It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat.

~ T. Roosevelt
Our Core Values:

**Integrity**
We uphold integrity in our words and actions.

**Compassion**
We show compassion to every person, every time.

**Service**
We provide service to our patients, our co-workers, and our community.

**Excellence**
We demonstrate excellence every day, in every way.

**Ownership**
We take ownership for all we do.
**Synergy in Practice - A Case Study**

*Interdepartmental collaboration results in excellent patient outcomes: A case report*

The Neuroscience and Spine Institute at Kalispell Regional Healthcare provides a comprehensive, multidisciplinary approach to patients with complex problems. The following is an example of excellent care provided due to the collaboration between the different specialties of the Institute.

This is a patient who was initially diagnosed with cerebral palsy at age two when she was having difficulty walking; however, she had progressive difficulties with gait, developing spastic paraparesis in her early teenage years.

Between the ages of 13 to 15, she underwent initial intrathecal baclofen pump placement, required assistive device for ambulation, with eventual progression to a wheelchair due to increasing spasticity.

At age 17, she continued to decline and a brain MRI revealed diffuse cerebral white matter hyperintensity, suggestive of leukodystrophy. She was subsequently evaluated by a pediatric neurologist at an out-of-state hospital. There, she underwent replacement of her baclofen pump in 2006 and 2012 due to being at the end of the battery life.

She graduated from mainstream classes with academic accommodations and was stable over the next few years, attending some college courses in Utah where she also worked as a student housing manager for a college, living relatively independent.

On March 6, 2013 she underwent routine baclofen pump replacement at an out-of-state hospital due to being at the end of her pump's battery life. She returned to work and baseline about 10 days after the surgery. However, on April 17, 2013 she had acute onset of abnormal lower extremity jerking, diffuse shaking, nausea, vomiting, and hallucinations.

She presented to the ER at the out-of-state hospital multiple times and was eventually diagnosed with baclofen withdrawal and pump/catheter failure. She underwent pump and catheter replacement on April 19, 2013.

*Patient's current scoliosis xray*
and was discharged the next day. Unfortunately, she continued to have cognitive deficits.

At this point, she was brought to Kalispell by her parents. She was seen by Dr. Camden Kneeland at The Montana Center for Wellness and Pain Management for pump management. He communicated with the patient’s physiatrist in Utah and there was concern about potential side effects from her baclofen.

Dr. Kneeland and the providers at The Montana Center worked closely with the patient to wean down her baclofen pump safely, so that she did not experience further withdrawal effects and to see if her altered cognitive state was a result of the baclofen. Once she was weaned off the medication and the pump was filled with saline, the patient was referred to neurology for further evaluation and care was transitioned to Dr. Kurt Lindsay.

Over the next six months, the patient showed dramatic cognitive improvements off the baclofen, but had worsening issues with lower extremity spasticity, which led to falls and a significant decrease in function. She had further interventions with Botox and phenol injections with her physiatrist in Utah, but these did not have lasting effect. In January 2014, the patient was referred to Dr. Rachel Zeider in the Department of Physical Medicine & Rehabilitation (PM&R) within the Neuroscience and Spine Institute.

Further options were discussed for oral medications to control her tone and improve her function. The patient was also referred for physical therapy and occupational therapy to work on increasing her functional abilities. The option of cautiously restarting the intrathecal baclofen was presented as a final attempt to improve the patient’s independence and function, should the oral medications not work. This was presented based on the fact that the

![Increased T2 signal intensity in the white matter indicating leukodystrophy. Image from 2013](image-url)
The patient had done very well with intrathecal baclofen for 13 years before having a problem with her pump. However, the patient and family were hesitant due to the significant changes she had during the prior year.

Over the next few months, the patient and her family decided to consider removal of the baclofen pump altogether as it had only been filled with saline for the past year. She was evaluated by Dr. Joseph Sramek with Neurological Surgery for the procedure, and after reviewing her complicated history and her current function, he agreed with considering a cautious trial of restarting the baclofen; he was willing to remove the pump altogether if this is what the patient and family chose.

After further consultation with Dr. Zeider, the family decided to proceed with the trial of baclofen. Due to the complicated medical history and the decrease in function from baseline, the patient was admitted to the Inpatient Rehabilitation Center at The HealthCenter for close observation and evaluation during the trial. During the admission, she was evaluated by multiple therapists and a neuropsychologist before and after the resumption of intrathecal baclofen. She was followed closely by neurosurgery and physiatry. She was in the hospital for 10 days during which time she showed significant improvement in her functional abilities, without decline in her cognition.

Since then, she has shown continued improvements in her independence, working with physical therapy, occupational therapy, and speech therapy at The Summit. She started volunteering at local schools, reading to first graders and helping in their classrooms a few times per week. Most recently, she obtained a position at a local store where she works multiple days per week handing out samples.

She continues to live at home with her parents and has the goal of living on her own in the future. Her baclofen pump continues to be co-managed by Neurological Surgery and PM&R. PM&R continues to address ongoing equipment needs and conservative treatment of her severe scoliosis.

Overall, this patient had a much more severe reaction than would typically be seen from baclofen withdrawal which is a known risk of intrathecal baclofen pump placement. She was initially treated for this at an outside hospital system. Once her care was transferred to Kalispell, the collaboration between the departments of the Neuroscience and Spine Institute facilitated her excellent recovery and have greatly improved her chances of returning to her prior level of independence.
The practice of medicine is an art, not a trade; not a business, but a calling in which your heart will be exercised equally to your head.

~ Sir William Osler
Synergy: the interaction or collaboration between two or more organizations to produce a combined effect greater than the sum of the separate efforts.

