electrodes are surgically implanted to record electrical discharges and further localize the seizure focus to determine the safety and extent of surgery. In Phase III, the patient has surgery to remove the area causing seizures.



Van Belle, BSN, CMSRN, Assistant Patient Care Manager on Neurology Unit F3, explaining the portable “head box” connecting patient to seizure monitor.

A key role for nurses

In the hospital setting, nurses continue to play a vital role in offering patients the best opportunity for a normal life. The nursing staff is an integral part of the assessment of the patient during seizures, and this assessment provides invaluable information to the medical team in classifying seizure type. Just as importantly, staff nurses must address two major areas of concern: the individual’s psychosocial integrity and their safety. Patients come with issues of social isolation, feelings of loss of control and hopelessness, and may have issues with self-esteem and feelings of vulnerability. It can be devastating to have a condition that is unpredictable and that prevents one from fully living a normal life; it is frightening to come to a hospital to find the cause, especially if it means having seizures. Many patients also suffer from anxiety and depression.

For some patients, the cause of these events is psychological. With this diagnosis, a neuropsychiatrist who is part of our multidisciplinary team becomes further involved in moving the patient from a place of confusion regarding the diagnosis towards methods to control the stressors that induce seizure-like events. As a liaison, nurses are challenged to continually support the patient until physicians are ready to discuss their findings. The most difficult interactions are those in which patients are told that their experiences are not epileptic. Some individuals are relieved while others struggle in disbelief. During these pivotal moments, nurses can truly impact the individual’s psychological integrity. Interactions must

achieve a balance between accepting the patient’s experiences and the new diagnosis. Only through a joint effort between physicians, nursing staff, and EEG technicians can the team move the patient towards a recovery process.

Safety issues concern both patients and staff. With seizure activity, the primary objective is to prevent injury and to maintain an open airway. Usually tapered off medications, patients are at extremely high risk for falls caused by the onset of their events. Seizure pads, floor padding, keeping the patient room doors open at all times to allow frequent checks and quick access are routine practices to reduce injuries. Neurology safety aides are stationed at the video monitors to watch for these unpredictable events. This not only enhances the safety of the patients, but also ensures that all seizure events are captured, which may ultimately reduce the length of stay. Staff safety is a concern as some patients may experience aggressive behaviors if restrained during the seizure period. Our nurses have a specific skill set that allows them to have a clear understanding of seizure first-aid and assessment in order to prevent such situations or to keep them from escalating.

There is always a feeling of “recovery” when patients are ready to be discharged. Patients and the multidisciplinary team both have a better understanding of the disorder and treatment. We have a sense of hope that our patients leave with a reduced burden of the disorder and are able to have a better quality of life. **SN**

Cool COLLABORATION



THERAPEUTIC HYPOTHERMIA AND THE HEART-BRAIN CONNECTION

J.J. BAUMANN, RN, MS, CNS
CLINICAL NURSE SPECIALIST,
STANFORD STROKE CENTER

Pulseless ventricular fibrillation, pulseless electrical activity, asystole. The brain waits, breathless, waiting for the heart to start pumping. It does not store oxygen or glucose; it waits for the blood supply from the heart to deliver what it needs. As it waits, brain cells begin to die. Then blood flow is restored: oxygen and glucose can get to the injured cells. The benefits of blood flow return are combined with detrimental effects, dubbed reperfusion injury. Excitatory amino acid release. Calcium influx into the cell. Free radical formation. Apoptosis, programmed cellular death. How does one slow all these molecular processes down? How does one keep the brain from dying now that the heart has begun to beat? Hypothermia.

Therapeutic hypothermia is not a novel idea. Even the ancient Egyptians described its beneficial uses. The father of CPR, Dr. Peter Safar, spoke of post resuscitation hypothermia in his 1957 book, *The ABC's of Resuscitation*. At the time, animal model research was showing benefit but human research was conflicting. But Dr. Safar's ideas to "save the hearts and brains of those too young to die" were pursued. In 2002, two back-to-back research articles were published in the *New England Journal of Medicine* showing the benefits of hypothermia after cardiac arrest. Post cardiac arrest patients who remained comatose following return of spontaneous circulation were cooled to 32-34° C for 12 to 24 hours. The results were impressive. The group of patients receiving therapeutic hypothermia had significantly improved neurologic outcomes without significant complications compared to the normothermic group.

In 2003, Dr. Christine Wijman at Stanford Hospital & Clinics implemented therapeutic hypothermia. Post cardiac arrest patients who remain comatose are cooled to 33° C for 24 hours. Using a cooling catheter or surface cooling pads with biofeedback, the patient easily remains between 32-34° C without getting too cold (<30° C), which can cause cardiac arrhythmias. Under the watchful eyes of the intensive care

nurse, the patient is monitored closely to avoid hypotension, hypokalemia, and insulin resistance. Re-warming is done just as carefully and slowly at 0.3° C per hour. Current research advocates for faster initiation of cooling of these patients – even to begin cooling during resuscitation! Emergency nurse Mark Andrews, RN, MS, took this research seriously. He currently is doing an evidence-based practice fellowship on decreasing the time to initiation of the hypothermia post cardiac arrest protocol. And the future? Moving initiation of cooling to the pre-hospital setting, where rapidly infusing cold (4° C) normal saline can decrease a patient's temperature 0.5-1° C.

What is the payoff for the intense care we provide these patients? It is watching those patients who were presumed to be brain dead walk out of the hospital. The law student who collapsed on the sidewalk, comatose after arrest, returning to school. The man who was down for over 30 minutes, cooled, now neurologically intact. This was Dr. Safar's vision. *The heart begins to pump, sending a warm rush to the brain, the brain is hurt, damaged by the heart's absence. The brain just needs time to chill, heal, and be whole again.* **SN**

Reference: *NEJM* 2002;346: 549-56 and *NEJM* 2002;346: 557-63

Inclusion Criteria

1. Age 18 years or older
2. Women must be over 50 or have a negative pregnancy test
3. Cardiac arrest with return of normal rhythm
4. Persistent coma as evidenced by no eye opening to pain after resuscitation (no waiting period required)

Exclusions

1. Any other overt reason to be comatose (e.g. sedating drugs, drug overdose, status epilepticus)
2. Pregnancy
3. A known terminal illness preceding the arrest
4. Known, pre-existing coagulopathy or bleeding
5. Pre-existing DO NOT INTUBATE code status and patient not intubated as part of resuscitation efforts
6. Blood pressure can not be maintained at least 90 mm Hg systolic either spontaneously or with low dose vasopressors.



J.J. Baumann, RN, MS, CNS

It Takes a Village

Caring for Patients with Subarachnoid Hemorrhage

MARY L. MARCELLUS, RN, INTERVENTIONAL NEURORADIOLOGY NURSE COORDINATOR (NEUROSCIENCES)
AND JOLI VAVAO, NP, CNRN (NEUROSURGERY)

Brain aneurysms are a life-threatening problem when they rupture (subarachnoid hemorrhage, SAH). Of the patients who survive the first 30 days post rupture, 50% do not function at their pre-rupture level.