The writing of this executive summary marks the fifth anniversary of the Neuroscience and Spine Institute of Kalispell Regional Healthcare. From our origins as four separate clinical practices, we have evolved into the single largest integrated clinical neuroscience group in the state. The driving force behind this evolution was the need and opportunity to provide advanced and comprehensive neuroscience and spine care for the people of Montana, in Montana. Kalispell Regional Healthcare facilitated this growth and evolution by providing the necessary facilities, technologies and talent, much of which will be highlighted in this manuscript.

The key to the success of the Institute is the eclectic mixing of the old and new, in due proportions, which provides a productive environment for providers to practice modern service line care, within a comfortable Montana culture for patients.

One of our goals was to decrease the necessity to send patients out of state. To this end, we have made significant inroads aided by the acquisition of advanced technologies and facilities, including:

- 24 hour electroencephalography (EEG),
- Functional MRI,
- O-arm-2 intraoperative surgical imaging system,
- A new intensive care unit.

Combined, they have allowed us to retain and treat the majority of patients with a tertiary acuity.

Next, we strived to develop a synergistic practice model which facilitates efficiency for patients seeking care. The components of this model include:

1) Coordination of scheduling which allow patients to obtain imaging and see multiple providers in a single day's visit.
2) Combined multidisciplinary case conferences where difficult clinical cases can be vetted and comprehensive treatment plans established.
3) Telemedicine clinical consultations, patient visits, and educational conferences.
4) Strategic outreach clinics bringing subspecialty healthcare to the rural Montana communities.

Finally, we continue to work toward the future. Kalispell Regional Healthcare has made a commitment to providing comprehensive pediatric medical services. The Neuroscience and Spine Institute is working to participate in, and be part of, the solution to providing pediatric neuroscience care.
Dr. Marcus Wheeler of the Department of Neurology, is the only Pediatric Neurologist in the state. The Department of Neurological Surgery is actively recruiting a Pediatric Neurosurgeon.

The Physical Medicine & Rehabilitation Department is working on adapting inpatient and outpatient programs, to accommodate the pediatric population and continues to be leaders for our concussion program (Save The Brain) which primarily cares for pediatric sports related brain injuries.

Our journey to a Center of Excellence continues. Jim Collins, the author of Good to Great, summarizes our journey so well:

“When all these pieces come together, not only does your work move toward greatness (excellence), but so does your life. For, in the end, it is impossible to have a great life unless it is a meaningful life. And it is very difficult to have a meaningful life without meaningful work. Perhaps, then, you might gain that rare tranquility that comes from knowing that you’ve had a hand in creating something of intrinsic excellence that makes a contribution. Indeed, you might even gain that deepest of all satisfactions: knowing that your short time here on this earth has been well spent, and that it mattered.”

Those of us who have had the privilege to participate in the development, implementation and operation of the Neuroscience and Spine Institute of Kalispell Regional Healthcare, have the pure blessing to share in this satisfaction. We are grateful to the Board of Directors and the Senior Management Group to have had this opportunity.

Respectfully,

TC Origitano MD, PhD, FACS, FAANS
Executive Director of Neuroscience and Surgical Development
Medical Director
Neuroscience and Spine Institute
Department of Neurological Surgery
Kalispell Regional Healthcare
Affiliate Professor of Neurological Surgery
Washington University Medical School
## Consolidated Productivity
### Neuroscience and Spine Institute

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Total Visits</td>
<td>28,039</td>
<td>30,901</td>
<td>37,943</td>
<td>40,438</td>
<td>6.6%</td>
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<tr>
<td>New Patient Visits</td>
<td>3,463</td>
<td>4,880</td>
<td>5,422</td>
<td>6,194</td>
<td>14.2%</td>
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<tr>
<td>Total Procedures</td>
<td>2,860</td>
<td>3,187</td>
<td>4,383</td>
<td>4,871</td>
<td>11.1%</td>
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<tr>
<td>Major Surgical Procedures</td>
<td>373</td>
<td>520</td>
<td>603</td>
<td>582</td>
<td>-3.5%</td>
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Trigeminal nerve before (A) and after (B) microvascular decompression.
# Neuroscience Talent

## Neurosurgery

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas C. Origitano, MD, PhD, FACS, FAANS</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Joshua Krass, DO</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Joseph Sramek, MD</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Stephen Campbell, MD</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Jessica Christensen, PA-C</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Robert Griffin, PA-C</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Tacey Griffin, PA-C</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Amy Tangedahl, PA-C</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Joshua Williford, PA-C</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
<tr>
<td>Joseph Sramek, MD</td>
<td>Neurological Surgery</td>
<td>Neuroscience and Spine Institute, Department of Neurological Surgery</td>
</tr>
</tbody>
</table>

- **Distinction:** Cerebrovascular and skull base fellowship trained neurological surgery; nationally recognized neurosurgery in skull base, vascular and tumor surgery; functional neurosurgery performing deep brain stimulation and epilepsy surgery
- **Midlevel’s role in optimizing clinical effectiveness:** access, expense, and efficiency

## Physical Medicine & Rehabilitation (Physiatry)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew Cole, MD</td>
<td>Physiatry</td>
<td>Neuroscience and Spine Institute, Department of Physical Medicine and Rehabilitation</td>
</tr>
<tr>
<td>Rachel Zeider, MD</td>
<td>Physiatry</td>
<td>Neuroscience and Spine Institute, Department of Physical Medicine and Rehabilitation</td>
</tr>
<tr>
<td>Mikal Bailey, MPAS, PA-C</td>
<td>Physiatry</td>
<td>Neuroscience and Spine Institute, Department of Physical Medicine and Rehabilitation</td>
</tr>
</tbody>
</table>

- **Distinction:** CARF (Certification for Rehabilitation Facilities) accreditation including stroke
Neuroscience Talent

Neurology

Melanie Klawiter, MD  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Bret Lindsay, MD  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Kurt Lindsay, MD  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Robert Schimpff, MD  
Neurology  
Outreach Clinics

Donald Stone, MD  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Marcus S. Wheeler, MD  
Pediatric Neurology  
Neuroscience and Spine Institute, Department of Neurology

Kristin Yandora, DO  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Paul Coats, NP  
Neurology  
Neuroscience and Spine Institute, Department of Neurology

Robert Cale, MD  
Pain Management  
The Montana Center for Wellness & Pain Management

Camden Kneeland, MD  
Pain Management  
The Montana Center for Wellness & Pain Management

Chris Nadasi, PhD  
Pain Management  
The Montana Center for Wellness & Pain Management

Lon Savik, DC  
Pain Management  
The Montana Center for Wellness & Pain Management

Colleen Gagliardi, ND, LAc  
Pain Management  
The Montana Center for Wellness & Pain Management

Brenda Anderson, PA-C  
Pain Management  
The Montana Center for Wellness & Pain Management

Distinction: Fellowship trained cerebrovascular neurology, neurophysiology, epilepsy neurology, pediatric neurology, headache medicine, neuroimaging
Support Staff

The Montana Center
Doreen Hart, RN
Beau Brindley, RMA
Jason Gunderson, RMA
Jessica Buckley, CMA
Tiffany Stover, CMA
Lisa Inman, CMA, Clinical Supervisor
Cherry Sovann, RMA
Kim Miller, CMA
Maryann Keane, RMA, Triage Coordinator
Marie Ferda, Coder
Sharon Thompson, Biller
Jessica Cox Anderson, Check-In Clerk
Libby Oldynski, Check-In Clerk
Sheri Gates, Check-In Clerk
Judy Becker, Check-Out Clerk
Colleen Cluka, Clerical Supervisor
C.J. Hanson, Clinic Operations Manager

Neurology
Tim Hoselton, EEG tech
Shanna Steven, EEG tech
Nichole Perisho, RN, Telestroke Coordinator
Dani Walker, InPatient Stroke Coordinator
Brittany Burns, Coder/Biller
Michelle Cuffe, Practice Associate
Dawn Pust, Practice Associate
Elizabeth Sacher, Practice Associate
Sidney Alberts, RMA
Tanita Anderson, RMA
Jessica Moore, RMA
Brenda Larson, RMA
Haley Graham, RMA
Aurelia Ramsey, CMA
Chris Lindsay, RN
Sarah Hylton, Dept. Assistant
Jennifer Bullins, Practice Manager

Neurosurgery
Linda Boehm, Coder
Kristi Ruggles, Practice Specialist
Ramona Guy, Practice Specialist
Oteese Dulmage, Practice Associate
Riley McDonald, Practice Associate
Kimberly McGuffie, Surgery Scheduler
Desiree Huston, RMA
Vanessa Horner, RMA
Janelle Cano, RMA
Jamie Mack, Dept. Assistant
Willie Deering, Dept. Assistant/Events
Kristina Kirschenmann, RN, Clinical Lead
Lisa Cantu, Supervisor
Jennifer Standley, Service Line Manager

Physical Medicine & Rehabilitation
Shelly Tyree, Practice Associate
Tiffany Molony, Practice Associate
Chelsea Dyer, RMA
Kaitlyn Sterry, RMA
Jacqueline Vigil, Supervisor

Montana Center for Wellness & Pain Management cont.

Eric Belanger, PA-C
Pain Management
The Montana Center for Wellness & Pain Management

Matthew Zemake, PA-C
Pain Management
The Montana Center for Wellness & Pain Management

Alisha Bailey, MSPT
Pain Management
The Montana Center for Wellness & Pain Management

Kelly Brewer, LCSW
Pain Management
The Montana Center for Wellness & Pain Management

Stephanie Cymbal, LCSW
Pain Management
The Montana Center for Wellness & Pain Management

Tanjaritta Anttiila, LCSW, CYT
Pain Management
The Montana Center for Wellness & Pain Management

Justin Green, LAc
Pain Management
The Montana Center for Wellness & Pain Management

Daniel Gregerson, LCPC
Pain Management
The Montana Center for Wellness & Pain Management

Diane Stephens, LMT
Pain Management
The Montana Center for Wellness & Pain Management

Distinction: A comprehensive center offering interventional pain management, physical therapy, gentle movement classes, yoga, chiropractic, massage therapy, acupuncture, naturopathic medicine, addiction medicine, and medical pain management.
Peter M. Sorini, MD, was a talented neurological surgeon who advanced clinical neurosciences in Montana for the past 21 years. A Montana native, he returned from his training at the prestigious Barrow Neurological Institute and The State University of New York at Buffalo to establish a practice at Kalispell Regional Medical Center in 1995. He subsequently moved to Butte and then Anaconda where he finished his career.

Dr. Sorini served in the Army Reserve obtaining the rank of Colonel with a number of deployments to Europe and the Middle East. He was a dedicated father and spouse. He was an example of how to balance excellence in patient care and family life.

Peter lost his battle with a malignant brain tumor in February of 2016. To honor his legacy of patient care and community service, The Neuroscience and Spine Institute of Kalispell Regional Healthcare established the Dr. Peter M. Sorini, Educational Endowment.

The Endowment will, in part, fund a summer internship program, which is meant to provide students an opportunity to experience the clinical neurosciences in hopes of inspiring a future career in the field.

To laugh often and much; to win the respect of intelligent people and the affection of children; to earn the appreciation of honest critics and endure the betrayal of false friends; to appreciate beauty, to find the best in others; to leave the world a bit better, whether by a healthy child, a garden patch or a redeemed social condition; to know even one life has breathed easier because you lived. This is to have succeeded.