As a referral center for complex cerebral aneurysms, Stanford patients benefit from the expertise of neurosurgeon Dr. Gary Steinberg and interventional neuroradiologist Dr. Michael Marks, both pioneers in the treatment of these lesions. Nurses play a critical role in the care of these patients as well. This patient population truly takes a “village” to make as full a recovery as possible. They require nursing expertise from the emergency department, cath lab, OR, ICU, neurosurgery unit, and rehabilitation. They require a whole team of physicians with various specialties as well as radiology techs, neurodiagnostic techs, PT/OT/speech therapy, case management, social services, and chaplaincy. The nurse caring for the patient is also caring for a family in crisis, which adds another level of complexity every day.

When an aneurysm is treated before it ruptures it is a pretty straight-forward treatment: the patient is in the hospital for two to five days and recovery takes two to five weeks. There are two methods of treating aneurysms. The goal of both is to exclude the aneurysm from the circulation. When blood can no longer enter the aneurysm, it can no longer rupture and cause further damage. This can be achieved by an interventional neuroradiologist placing coils into the aneurysm endovascularly or by surgical clipping of the aneurysm, which is done by a cerebrovascular neurosurgeon. The choice of treatment is based on the size, shape, and location of the aneurysm as well as the condition of the patient.

However, when an aneurysm ruptures, the problem is not only treating the

aneurysm, but supporting the patient during the critical period when complications can develop.

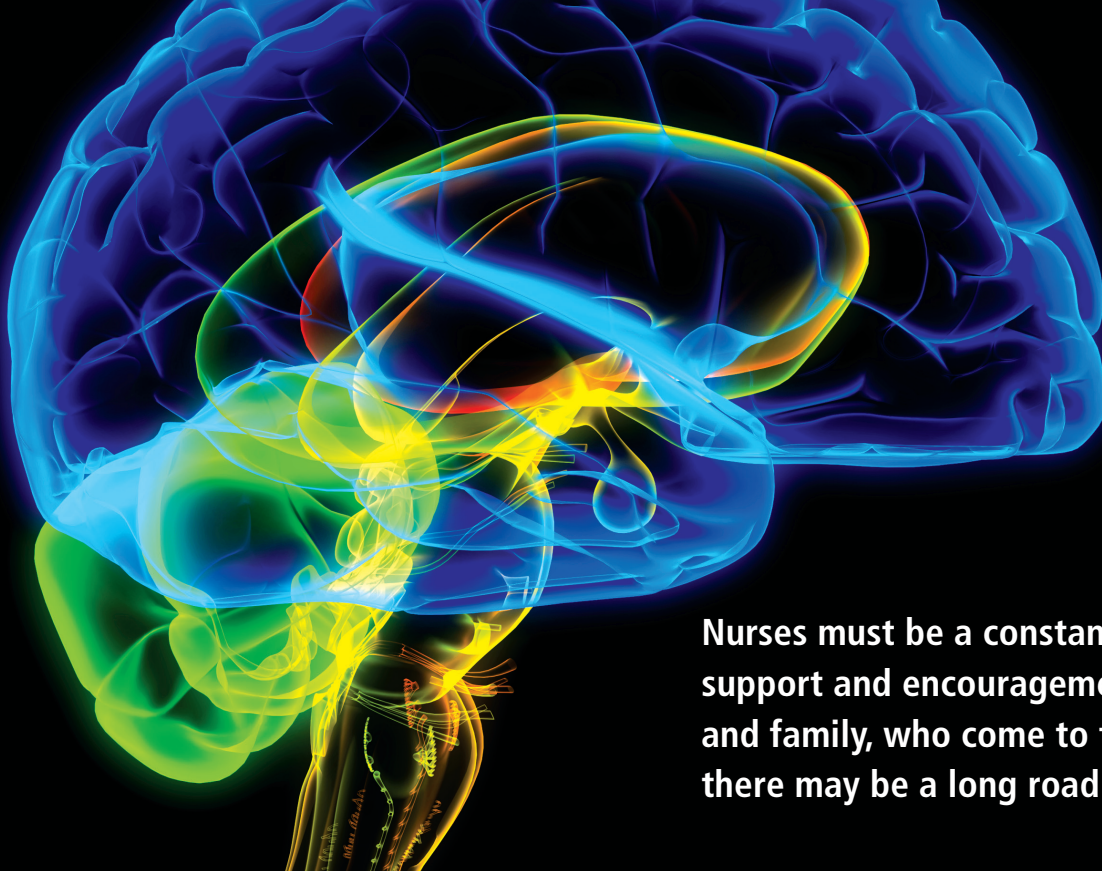
Phase 1: Acute – E2ICU

For at least several days after the SAH is diagnosed, patients are cared for in the intensive care unit. Sometimes early in their hospitalization they may seem very normal, but as these patients are at risk for vasospasm over the next 4-21 days, they can begin to have changes in level of consciousness or focal neurologic deficits which may even progress to a major stroke. Daily transcranial doppler (TCD) monitoring is a vital tool in being able to assess these patients. At this juncture it is critical to maintain BP within the set parameters as well as to monitor the patient’s neurologic status at least hourly. Hydrocephalus is another common problem in this patient population and external ventricular device (EVD) monitoring is done frequently. Depending on the severity of their bleed, patients may also be intubated and on a ventilator. Because the patient may

worsen significantly in the first 10-14 days post bleed, the strain on the families is tremendous.

Phase 2: Subacute – G1

Often the family is very nervous about the change in staff ratio compared with the ICU, and the nurses and staff must educate the family and patient (who is still often confused) to the new environment and schedules. These patients are still monitored closely for any neurological changes and aggressive efforts are made to prevent complications (DVT, infection, pneumonia, vasospasm, etc.) during this phase of recovery. Some patients may still have a tracheostomy, PEG tubes and/or EVDs in place that need to be managed. In addition to the fact they may have hemiparesis, visual field deficits, and cranial nerve dysfunctions, they may also be confused, have short-term memory deficits, emotional outbursts, and depression. Nurses must be a constant source of support and encouragement for the patient and family, who come to the realization there may be a long road ahead.



Nurses must be a constant source of support and encouragement for the patient and family, who come to the realization there may be a long road ahead.

The nurse at the bedside works closely with PT/OT/ Speech Therapy and Case Management to determine when the patient is ready for the next phase of recovery, rehabilitation.

Phase 3: **Rehabilitation**

Patients who have suffered a SAH have a typical pattern of recovery with the most rapid improvement over the following 3-6 months, and then a slower recovery even up to 18 months after the hemorrhage. By focusing therapy during the first 3-6 month period, patients can often make a remarkable recovery to the point of partial if not complete independence. The rehabilitation team will often progress the patient through such basic tasks as walking and activities of daily living to more complex tasks that

the patient would need to do to be independent in society. While it is important for the body to heal and regain function after a SAH, there is also a focus on the cognitive recovery. For example, someone who had a high level of executive function before the hemorrhage may find simple tasks such as remembering phone messages or being able to complete a simple multiple step task difficult or impossible post hemorrhage. In addition, many patients become depressed because of altered body image and dependence on others during this phase of recovery. The nurse working with the patient must always be alert to this emotional downward spiral that is easy to fall into and can limit recovery. A visit with a neuropsychologist is helpful for patients in this phase of treatment.