~ Ralph Waldo Emerson
In the summer of 1978 while employed as an associate professor at the University of Florida medical school and serving as chairman of neuropatholgy, I took an extended trip to evaluate possible localities in the Rocky Mountain West for a clinical neurology practice because my wife and I wanted to move our family to the mountains. During this trip I visited multiple locations and eventually, Kalispell, Montana.

Like so many who have visited Kalispell, I drove from Missoula and vividly remember descending on Highway 93 towards St. Ignatius. The season was late August and the Mission Mountains, particularly Mount McDonald, were snow covered and reflected the setting sun beautifully. This gorgeous panorama made me hopeful that I might be able to find a way to practice medicine in Northwest Montana. Kalispell was by far the smallest population area that I had considered as a possible place to practice neurology. Despite its low population base, it had several outstanding capabilities. The hospital was new, having recently been built with funding on the basis of a community bond, and it had an established medical helicopter service. An enormous additional plus, was the administration’s support for my suggestion to acquire a CT scanner and expand clinical support services for neurology patients. The hospital already had excellent internal medicine practitioners and well-established sophisticated orthopedists, and the medical staff was receptive to the idea of adding a neurologist.

On return to Florida, and after many family discussions, we made the decision that I would resign my tenured position. It didn’t take long after relocating and beginning my practice in Kalispell to realize that my previous extensive experience teaching medical students, graduate students and a variety of nursing and physical therapy students turned out to be an especially valuable resource. At the hospital, we began to establish an ongoing and comprehensive nursing education program that dealt with the necessary skills required to care for neurological patients. This included instruction in the care of neurological trauma patients.

The nursing supervisors and entire nursing staff were wonderfully receptive and responded with enthusiasm. They rapidly improved their knowledge and skill for the treatment of neurological patients. The hospital administration followed through with promises for a high resolution CT scanner after a patient study showed sufficient need. Not much later, a concurrent modern intensive care unit helped complete the clinical resources.

Prior to leaving the University of Florida, I knew that I would be responsible for non-surgical neurological trauma care in Kalispell. Once I had made the decision to move to Kalispell, I
asked several of my neurosurgical residents to call me at any time so I could participate in the emergency care of neurological trauma patients.

The residents gleefully accepted, and prior to the move to Montana, I spent many hours in the university hospital emergency room learning skills usually not part of traditional neurology training. These skills turned out to be particularly important as there was a high trauma rate in Northwestern Montana, largely a combination of accidents on Highway 93 and accidents in the busy logging industry. My worries about neurology referrals in a low density population turned out to be groundless.

The opposite proved to be true; I was too busy. Although many of the neurological trauma patients were helicoptered to Missoula for neurosurgical care, we kept a high percentage of neurological trauma patients who did not require surgery at our local hospital for their continued care and rehabilitation. The hospital then established a formal rehab center and recruited a psychiatrist. However, early attempts to recruit a neurosurgeon in Kalispell were unsuccessful. In 1981, after 2 1/2 years in Kalispell I was so busy that I was spending less time recreating in Montana than I had when I took vacations with my family to Montana from Florida. I discussed this situation with one of my neurosurgical colleagues in Spokane and to my surprise, I was offered a position as chief of neurology at Sacred Heart Hospital.

After a visit and a formal offer of that position, my wife and I went to Spokane and began house hunting. It was a warm day in June, and the 600-bed hospital reminded me of my previous university career. On our return to Kalispell that evening, we sat on our deck overlooking Kalispell, the beautiful Flathead Valley, and the distant Glacier Park. My wife mentioned to me that if we did leave Kalispell she would at least like to be returned for burial.

Her message was clear. The next day I went to the hospital administrator and indicated that if we could not recruit a neurosurgeon I would have to leave Kalispell, but that I had a strong desire to stay. A formal search committee with the appropriate funds was established and within a relatively short time, our first neurosurgeon came to Kalispell.

Establishing neurosurgery was another major clinical neuroscience effort. The call coverage required for a single neurosurgeon in a relatively remote community was a major negative, so I agreed to cover alternate weeks. Trauma requiring surgery was still evacuated as previously during those weeks, but being on call half-time was a huge blessing for me. Part of that successful recruitment effort was the establishment of the first MRI in Montana.

This required considerable effort by clinicians, the hospital administration, the hospital board and the community. At that time, purchase of expensive clinical medical equipment in that category required State approval. Fortunately, after all the presentations and debates, we were granted the “certificate of need” and the scanner became a reality. In the clinical neurosciences MRI scanners are absolute necessities and have allowed subsequent recruitment of neurologists and neurosurgeons leading to expanding capabilities for sophisticated patient care.

I am thankful for the extensive training that I had prior to coming to Kalispell. My fellowships in neurology, neuropathology and tumor biology all contributed to my ability, not only in patient care, but to participate in decision-making, while a member of the hospital board of trustees, as well as a member of the hospital medical staff. During my career in Kalispell, I served as chairman of the Department of Medicine, director of the Special Care Unit, director of Continuing Medical Education, and
chief of staff of Kalispell Regional Medical Center. I also served on the Northwest Horizon Board of Trustees and the Northwest Healthcare Board of Trustees as chairman of the Strategic Planning Committee.

I am particularly proud of the recruitment of excellent neurologists and neurosurgeons to the community. Building the hospital's capability to care for neurological and neurosurgical patients has involved the skills of many dedicated professionals. I would like to specifically mention Dr. Pete Sorini, who practiced here for five years before returning to his home town, Butte, MT. Pete was enormously gifted with his interpersonal skills as well as his neurosurgical excellence. His recent death due to a brain tumor is an enormous loss to all of us and he will be remembered with gratitude and great respect.

With Pete, we were able to bring together the first group of neuroscience clinicians and formed the Mountain Neuroscience and Spine Institute, LLP in 1999. This group included three neurologists, three neurosurgeons, a physiatrist, a neuropsychologist, a physical therapist and a chiropractic practitioner.

Eventually, this group was disbanded in favor of the much broader and inclusive non-profit Northwest Healthcare Organization. However, at the time that the multidisciplinary neuroscience group was dispersed, our KRMC CEO indicated that the project would remain a priority for the future. I have been delighted that a neuroscience center is now well-established with a wonderful staff of motivated and capable clinical practitioners in multiple disciplines.

The number of devoted healthcare practitioners, administrators, community board members and the dedicated care of patients has led to a clear level of clinical excellence. Kalispell has seen this transformation in multiple clinical services. I am delighted to have had an opportunity to spend thirty-six of my fifty years practicing medicine in this remarkable community and this fine hospital organization. I owe particular thanks to Velinda Stevens, who has had the vision and leadership capabilities to transform dreams into realities.

In my final years – nearly fifteen – of medical practice, I have been involved in the startup and regular practice in our KRMC Outreach program. The program started in relatively small communities close to Kalispell but has expanded to include locations throughout the state. In combination with our radiology services, it offers an exposure of dedicated clinical practitioners and has expanded our referral area, making a much wider expansion of clinical services available.

This has been a wonderful professional experience for me and has led to a fuller understanding of the critical role rural health facilities and practitioners play in our Kalispell medical facilities.

As I enter retirement after fifty years practicing medicine, I am thankful to many mentors, colleagues, patients, and educators for the splendid opportunity to serve as a clinician. In a world of increasing confusion about meaningful employment I would make these same choices again. I highly recommend the challenging, but deeply gratifying, world of healthcare sciences.

Dr. Schimpff enjoying Montana's outdoors.
Congratulations to Jessica Christensen, PA-C on the completion of her Advanced Practice Neurological Surgery Fellowship

Advanced practice providers are playing an ever increasing role in the delivery of subspecialty surgical care. Jessica completed the inaugural Neurological Surgery Advanced Practice Provider Fellowship at Kalispell Regional Healthcare. The fellowship was a combination of one year of clinical rotations and fifty learning modules. With the successful completion of her fellowship, Jessica will be joining the Department of Neurological Surgery at Kalispell Regional Healthcare’s Neuroscience and Spine Institute.

Jessica Christensen receiving her Certificate of Fellowship from Tacey Griffin.
This past year has continued to be one of evolution and maturation in both our clinical and educational missions. The department aligned itself with the health system strategic initiatives of access, outreach, pediatrics, Meditech electronic medical record implementation (EMR), and North Valley affiliation.

The year was highlighted by a number of additions to the department providers. Dr. Stephen Campbell joined us in January of 2016 which returned the compliment of neurological surgeons to four. Jessica Christensen, PA-C, joined us as our first advanced practice provider neurological surgery fellow. Joshua Williford, PA-C, joined as our advanced practice neurological surgery hospitalist. These additions increase patient access, spectrum of care, and efficiency of care.

Dr. Campbell joined us after a 10 year career in Pennsylvania at a leading neuro-trauma center. He brings with him an interest in general neurological surgery, neuro-trauma, intraoperative image guided spinal surgery and stereotactic radio-surgery. His interests expand our trauma/critical care, brain tumor and spinal surgery expertise and treatment options.

Jessica Christensen, PA-C, is neuro surgery’s first fellow. The fellowship is a unique educational endeavor developed under the leadership of Tacey E. Griffin, PA-C, M.Ed, within the department, consisting of twelve month clinical experience paired to a 50 module curriculum of readings, objectives and self-assessment. At the completion of the fellowship, Jessica will be joining the department. The uniqueness and novelty of the fellowship was highlighted by national presentations to the Society of University Neurosurgeons, the American Association of Neurological Surgeons, and the Society of Neurological Surgeons annual meetings.

Joshua Williford, PA-C, joined the department with 10 years of advanced practice provider experience in neurological surgery. His primary role is the care and coordination of neurosurgical patients in the hospital. His efforts have helped to stream-line interdisciplinary care leading to efficiencies in length of stay, timely discharge, and improved coordination between hospital services. Josh also brings significant experience in operative assistance and management of outpatient spine.

The clinical enterprise of the department continued to mature. Major case numbers were down by 3.5% reflecting a period of decrease in surgical compliment during the first seven months of the year. This was more than compensated by the increase in new patient visits of 15.4% as a result
of the addition of the above mentioned key personnel and departmental access initiatives. Additionally, in-office injection therapies increased by 12.5%. There is an expected increase in surgical case volume as a product of these additional new patient visits which will be reflected in the upcoming year.

Advances in surgical therapeutics also occurred. Drs. Campbell and Krass in collaboration with Drs. Stillie and Eshleman, of Radiation Oncology, formalized and implemented the Stereotactic Radio-Surgery Program. This program provides minimally invasive, sculptured, radiation treatment for brain tumors, spine tumors, vascular malformations and facial pain. It represents an advanced radiation complement to a number of open surgical procedures and provides access to a technology previously requiring patients to exit the valley.

Additionally, the health system acquired the O-arm 2 intraoperative surgical imaging system (the first of this system in the state of Montana). This device provides 3-D intraoperative imaging which directly interfaces with our surgical navigation computer system providing the most accurate, durable and reliable placement of surgical instrumentation in the spine. Healthcare is moving to a value-based system dependent on decrease length of stay, lower surgical revision rates, decreased intraoperative complications, shorter operating room times, decreased radiation exposure and decrease infection rates. The application of new technologies such as the O-arm 2, facilitates the capture of these value-based criteria.