Phase 4: Follow-up and long-term recovery

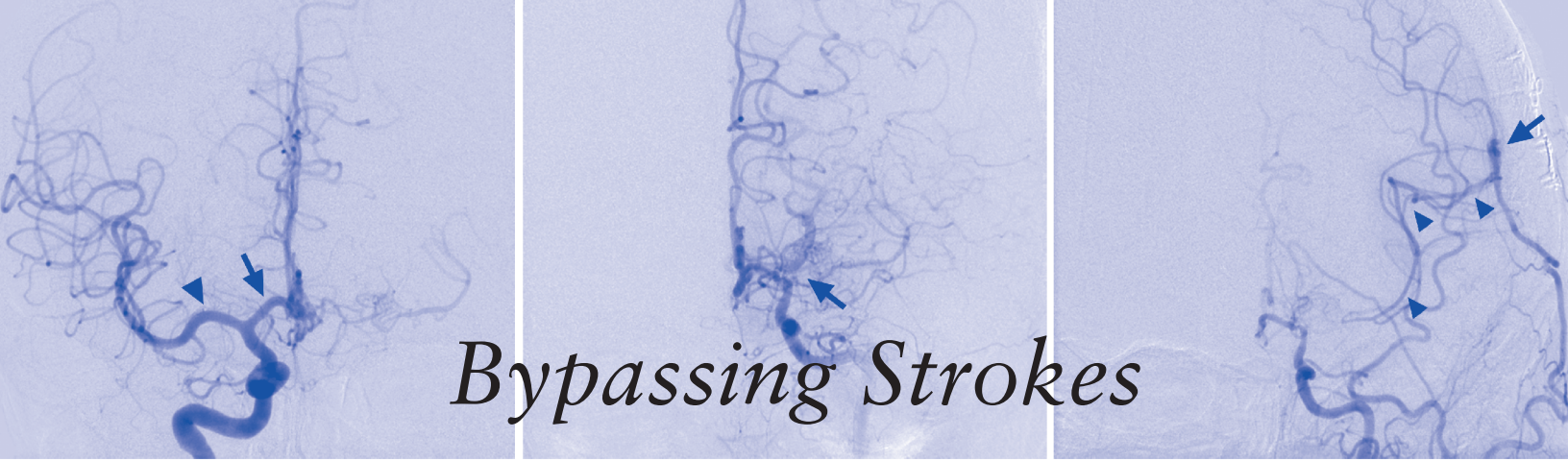
Subarachnoid hemorrhage patients and families form a strong bond with neuroscience nurses at Stanford Hospital & Clinics. Often patients will return for follow-up appointments after being discharged from rehabilitation and make a point of visiting the nurses on E2 and G1 to show them how far they have come in their recovery and to say thanks. Outpatient advanced practice nurses follow these patients at regular intervals over the next 1, 3, and 10 years to monitor their recovery and troubleshoot any new issues that develop. They communicate with other services that also follow these patients such as neuro-endocrinology, ophthalmology, and rehab medicine. These

nurses often advocate for the patients with employers, disability services, and insurance companies during their recovery and are also a constant educational resource for family and even primary care physicians about the care of post SAH patients.

It takes a village

Nurses are the source of knowledge, comfort, compassion, and encouragement necessary for a meaningful recovery that allows patients to enjoy life again. We cannot predict when a life-altering event will occur nor the ultimate outcome for patients and their family, but the neuroscience nurses at Stanford play an integral role in the care of these patients in times of crisis.

SN



Bypassing Strokes

Stanford's Cutting Edge Moyamoya Center

TERESA BELL-STEPHENS, RN, CNRN
NURSE COORDINATOR, CEREBROVASCULAR NEUROSURGERY

Moyamoya disease is a progressive disorder leading to stenosis or occlusion of the internal carotid arteries, resulting in symptoms such as TIAs and strokes. It can affect patients at any age, but there is a peak incidence in the second and fourth decades of life, leading to devastating effects of stroke at very young ages.

The moyamoya team at Stanford feels the disease is under diagnosed due to poor screening and lack of knowledge about the disorder. The recognized incidence of moyamoya is 0.086/100,000 in the U.S. (Uchino et al). At Stanford, two to three new moyamoya patients are seen each week, and close to 700 surgical procedures have been performed since 1991.

Diagnosis generally involves a detailed history, neurological exam, and review of radiological studies, including MRI head scans, cerebral angiogram, and blood flow studies such as SPECT scans, MR perfusion and CT perfusion. The disease most often affects the carotid arteries bilaterally, necessitating treatment on both sides. Fortunately, patients can generally be treated safely with revascularization surgeries. The Moyamoya Center at Stanford uses a multidisciplinary approach to diagnose and treat patients with moyamoya disease from all over the world. More patients with moyamoya are treated at Stanford Hospital & Clinics than anywhere else in North America.

Successful treatment approaches

Stanford has been on the leading edge of developing safe treatment methods for patients with moyamoya for nearly

two decades. The preferred treatment for patients over the age of five is to do a direct bypass graft, also known as a craniotomy for superficial temporal artery to middle cerebral artery bypass procedure. A scalp artery is sewn directly to a distal branch of the middle cerebral artery. This bypass procedure ensures an immediate improvement of blood flow to the patients' brains. Over time, the graft matures, and strokes are prevented. In addition the incidence of TIAs has been found to be significantly reduced. Indirect bypasses are reserved for patients under five, or for older patients who do not have adequate donor or recipient vessels (>8mm) enabling a direct bypass to be done. This procedure involves laying an artery with surrounding tissue onto the outer surface of the brain in hopes that it will "take root" and grow vessels to supply arterial blood to the brain. A recent publication by the Stanford moyamoya team documented the largest series of patients ever treated, and showed significantly improved outcomes with low surgical risks (Guzman et al).

Seeking to learn more

Patients often attempt to obtain information about treatment on their own when advised to take the "wait and see" approach recommended by their physicians. A common source of information is the Internet, including moyamoya.com, which was developed by a moyamoya patient, and enables patients to network with each other for information about moyamoya. In addition, Stanford Hospital & Clinics has a web site about moyamoya treatment available at: <http://stanfordhospital.org/clinicsmedServices/COE/neuro/moyamoyaDisease>

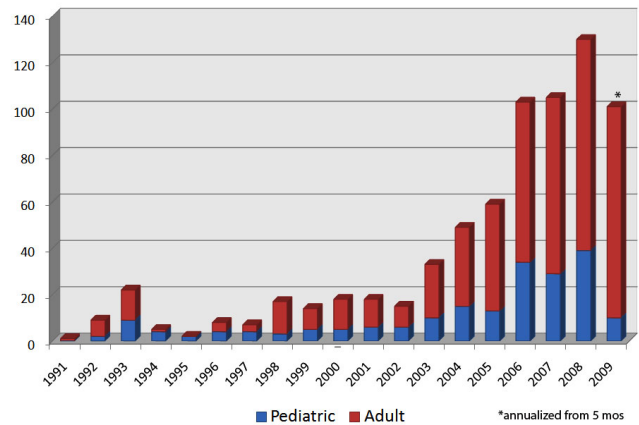
Many of the moyamoya patients treated at Stanford are referred via Internet resources either by their physicians or family members.

A team approach

Managing the peri-operative moyamoya patient presents a unique challenge for everyone involved. Because patients often come from out of the area to be treated at Stanford, coordination of care must be done well in advance. Patients undergo extensive outpatient testing prior to surgery, including an angiogram, MRI, TCD, neuropsychological evaluation, Nuclear Medicine (SPECT), CT and clinic evaluation. They are often in the local area for about three weeks before they are admitted, and require two hospitalizations for bilateral craniotomies. Once admitted, they go from the OR to E2 ICU and then to G1 before being discharged. They may see someone from Rehabilitation Services for evaluation as needed. You can see what a team approach we use! We are so fortunate to be able to offer patients a wealth of experienced staff, many of whom have worked with the Stanford moyamoya program since the first patient was treated in 1991.