There has also been continued growth in the neuro-oncology program of 17.5%. This increase reflects three significant factors:

- An increase in the geographical referral base;
- Significant retention of neuro-oncology patients within our primary referral area;
- The on-boarding of the radio-surgery/O-arm 2 technologies.

To improve access for patients in Lake County, a weekly neurosurgical clinic has been established in Polson.

As part of expanding the spectrum of care for pediatric patients the department is actively recruiting a pediatric neurosurgeon. Neurological Surgery was one of the early adaptors of the Meditech EMR and will participate in the role out of the Meditech 6.15 upgrade implementation.

The department highly values its educational endeavors seeing them as integral to improving patient outcomes and as a continuous self-improvement project. The department educational program includes:

1) Annual hands-on Boot Camp for Advanced Practice Providers;
2) Neurological Surgery Fellowship for Advanced Practice Providers;
3) Emergency Neurological Life Support Course;
4) Clinical rotations for medical students;
5) Clinical rotations for physician assistant students;
6) Weekly CME case conference, spine conference, journal club, and morbidity and mortality with expansion to providers by tele-conference in Hamilton and Anaconda;
7) Flathead Valley Community College Nursing lectures;
8) Involvement in the rural general surgery training fellowship;
9) Establishment of the Peter M. Sorini, MD, Neuroscience Internship;
10) Involvement in the family medicine residency.

As one looks at the health system a strategic initiative of access, pediatrics, EMR, outreach and North Valley, the commonality is service to our patients and referring providers. We have adopted the goal of the six words, “Yes, how can I help you”, to characterize the department’s commitment to participating in solutions for delivery of advanced comprehensive brain and spine care for Montana, in Montana.

TC Origitano MD, PhD, FACS, FAANS
### Trauma/Critical Care

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total trauma activations</td>
<td>241</td>
<td>239</td>
<td>296</td>
</tr>
<tr>
<td>Direct Neurological Surgery trauma admits</td>
<td>52</td>
<td>76</td>
<td>71</td>
</tr>
<tr>
<td>Neurological Surgery trauma consults</td>
<td>75</td>
<td>48</td>
<td>78</td>
</tr>
<tr>
<td>Total (in percent)*</td>
<td>53%</td>
<td>52%</td>
<td>50%</td>
</tr>
</tbody>
</table>

* Does not include non-activations, non-traumatic neurological emergencies (chronic subdural, stroke, intracranial hemorrhage, hydrocephalus)

---

### Neuro-Oncology Case Presentation & Operative Interventions Performed

- **2011-2012:** Presentations: 22, Cases: 22
- **2012-2013:** Presentations: 24, Cases: 27
- **2013-2014:** Presentations: 48, Cases: 34
- **2014-2015:** Presentations: 51, Cases: 49
- **2015-2016:** Presentations: 50, Cases: 47

---

### Neurosurgery Surgical Cases

- **2011-2012:** Functional: 313, Peripheral: 17, Cranial: 18, Spine: 224
- **2012-2013:** Functional: 416, Peripheral: 32, Cranial: 84, Spine: 324
- **2013-2014:** Functional: 520, Peripheral: 24, Cranial: 360, Spine: 360
- **2015-2016:** Functional: 583, Peripheral: 64, Cranial: 183, Spine: 183
Physical Medicine & Rehabilitation (PM&R) is a specialty focused on improving the quality of life for our patients. We treat a variety of patients with diagnoses including but not limited to stroke, traumatic brain injury, concussion, back pain, neck pain, amputations, gait abnormalities, and multiple other neurologic and musculoskeletal pathologies. Our focus is on returning to life after an injury occurs or diagnosis is given.

The past year has shown exciting growth in the Department of Physical Medicine & Rehabilitation. We have developed some unique programs and work together with multiple disciplines to provide excellent care for our patients. The following represents a snapshot of our involvement in the Flathead Valley medical community:

**Inpatient Rehab**
A significant part of our practice involves working in the hospital. We provide medical directorship to an 11-bed CARF (Commission on Accreditation of Rehabilitation Facilities) accredited inpatient rehab unit with subspecialty certification in the care of stroke patients. In addition to the inpatient rehab unit, we provide consults in the main hospital and Brendan House helping to care for a variety of patients. We also have a collaborative relationship with neurosurgery, neurology, and physical therapy to provide gait and functional analysis after various procedures in the hospital.

**Concussion and Traumatic Brain Injury**
While the PM&R department has been quite involved in the care of concussion patients in the past, we have increased our involvement by now housing the Save the Brain Campaign. We provide care to patients with concussion ages five years and up. We continue to see growth in the number of concussions we see and are working to provide education for area providers and schools to both prevent and treat concussions more effectively. We look forward to further collaboration with area trainers, physical therapists, occupational therapists, and speech therapists as we develop a multidisciplinary conference to discuss ongoing management of these patients.

In addition, we treat patients with more complicated brain injuries throughout their continuum of care. We help with initial hospital management once they have been stabilized and continue to follow them through their inpatient rehabilitation stay and their transition home. We help manage neurocognitive deficits, physical impairments, and other needs that arise as a result of their brain injury, coordinating care with other disciplines and specialties if needed.

**Spine**
A large part of our outpatient practice is focused on conservative treatment of patients with back and neck pain. We are often the first providers in the Neuroscience and Spine Institute to evaluate these patients and direct their care. We treat patients with conservative measures, diagnosing and prescribing treatment that is specific to their needs. We
work closely with neurosurgery to determine if patients require surgical intervention and help to expedite that process if necessary. We also collaborate with The Montana Center for Wellness and Pain Management, which often provides interventional procedures that we prescribe and takes over the care of patients with more chronic pain management needs.

Two programs that we have developed to provide more comprehensive care include the treatment of compression fractures and scoliosis. We frequently treat patients with nonsurgical compression fractures and monitor them through their recovery. To ensure appropriate patient care, we work with an orthotist to ensure patients receive the proper brace, physical therapists to create an appropriate rehab plan, and neurosurgery to coordinate surgical needs. Our scoliosis program is also growing providing conservative treatment for patients with scoliosis from childhood through adulthood.

Amputee Care and Bracing Needs
We provide care for patients with prosthetic and orthotic needs through our multidisciplinary clinic in which we work with a prosthetist, orthotist, and physical therapist. We frequently communicate with patients’ surgeons to expedite care and prevent future complications when possible. Additionally, we provide gait analysis for patients and look forward to partnering with The Summit’s Competitive Edge Gait Laboratory to provide even more detailed gait analysis and more effective prescription of braces and prosthetics for our patients.

Pediatrics
Over the past year the population of pediatric patients we serve has grown. We have started treating children with cerebral palsy, spina bifida, and other developmental conditions. We help to coordinate bracing and equipment needs as well as treating their spasticity. We frequently see patients in our office with their physical therapist facilitating a more comprehensive approach to their complicated issues. We have found this to be rewarding for both the patients and their families.

Spinal Cord Injury
We provide comprehensive care for spinal cord injured patients in the valley. Our role often includes prescribing needed therapies and equipment in addition to management of spasticity, neurogenic bowel, and neurogenic bladder. We frequently coordinate care with specialists for patients requiring more indepth treatment of these issues.

Spasticity Management
Spasticity management is an important and growing part of our practice. We use medication management, Botox injections, and baclofen pumps to more effectively treat patients with increased muscle tone related to neurologic diagnoses. We provide Botox injections to the limbs and trunk and partner with Neurology to perform these injections for cervical dystonia. Similarly, we partner with Neurological Surgery to provide care of patients with baclofen pumps.

Education
Whether it means teaching our patients about their diagnosis and treatment options, teaching nursing and therapy staff how to better care for patients, or teaching area schools about recognition of concussions, education is an important part of what we do. This year we are taking education to the next level by starting the first PM&R Fellowship for Midlevel Providers. Our fellow will rotate
among multiple specialties that relate to the field of PM&R and will have a focus on education rather than seeing a high volume of patients. This will prepare the fellow with a solid foundation going forward and will allow the fellow to hit the ground running once they graduate.

Overall, we are excited about the growth we have seen in our department and the partnerships we have developed with the other disciplines within the Neuroscience and Spine Institute. We hope to continue this growth and strengthen our relationships with the Institute and other disciplines to provide excellent multidisciplinary care for our patient population.

Andrew Cole, MD

Rachel Zeider, MD

**Inpatient Case Mix 2016**

<table>
<thead>
<tr>
<th></th>
<th>KRMC</th>
<th>Region</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>42.7%</td>
<td>23.3%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Brain injury</td>
<td>16.5%</td>
<td>13.3%</td>
<td>11%</td>
</tr>
<tr>
<td>Multi-trauma/Ortho</td>
<td>13.6%</td>
<td>28.6%</td>
<td>26.1%</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>11.7%</td>
<td>7.2%</td>
<td>6%</td>
</tr>
<tr>
<td>Neurological</td>
<td>9.7%</td>
<td>8.2%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Cardiac</td>
<td>2.9%</td>
<td>4.3%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Other</td>
<td>1.9%</td>
<td>11.3%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Amputation</td>
<td>1.0%</td>
<td>3.4%</td>
<td>3.1%</td>
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</table>

**Inpatient Rehabilitation Summary**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Average daily census</td>
<td>4.1</td>
<td>5.7</td>
<td>4.6</td>
<td>3.75</td>
</tr>
<tr>
<td>Average monthly admissions</td>
<td>8.0</td>
<td>14.3</td>
<td>12.5</td>
<td>9.4</td>
</tr>
<tr>
<td>Average monthly referrals</td>
<td>16.3</td>
<td>29.0</td>
<td>26.3</td>
<td>25.9</td>
</tr>
</tbody>
</table>
# Neurological Surgery and Physical Medicine & Rehabilitation Summary

## Neurological Surgery and Physical Medicine & Rehabilitation Productivity

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Visits</td>
<td>3,772</td>
<td>4,677</td>
<td>5,322</td>
<td>6,338</td>
<td>7,559</td>
<td>19.0%</td>
</tr>
<tr>
<td>New Patients</td>
<td>1,120</td>
<td>1,061</td>
<td>1,514</td>
<td>1,577</td>
<td>2,145</td>
<td>36%</td>
</tr>
<tr>
<td>Major Procedures</td>
<td>373</td>
<td>436</td>
<td>520</td>
<td>603</td>
<td>582</td>
<td>-3%</td>
</tr>
<tr>
<td>Office Procedures</td>
<td>0</td>
<td>0</td>
<td>154</td>
<td>285</td>
<td>401</td>
<td>41%</td>
</tr>
<tr>
<td>Total Procedures</td>
<td>373</td>
<td>436</td>
<td>674</td>
<td>888</td>
<td>983</td>
<td>11%</td>
</tr>
</tbody>
</table>
Department of Neurology

His Majesty | Yellowstone National Park
Building on the promise of 2015, the Neurology Department has continued to experience substantive growth in our capacity to care for our patients with neurologic disease in 2016. Not only are we seeing more new patients in both the outpatient and inpatient settings, we are exerting a greater diagnostic and treatment sophistication in the care of the patients that we see. An extensive remodel of our outpatient clinic and the acquisition of a modern electroencephalography (EEG) capability in 2015 have led to meaningful improvements in both access to care and to the quality of care that we are able to provide.