Moyamoya patients require long-term follow-up, so we work hard to try to develop relationships with our population of patients and their families in order to maintain the communication and establish follow-up procedures, especially considering the geographical constraints. We request that they return to Stanford at 6 months, at 3 years, and at 10 years after surgery for clinical evaluation so that their blood flow can be evaluated. We also strive to maintain ongoing communication with the community physicians primarily managing the moyamoya patients. There are specific lifestyle limitations for moyamoya patients who have undergone revascularization procedures, such as maintaining lifelong antiplatelet therapy, staying well hydrated, avoiding the use

Annual Moyamoya Surgeries 1991-2009



of birth control pills or hormone replacement therapy and not donating blood in order to prevent reduction in their own blood volume. The RN/NP team working with these patients provides this long-term connection.

On a lighter side, for the benefit of patients, staff and faculty, we host an annual reunion of moyamoya patients and their families. It's an opportunity for everyone to gather outside of the hospital to meet and greet each other and enjoy an afternoon of fun, food and games. The patients say they get a lot out of it, but we feel we get even more! [SN](#)

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Stanford Hospital and Clinics/Moyamoya Center 4th annual reunion, May 30, 2009

Taming the Tremors

TRACI HORNBECK, MS, PAC
(NEUROSURGERY) AND
WENDY COLE, RN, MN (NEUROLOGY)

DEEP BRAIN STIMULATION FOR PARKINSON'S DISEASE

Taking 17 pills was a part of the daily routine for Dana Naone-Hall. For Mark Furrer, tailoring his activities throughout the day, based on his medication schedule, was a way of life. That was until they each underwent deep brain stimulation surgery here at Stanford Hospital & Clinics. Prior to coming to Stanford, they had both been struggling with symptoms of Parkinson's disease for several years.

Two patients' journeys

For Dana Naone-Hall, the diagnosis of Parkinson's disease came at an early age. She was 39 years old when she began to experience her first symptoms. For the first ten years, her symptoms were mild, but during the next ten years, things took a turn for the worse. "Everything became measurably more difficult," she said. She took the standard medications prescribed for Parkinson's disease, but as her disease advanced she became more limited in her ability to perform simple, daily activities. She began to experience dyskinesias, which are abnormal, involuntary, dance-like movements affecting any part of the body. The duration of

her medication response was shortening and becoming less reliable as she developed motor fluctuations. Motor fluctuations are a side effect of prolonged levodopa use and include decreased duration of medication efficacy, and unpredictable or fluctuating responses to medication. She found that symptoms such as bradykinesia (slowness of movement) and freezing (sudden inability to move) along with tremor, stiffness and muscle cramping were occurring more often. Despite attempts to control the abnormal body movements, daily activities were becoming much more difficult. At that point, she began to wonder, “Is this it? Will my situation just continue to get worse?”

As Mrs. Naone-Hall’s Parkinson’s disease progressed, two different neurologists suggested that she look into deep brain stimulation. She dismissed the idea at first, feeling horrified at the thought of having brain surgery. That idea changed when she came to Palo Alto from her home in Hawaii to visit her daughter who had graduated from Stanford University. Her daughter had a wedding planned in the near future, and Mrs. Naone-Hall worried tremendously about her ability to be able to make it through such an important event without her symptoms taking over. She wanted, more than anything, to be there for her daughter.

This worry prompted her to make an appointment at the Movement Disorders Center in the Department of Neurosciences at Stanford. This visit included evaluations by neurologists Helen Bronte-Stewart, MD, MSE, and Pravin Khemani, MD; neurosurgeon Jaimie Henderson, MD; and clinical neuropsychologist Simon Tan, PhD. Evaluations include definitive diagnosis of idiopathic Parkinson’s disease, and medical and cognitive assessments that are important factors in determining if a patient would be a good candidate for deep brain stimulation. Going into the appointment, she was skeptical but afterwards she said she felt a strong conviction that deep brain stimulation would benefit her.

Mrs. Naone-Hall underwent surgery for implantation of a deep brain stimulation system by Dr. Henderson with the assistance of Dr. Bronte-Stewart. The system was programmed by Wendy Cole RN, MN, and Dr. Bronte-Stewart. When asked how she felt after surgery, Mrs. Naone-Hall said she felt a part of herself that had been missing for so long was restored. She realized her Parkinson’s disease symptoms had become so severe that she was spending almost all of her mental and physical energy trying to control them. After the surgery, she felt as though a “load had been lifted off of her,”

and with her clarity of mind restored, she was able to engage again in the creative and intellectual pursuits she enjoys.

For Mark Furrer, the symptoms of Parkinson’s disease appeared when he was in his early 40s. At first, he said he had a lot of denial about the disease and where it would take him. Initially, he felt he could mentally overcome his symptoms, but eventually they began to affect his work. His family, friends, and colleagues started to notice his difficulty rising from a seated position and his altered gait. His diminished facial expression led them to believe he was in a dour mood most of the time. At that point, he started to inquire about deep brain stimulation.

Mr. Furrer, at the age of 50, also made the decision to have a deep brain stimulation system implanted. When asked to compare his symptoms before and after surgery, he remembered the embarrassment he felt, before surgery, when he needed to grip the pew for support while walking through church. “I acted like a man beyond my years,” recounts Mr. Furrer. “Since deep brain stimulation, that has not been a problem. In fact, sometimes I forget it is there and have to remind myself that I have something implanted inside my body.” He noted that if he had realized he would experience such positive results, he would have considered surgery sooner.

Deep brain stimulation has been approved by the Food and Drug Administration for use in patients since 1997. Two electrodes are implanted, one on each side of the brain if symptoms involve both sides of the body. The electrodes are connected by subcutaneous extension wires to a battery that is implanted over the pectoralis muscle. Deep brain stimulation electrodes are typically implanted in the basal ganglia – specifically, in the subthalamic nucleus for Parkinson’s disease, the thalamus for essential tremor, and the globus pallidus internus for dystonia. There are other indications for which deep brain stimulation is being used, including epilepsy, obsessive-compulsive disorder and depression. However, deep brain stimulation for these indications remains investigational at the present time.

The complex task of diagnosis and evaluation

Patients who have idiopathic Parkinson’s disease are the best candidates for deep brain stimulation. The diagnosis of idiopathic Parkinson’s disease is based mostly on the patient’s medical history and physical exam. One of the most important clinical features is the presence of a robust response

to levodopa, which is measured by the Unified Parkinson's Disease Rating Scale (UPDRS) examination. The UPDRS examinations are performed with and without levodopa for each patient. The results are compared and the difference in their scores is used to help determine the diagnosis.

The diagnosis of idiopathic Parkinson's disease versus atypical parkinsonian disorders (Parkinson plus syndromes) can be made by neurologists who specialize in movement disorders. It is a complex diagnosis based mostly on clinical symptoms. Idiopathic Parkinson's disease and atypical parkinsonian disorders both have symptoms of parkinsonism, which can include tremor, bradykinesia, rigidity and postural instability. Idiopathic Parkinson's disease is the most common form of parkinsonism and is commonly referred to as Parkinson's disease (PD). Atypical parkinsonian disorders have the presence of clinical features that distinguish them from PD, which can include the lack of a robust response to levodopa, and the presence of early dementia, hallucinations, autonomic dysfunction and cerebellar signs. Atypical parkinsonian disorders include multiple system atrophy, progressive supranuclear palsy, and corticobasal degeneration. These disorders do not respond well to deep brain stimulation.

Patients with Parkinson's disease are good candidates for deep brain stimulation when their symptoms become more difficult to treat with medication due to progression of the disease and development of motor fluctuations and dyskinesias. Motor fluctuations create the need for higher and more frequent dosing of medication in order to control symptoms. Dyskinesias tend to worsen with the increased dosing. Deep brain stimulation can significantly mitigate the severe fluctuations in symptoms caused by motor fluctuations and

dyskinesias. Deep brain stimulation treats the symptoms that respond best to levodopa, however tremor that is unresponsive to medication can also be significantly reduced.

Patients tend to have poorer outcomes with deep brain stimulation when they have dementia, depression, limited social support, and medical co-morbidities that increase their risks for undergoing surgery.

The operation carries risks including those that are typically associated with brain surgery, such as a 1.5% risk of hemorrhage, weakness, numbness, paralysis, speech problems, cognitive difficulties, or others, as well as a 5-8% risk of infection. Side effects from stimulation can occur, which may include muscle contractions, speech difficulty, mania, depression or others. However, these side effects can often be relieved by changing the programmed settings of the system.

Improving quality of life

Deep brain stimulation provides continuous, around-the-clock therapy for Parkinson's disease symptoms, while allowing patients to decrease their dependence on medications. Results of multiple clinical studies have demonstrated its effectiveness at treating tremor, rigidity, bradykinesia, motor fluctuations and dyskinesias. Although it is not a cure for Parkinson's disease, deep brain stimulation can often improve symptoms by 60% to 80% and can allow 60% or greater reduction in medication. Both Dana Naone-Hall and Mark Furrer agree that deep brain stimulation has significantly improved their quality of life. As Mrs. Naone-Hall said, "It's not perfect, but to have mobility and essential functioning restored, I am grateful for that everyday." **SN**



DEEP BRAIN STIMULATION ELECTRODES ARE TYPICALLY IMPLANTED IN THE BASAL GANGLIA – SPECIFICALLY, IN THE SUBTHALAMIC NUCLEUS FOR PARKINSON'S DISEASE, THE THALAMUS FOR ESSENTIAL TREMOR, AND THE GLOBUS PALLIDUS INTERNUS FOR DYSTONIA.

At left, Traci Hornbeck, MS, PAC, Neurosurgery



The Specialized Care of the Neurosurgical Patient

JULIE TISNADO, MSN, RN, CNRN
PATIENT CARE MANAGER-NEUROSURGICAL UNIT G1

The neurosurgical unit moved to its new home on G1 on May 27, 2009. The physical unit underwent an extensive renovation that included the addition of an additional Neurosurgical Close Observation Room (NCOR). The unit now has two three-bed rooms that provide intermediate level care for the adult neurosurgical patient population.

The staff of G1, including 14 certified neuroscience nurses, cares for patients who require close monitoring and frequent intervention for diagnoses such as post op craniotomy for cerebrovascular disease, and brain tumors. After spending at least 24 hours in the intensive care unit, most of these patients are transferred to NCOR. Nurses are skilled at caring for externalized ventriculostomies (tube placed directly into the ventricle of the brain draining cerebrospinal fluid to reduce intracranial pressure). Other types of patients include those who have had bypass grafting for moyamoya disease (narrowing of blood vessels leading to reduced blood supply to the brain), transsphenoidal hypophysectomy for a

pituitary tumor, implantation of deep brain stimulator for a movement disorder, and microvascular decompression for Arnold Chiari disease.

The care of patients in NCOR requires frequent neurological assessment and intervention for changes in the level of consciousness due to cerebral edema, vasospasm, confusion/agitation, and delirium. Nurses must demonstrate the ability to accurately and thoroughly assess their patients' needs when these physical signs can be subtle and easy to misinterpret. There is no invasive monitoring to alert them to potential problems. New grad nurses on G1 generally spend up to one year caring for patients on the unit before training to work

in the NCOR. They must complete a series of modules and work with a preceptor for orientation to this level of care.

As patients become more stable in NCOR, they are transferred to the general care environment on G1. In addition to the cerebrovascular and tumor cases, nurses care for a variety of patients who have had a spinal procedure, including cervical, lumbar, or thoracic laminectomies or fusions with or without instrumentation, non-traumatic spinal cord injuries, and spinal cord tumor resection. G1 is also the only unit beside E2/

ICU to care for patients with lumbar drains, a closed system that allows drainage of cerebrospinal fluid from the subarachnoid space. It is typically indicated for patients who have experienced a post-op dural leak, normal pressure hydrocephalus, or when a shunt has become infected.

The G1 nurses play an important role in the beginning phases of rehabilitation. A large number of patients, as a result of the neurological insult they have experienced, require an integrated approach with nursing, physical, occupational, and speech therapy. Team meetings occur three times a week, focusing on coordination of efforts to help patients maximize mobility, perform activities of daily living, and/or ability to communicate their needs. Many patients require

“A large number of patients, as a result of the neurological insult they have experienced, require an integrated approach with nursing, physical, occupational, and speech therapy.”

specialized equipment such as helmets, different kinds of braces or collars, and orthotics. The staff must be skilled in the application of these devices in order to provide training for patients and their families in preparation for going home. **SN**

Stanford Shared Governance Councils

NANCY BECKER, RN, UNIT EDUCATOR, CARDIOLOGY UNITS D1, CCU, CSU

Nurses with a voice in an organization are a powerful force. The nursing staff at Stanford Hospital & Clinics participates in five councils and shares in decision making regarding our professional practice. The shared governance model encourages the interdisciplinary communication necessary in our complex organization. Staff nurse involvement in councils promotes investment in shared accountability and responsibility.

The Five Councils

THE COORDINATING COUNCIL coordinates, integrates, and monitors the activities of the councils. Its membership is made up of the chairs and chair-elects of the other four councils, the Director of Practice and Education, the Chief Nursing Officer, and the Director of Nursing Operations.

THE QUALITY COUNCIL, chaired by Norma Greenberg, OTR, provides oversight, prioritization, monitoring, and evaluation of patient care performance improvement projects. Projects involving infection control, pressure ulcer prevention, fall reduction, and other quality initiatives originate in the Quality Council. Members of the Quality Council bring unit-based quality improvement projects to the council at large. For example, E/F Ground presented work on the “Call Don’t Fall and Post-fall Huddle Project” that sharply reduced the number of falls on their unit. Their content was presented house-wide by the Education Council.

The Quality Council also monitors community-based issues as they pertain to the hospital. Could it Happen Here? is a new feature of the Quality Council agenda. It will look at news items of interest to the council. The Quality Council’s first discussion was about the “Octomom” case and the firing of staff who inappropriately read her chart. Highlights of the discussion included Stanford’s policy regarding patient privacy and the consensus was that staff were very aware of the requirements.

THE PRACTICE COUNCIL, chaired by Sara Silberschatz, RN, B3/C3, provides oversight for the development, evaluation, and revision of practice standards, making them consistent

with national, state, and community “best practice” standards. A new procedure or policy may originate in or be vetted through the Practice Council. Council members bring issues from their nursing units and departments to the council for discussion, and other issues are brought to the council through various task forces and initiatives.

One of the Practice Council’s recent projects was creating a policy for communicating patient information to families. Nurses recognized a need to balance patient privacy with families’ need for information. The council responded to this need by creating a policy that allows patients to set a password that can be given to family members. When family members call the nursing units with questions about the patient, nurses ask for the password before giving out any information. This has led to increased satisfaction for patients and nurses alike!

THE EDUCATION COUNCIL When the Quality or Practice Councils identify an educational need for the nursing staff, the Education Council comes into play. The Education Council, chaired by Lisa Curtis, Case Management, is responsible for assessing, planning, and implementing the organization’s educational needs relative to patient care. These can include mandatory quality requirements, new products and procedures, or education on a health imperative such as the H1N1 pandemic. Unit Educators largely make up the membership of the Education Council, and disseminate the curricula via multimedia, including posters, PowerPoint, and one-on-one discussion.

THE RESEARCH COUNCIL, chaired by Julie Shinn, CNS for NICU and D3, promotes nursing research and the use of evidence-based practice in the pursuit of excellence in patient care. The Research Council uses a variety of activities to build research skills and to encourage and support evidence-based practice in nursing. Some of their sponsored activities include EBP program, classes on use of the library,

Continued on page 17

The Heparin Challenge

Solving the Puzzle of a Complex Protocol

MARIYA I. FAIR, RN, STAFF NURSE, D1

My career in nursing started in 2008, when I joined D1 CCU/CSU at Stanford Hospital & Clinics (SHC) as a new graduate nurse. SHC provides ample resources and support systems for new nurses including orientation, mentoring, and a nurse residency program. Most of the time experienced nurses and medical residents are able to share their wealth of knowledge with new graduates who, after nursing school, still have more questions than answers in regards to the diagnoses and treatment of various diseases. However, I found that questions related to Heparin protocol puzzled many regardless of their experience. The confusion was obvious when questions such as “Why do we check both the Heparin Activity Level (HAL) and aPTT for patients on a continuous Heparin drip?” and “What should the nurses do if the results of HAL and aPTT do not correlate?” kept popping up in conversation.

The one-year residency program at SHC provides graduate nurses with comprehensive education materials and access to experienced staff to ask questions and share experiences. During one of the residency classes I shared my observations regarding the challenges of Heparin monitoring with colleagues from D1 and NICU. It turned out I was not the only one who was confused! Some of my colleagues from D1 and NICU decided to take on the challenge and investigate the topic of appropriate Heparin monitoring. Specifically we were interested in the appropriate use of either or both the Heparin Activity Level and activated Partial Thromboplastin Time in adult patients receiving anticoagulation therapy with continuous infusion of Unfractionated Heparin (UFH).

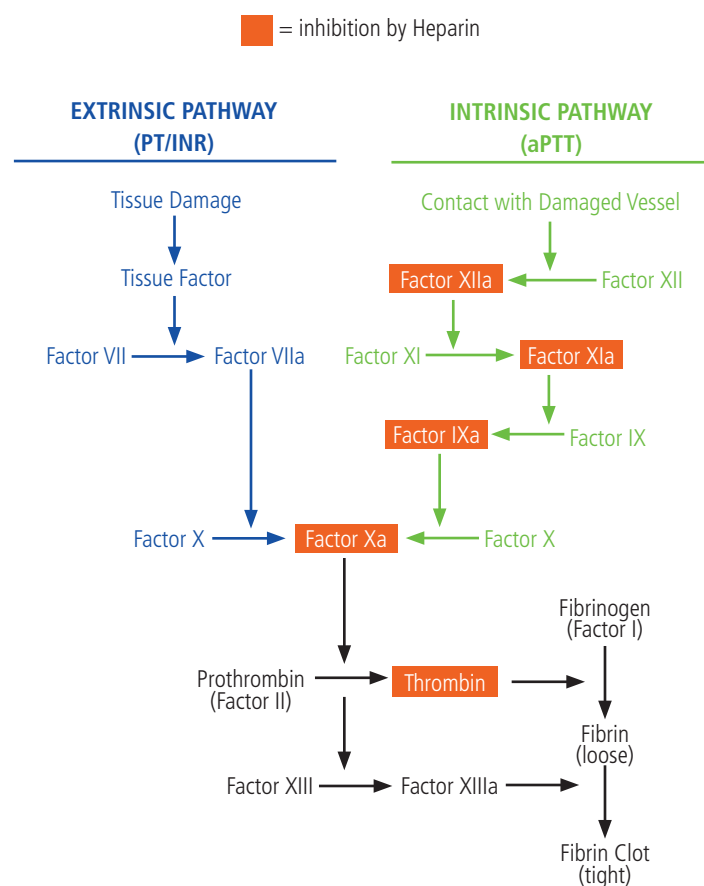
Our effort found great support among nurses and physicians throughout the organization. We met with Dr. Zehnder, Professor of Pathology and Medicine, and Eileen Pummer, RN, MSN, who were part of an interdisciplinary team that helped establish the innovative, diagnosis-driven, Heparin Infusion Protocols implemented at SHC in the spring of 2009. Through consultation, meetings and research we were able to answer some of the puzzling Heparin questions. The following summarizes our findings.

Coagulation cascade and anti-clotting mechanism

Heparin is a widely used anticoagulant in the treatment and prevention of thrombosis. It is mostly prescribed for acute deep vein thrombosis, pulmonary embolism, postoperatively for vascular surgeries or post myocardial infarction. Getting familiar with the coagulation cascade and anti-clotting mechanisms helps to understand why we use Heparin in the first place.

The main function of the coagulation system is to maintain vascular integrity without compromising the potency of the blood vessels. When a blood vessel is injured, the vascular integrity is regained by initiation of the coagulation cascade.

Figure 1. Coagulation Cascade



The cascade activates clotting factor proteins including factors Xa, thrombin, and fibrin. The final step of the coagulation cascade is formation of a fibrin clot. The clot seals the injured site and minimizes bleeding.

At some point, however, the fibrin clot needs to be dissolved in order to maintain vascular potency. This task is achieved by an anti-clotting mechanism that limits the clot formation and localizes the clot to the site of injury. Among various anti-clotting proteins Antithrombin III (AT) is responsible for the anticoagulation effects of Heparin. Heparin binds to Antithrombin III to produce the anticoagulant effect by inactivating thrombin and factors X, XII, XI and IX. The rate of inactivation under normal conditions is slow but can be increased several thousand fold by Heparin. The sequence of the coagulation process and the effect of Heparin on this sequence are shown in Fig.1.

Why monitor both the aPTT and HAL?

Despite wide clinical acceptance of the aPTT test for Heparin monitoring, there are several concerns about validity and reliability of the aPTT test. A study conducted by Raschke et. al in 2003 revealed that an unexpected variance between therapeutic anticoagulation ranges for aPTT testing was in part related to the use of more than 300 different reagents and variation among lots of the reagents. Depending on the reagent used, the same vial of plasma yields mean aPTT results ranging from 48 to 108 seconds. Also, when calibrated to anti-Xa, aPTT ratios vary from 1.6 to 6.2 times the control value. Therefore, the use of fixed aPTT therapeutic range of 1.5 to 2.5 times the control value may result in unfractionated Heparin under dosing. In addition, there are physical conditions that may cause prolongation or decrease in aPTT levels including clotting factor abnormalities, lupus anticoagulants, liver disease, DIC, and Heparin resistance.

As a result the recommended method for establishing therapeutic range for Heparin was transitioned to the anti-Xa method. None of these physical conditions mentioned above interfere with determination of Heparin activity level (HAL) by anti-Xa assay (Zehnder, 2009). Per Stanford Protocol, both HAL and aPTT are monitored during the course of heparin treatment. In cases when HAL level is therapeutic and aPTT results are sub-therapeutic or supra-therapeutic additional tests may be ordered to test for conditions that affect Heparin utilization.

Nursing implications

According to the Joint Commission, anticoagulants have been identified as one of the top five drug types associated with patient safety incidents in the United States. In 2008, the Joint Commission addressed the goal to “reduce the likelihood of patient harm associated with the use of anticoagulant therapy” in its National Patient Safety Goals. In order to reach this goal, SHC has established six diagnosis driven protocols for Heparin infusions. These protocols guide the practice of Heparin administration and monitoring.

What is tested with aPTT and HAL?

PTT/APTT* (NORMAL RANGE: 25 TO 38 SECONDS FOR NON-COAGULATED PATIENTS)

The activated partial thromboplastin time (aPTT) is the time, in seconds, for patient plasma to clot after the addition of an intrinsic pathway activator, phospholipid and calcium. The test measures the inhibitory effects of Heparin on thrombin, and clotting factors V, VIII, IX, XI, and XII. This test has historically been used to monitor patients receiving continuous Heparin infusion. The therapeutic goal for a patient being anticoagulated with Heparin is an aPTT approximately 1.5 to 2.5 times the baseline.

*Not to be confused with PT (prothrombin time) that measures the effectiveness of coumadin-type anticoagulant drugs, such as warfarin sodium (Coumadin). In addition, the PT value is used in calculating INR (the International Normalized Ratio).

ANTI-XA ASSAY (HAL)* (NORMAL RANGE: 0.3 TO 0.7 IU/ML)

Heparin activity level (HAL)* test measures inhibition of factor Xa activity by heparin in patient's plasma. The test can be ordered for patients receiving Unfractionated Heparin (UFH) or low molecular weight Heparin (LMWH).

* Heparin activity level (HAL) is a term used exclusively at Stanford Hospital & Clinics. The common name of the test is Anti-Xa assay.

To insure patient safety, Stanford Heparin Protocol requires a set of baseline tests to be completed prior to initiation of Heparin treatment. Reviewing baseline data including medical history, patient assessment, baseline labs, and patient fluid status reveals individual differences that may affect the pharmacokinetics of Heparin and consequently HAL and aPTT values. In addition, knowing the patient's baseline status will help formulate specific nursing protocol for each patient. Without a specific Heparin protocol in place a patient may suffer injury outweighing any consequences from withholding initiation of IV Heparin therapy in the first place.

Once ordered by the physician it is the responsibility of the nurse to properly initiate and maintain the Heparin infusion. This includes accurately timing multiple blood draws, reacting appropriately to reported HAL and aPTT results, making appropriate dose changes without new orders, anticipating trends in HAL levels, assessing the patient for signs of complications, and properly reporting all findings to the ordering physician. Please also note that it is important to not draw blood from the same infusion port as the Heparin is running through, and to stop the Heparin infusion for a few minutes prior to drawing blood from another port in the same arm as the infusion. Improperly drawn blood may result in inaccurately high HAL and aPTT levels, and could compromise patient safety when the nurse reduces the dose of Heparin to sub-therapeutic level as a result. Heparin is a high-risk medication and two nurses are required to independently check all infusion initiations and all dose changes.

Conclusion

This exploration was inspired by the desire to clarify confusion and overcome challenges related to Heparin monitoring. While working on this project we found outstanding support from nurse managers and physicians who were eager to help us succeed in our effort to make sense of Heparin monitoring. In the end, everyone benefits from the shared knowledge. We presented the project findings at the new graduate nurse residency class and received very positive comments from our classmates and program coordinators. It seems that we were able to educate the participants about new Stanford Protocols, appropriate laboratory tests, and nursing implications related to Heparin monitoring. One of our classmates commented "I never realized that aPTT is such an unreliable method of testing for Heparin. Now it makes sense why we need to draw both HAL and aPTT." The residency program coordinators encouraged us to create education materials

that would explain Heparin monitoring and the new Stanford Heparin protocol. In the future this topic may be included into the new graduate nurse residency program and we look forward to this development. **SN**

Contributors

Eric Dwight-Gilroy, Staff Nurse, D1; Elizabeth Coxon, Staff Nurse, D1; Robert Stanley, Staff Nurse, NICU; Eileen P. Pummer RN, MSN, CPHQ, Quality Manager

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Shared Governance Councils, continued from page 14

research resources, and research poster presentation. The Research Council responds to emerging clinical issues with evidence-based solutions and recommendations. One of the nursing research projects the council sponsored during 2009 was participation in a national study of Magnet™ hospital work environments and their relationship to new graduate nurse retention. The Essentials of Magnetism Healthy Work Environment Survey was part of the study and completed by over 40% of inpatient clinical nurses. Findings from the study will be used to promote healthy nursing unit work environments.

This fall, **THE COORDINATING COUNCIL** is working to facilitate the work of the councils by consolidating the meetings to one day per month. The goal is to streamline the process of shepherding an agenda item through more than one council and improve through-put. The Director of Education and Practice, Jim Stotts, is implementing an orientation program for new council chairs and chair-elects to develop the leadership skills needed in shared governance.

The shared governance councilor structure continues to be a journey towards empowerment of the nursing staff to engage in patient care decisions, policy decision making, nurse peer issues, and work environment issues. Leaders can develop at every level in the Stanford organization, promoting professional fulfillment and personal satisfaction. **SN**



Africa:

My Mission, My Passion, One Day at a Time
A Nurse's Perspective

JOCELYN WONG, RN, BSN

STAFF NURSE, INTERMEDIATE INTENSIVE CARE UNIT (D2/G2S)

In Africa, every 3.6 seconds someone dies of starvation – the majority under the age of five. Every 30 seconds a child dies from malaria. Every year 6 million children die from malnutrition. AIDS and tuberculosis kill millions. These are the challenges African people face every day, when survival becomes a daily burden.

My passion for working in third world countries became apparent when I had the opportunity to go to Africa as a nursing student in 2007 with International

Service Learning (ISL). The opportunity to help people became a strong desire for me. I spent three weeks working in different villages with people who had never

met or seen a healthcare worker. We visited the Maasai tribes, who lived in homes made of straw. The children did not know from day to day where their next meal would come from. Showers were unheard of and the simple habits of boiling water and not stepping on animal excrement were new to them. We were able to survey each individual's health status and take blood pressures. Those who needed medicine were able to visit free clinics set up by ISL where we provided

donated medications from America. We saw over 500 people on this trip, and despite the poverty and lack of help and healthcare in Africa, I realized then that just one volunteer can make a difference in the lives of many.

After I graduated from nursing school, I decided to take a mission trip with my church to Nepal. My experience there only deepened my love and passion to help those less fortunate. In Nepal, I really developed

a heart for social justice and returned home with a deeper understanding of love. I remember a story of one of the little girls at the orphanage whose mother was attacked by a tiger in front of her eyes, leaving her without any family. There were many instances where we saw poverty and suffering, but our team provided shelter and hope.

Another opportunity arose when I was able to be part of a mission trip to Kenya with a group called “First Love” that worked alongside my church. My desire to visit Africa again was very strong. It was truly an honor to have the opportunity to go to Kenya in the summer of 2009 after one year of experience as a new graduate and staff nurse. Stanford allowed me the opportunity to apply the various skills I learned working on the units to my time volunteering in Kenya. I was able to spend alternating weeks working with a school and an orphanage.

Our team was comprised of two staff nurses and a nurse practitioner, and together we were able to provide essential health-care. For example, some of the children had multiple foot wounds from lack of shoes and proper hygiene. We treated their wounds and taught them the use of Neosporin™, Band-Aids™,

wound treatments and prevention skills. Many of the children had malaria but were unable to get treatment due to the high cost of antibiotics, so our team was able to provide financial support, allowing the children to be seen at the clinics.

We were also able to assist with the final touches on a newly built orphanage that now houses 20 girls, each with a sad story. The orphanage will eventually be able to provide housing, including meals and a loving environment, for up to 100 children. We helped in various ways, including intense labor to continue building this new land from scratch. We assisted with building sidewalks, painting buildings, potting plants, and other various projects. I was glad to have this amazing experience even though it was hard work and very tiring. I am once again torn and broken to see the poverty and hardships this country has to face on a daily basis, but I truly believe there is so much we can give, even if it's one day at a time. **SN**

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A Balance of Work and Play



“Do you have a best friend at work?” When the Gallup Survey asks the question, no one can top this friendship: **DEBRA JOHNSON** and **SASHA MADISON** are two colleagues who attended the same elementary school in Van Nuys, CA. They played in the school orchestra, attended the same high school and Girl Scout Troop (Debra on left, Sasha on right). They now share an office together in the Department of Infection Control and Epidemiology. Sasha and Debra were active in Girl Scouts with their daughters in the 1980s. They remain close friends today, frequently seen attending rock concerts together as they balance their work and play.

JENNIFER PANCOE began her nursing career in North ICU three years ago as a new graduate. Jennifer has taught EMT school, been a paramedic, worked as a swim coach and a volunteer fire fighter. She enjoys making gift baskets, mountain biking and making jewelry... a hobby she has been perfecting for seven years.



JOEL BALUYOT has worked in the Operating Room for 2 years and has been singing since grade school. Before moving to this country, he sang with a choir in the Phillipines which toured all over the world. He presently sings with the Saringhimig Singers and is in the chorus of the San Francisco Symphony.

JUDITH ALDERMAN (left) and **JESSICA DEPUTY** (right) are 2 staff nurses on D1 who are passionate about living a heart healthy life style and minimizing the foot print they leave on this earth. With Judith taking the lead, they organized the first Stanford Hospital Bike to Work Day which was celebrated last May 14th. They even inspired a co-worker, Bob Critz, to bike 75 miles from Stanford to Napa and 101 miles the next day to finish his commute home to El Dorado Hills... logging in 176 miles of bike commuting for the Bike to Work Day event.

In Recognition of...

CERTIFICATIONS/RECERTIFICATIONS

CMSRN – Certified Medical-Surgical Nurse

Celeste Delatorre – May 2009
Jaime Hellman – May 2009
Petra Jurikova – May 2009
Angeline Yu – May 2009
Francy Zate – May 2009

OCN – Oncology Certified Nurse

Joy Caneda – May 2009
Janette Garcia – May 2009
Yvonne Trevino – May 2009

CCRN – Critical Care Registered Nurse

Rey Marvin Avelino – April 2009
Jana Barkman – April 2009
Christine Berg – April 2009
Khrizna Belardo – May 2009
Maggie Buckley – April 2009
Nicole Cromwell – May 2009
Leean Rodolfich – April 2009
Reshmi Siongh – June 2009
Jennifer Tonelli – March 2009
Theresa Vidal – March 2009

PCCN – Progressive Care Certified Nurse

Melissa Aurelio – March 2009
Rey Marvin Avelino – June 2009
Colleen Bonnett – June 2009
Marilyn Everett – May 2009
Tua Palangyo – April 2009

APRN-BC – Advanced Practice Registered Nurse – Board Certified

Patricia McQueen – July 2009

CNS – Clinical Nurse Specialist

Patricia McQueen – July 2009

CMTE – Certified Medical Transport Executive

Sonya Ruiz – May 2009

MASTER/GRADUATE DEGREE

Cynthia Deporte, RN, BA, BSN, MSN, Master of Science in Nursing Administration, San Francisco State University, August 2009

Ling Chen, RN, MSN, CNOR, Master of Science Degree in Nursing, Clinical Nurse Specialist Track, San Francisco State University, August 2009

Jennifer Christensen, RN, MSN, NP, Master of Science in Nursing, Adult Nurse Practitioner with a Specialization in Environmental and Occupational Health, University of California, San Francisco, June 2009

Diana Dela Cruz, RN, BSN, MSN, CNS, Master of Science in Nursing, San Francisco State University, August 2009

Beverly Jackson, RN, BSN, MSN, Master of Science in Nursing Leadership, Grand Canyon University, Phoenix, AZ, May 2009

Alison Kerr, RN, MSN, CVN, Master of Science Degree in Nursing, San Francisco State University, August 2009

Tarina Kwong, RN, MSN, Master of Science Degree in Nursing, San Francisco State University, August 2009

Elisa Nguyen RN, MS, CMSRN, Master of Science in Nursing Administration, San Jose State University, May 2009

Leticia Mendoza RN, MSN, CNS, PHN, Master of Science in Advanced Community Health and International Nursing, University of California, San Francisco, May 2009

Patricia McQueen, RN, MSN, PHN, CNS, Master of Science in Nursing, California State University, Fresno, May 2009

Tua Palangyo, RN, BA, MSN, Masters Degree in Nursing, Clinical Nurse Specialist, San Francisco State University, August, 2009

Juliet Javier Zabal, RN, MSN, CCRN, CNS, Master of Science in Nursing, San Francisco State University, August 2009

Afsaneh Zanjani, RN, MSN-ED, Master of Science in Nursing and Nursing Education, University of Phoenix, Feb, 2009

BACHELOR/UNIVERSITY DEGREE

Cherrie Lozada, RN, BS, Bachelor of Science, Nursing, Drexel University, Philadelphia, PA, March 2009

Sadhna Sud, RN, BSN, Bachelors in Nursing, San Jose State University, May 2009

APPOINTMENTS/AWARDS

Leticia Mendoza, RN, MSN, CNS, Honorary Ambassador, U.S. Fund for UNICEF, May 2009

Michelle Woodfall, RN, MS, CEN, CCRN: Associate Clinical Professor for UCSF School of Physiologic Nursing, April 1, 2009.

ARTICLES AND PUBLICATIONS

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CONFERENCE PRESENTATIONS

Theresa Mallick-Searle: "Fibromyalgia Syndrome" American Academy Nurse Practitioners Annual Meeting, Nashville, TN, June 2009

Amy Elizabeth Parker: "Impact of Evidenced Based Design on Quality and Safety", Issues in Nursing Conference, UCSF School of Nursing, San Francisco, April 2009.

Connie Taylor: "We're Live with Epic – Now What?", Epic Nursing Advisory Council, Madison, WI, March 12, 2009.

Visitacion Verbo: "Evidence-based Practice: The True Voice of Global Nursing, UERMMMC College of Nursing 50th Foundation Anniversary Lecture Series, Manila, Philippines, February 2009.

Laura Zitella: "Understanding Stem Cells", Bioengineering 25, University of California, Berkeley, April 2009.



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