Thus far in 2016, we have collectively seen 13% more new outpatients than were seen in 2015 without additional providers. Outpatient utilization of EEG, Electromyography (EMG) and Botulinus toxin (Botox) injection procedures this year increased by 18%, 22% and 38% respectively compared to last year. We have also remained committed to our extensive outreach efforts bringing neurology directly to more than ten rural locations throughout Northwest Montana. Thanks to the capable and thoughtful support of our Kalispell Regional Healthcare (KRH) administration, our faculty includes fellowship-trained adult neurologists with special expertise in neurophysiology, vascular neurology, and neuroimaging.

In addition, our faculty boasts the only pediatric neurologist in Montana. We bring together our collective talents in the evaluation and treatment of our patients with cerebrovascular disease, epilepsy, demyelinating disease, movement disorders, dementia, headache disorders, peripheral nerve disease, and pediatric neurologic disorders. We enjoy strong collaboration with our fellow neuroscience colleagues in neurosurgery, physiatry and pain medicine and our patients benefit greatly from this collaboration.

Pediatric Neurology

KRH has remained committed to the care of children in our community and throughout the state of Montana. 2016 has seen significant growth in Kalispell Regional Medical Center’s (KRMC) Neonatal Intensive Care Unit as well as the establishment of both an Inpatient Pediatric Ward and adjacent Pediatric Intensive Care Unit. Of even greater significance, KRH has recently broken ground on a 190,000 square foot Woman and Children’s Center this year with completion anticipated in the fall of 2017.

Dr. Marcus Wheeler, Pediatric Neurologist, has been a most welcome addition to our faculty and has seen his practice grow consistently over the past two years. In addition to maintaining an ever-growing outpatient clinical presence in Kalispell and other cities in Northwest Montana, Dr. Wheeler will ably guide our involvement in the rapidly evolving inpatient pediatric landscape as well.

We look forward to a very bright future for pediatric neurology in the state of Montana and to providing the best possible neurologic care for our children.

Cerebrovascular Disease

Over the past several years, the Neurology Department has consistently worked toward Stroke Center Certification for KRMC and anticipates acquiring this designation in the
spring of 2017 through the American Heart Association-American Stroke Association. Our fellowship-trained vascular neurologist, Dr. Kurt Lindsay has capably spearheaded this effort by developing and implementing stroke-care algorithms which ensure timely and appropriate diagnosis and treatment of acute ischemic stroke.

Dr. Lindsay has also overseen the growth of KRH’s Telestroke Program which allows our on-call neurologists to provide hyperacute, real-time consultative services to providers who are evaluating and caring for stroke patients in rural settings across Northwest Montana. We anticipate adding a ninth rural hospital to our Telestroke system by the summer of 2017.

Seizure Disorders
Seizure disorders are common and often misunderstood neurologic conditions that are most frequently idiopathic in etiology and most often eminently responsive to a single well-selected anticonvulsant medication. Patient and family education is critical for success with this condition and our neurologists and nursing staff devote much time and energy to this endeavor.

Electroencephalography (EEG) is the foundational diagnostic tool utilized in delineating seizure type and thereby drives selection of the most appropriate and efficacious anticonvulsant therapy. Our modern EEG system, employed by our certified EEG technologists, provides high quality tracing for interpretation.

Pseudo seizures are commonly encountered in neurologic practice and are often very difficult to distinguish from epileptic seizures. Our recently acquired EEG technology allows us to perform continuous video-enhanced EEG monitoring in the inpatient setting and is truly indispensable in the diagnosis of no epileptic spells. KRMC is the only hospital in Montana with this capability and our projected utilization of continuous video EEG monitoring in 2016 has increased by 83% compared with 2015.

Dr. Donald Stone, our fellowship-trained neurophysiologist has overseen the acquisition and implementation of this technology. Dr. Stone also manages, educates and supports our talented EEG technologists who capably provide 24-7 on-call coverage for EEG services.

Despite appropriate diagnostic and therapeutic intervention, some seizure patients are medically intractable with seizure types that are not amenable to seizure surgery and may benefit from Vagal Nerve Stimulation (VNS). In these patients, we work closely with our neurosurgery colleague Dr. Joseph Sramek in carefully selecting patients appropriate for VNS implantation and subsequent modulation.

Demyelinating Disease
Montana lies within the latitudinal “hot zone” for multiple sclerosis; as a result, we have patients with existing demyelinating disease and frequently make the de novo diagnosis typically in young, otherwise healthy, women. While the number of approved disease modifying therapies continues to grow in recent years, it still seems that we remain distant from understanding clearly the underlying pathophysiology of this common and potentially debilitating disease.

MRI has radically improved our ability to diagnose demyelinating disease and has even provided insight into its pathogenesis. We look forward to caring for our patient’s with multiple sclerosis and other demyelinating diseases in the future bringing to bear the latest in neuroimaging technology and disease modifying therapy.
Movement Disorders
Parkinsonism, essential tremor, dystonia and dyskinesia are some of the more common movement disorders seen routinely by neurologists at the Neuroscience and Spine Institute. A wide range of pharmaceutical interventions are available in the treatment of these conditions which may provide significant benefit. Our neurology service is facile in both the diagnosis and treatment of this spectrum of neurologic disorders.

In carefully selected patients with idiopathic Parkinson's disease, essential tremor and some forms of dystonia, deep brain stimulation (DBS) can be an invaluable treatment option. We work closely with Dr. Sramek of Neurological Surgery to identify those who would benefit from DBS implantation. Our patients also have access to a full range of exercise facilities, therapies and support groups which can be invaluable to patients and families living with movement disorders.

Neuroimaging
It is nearly impossible to imagine practicing neurology, neurosurgery or any other clinical neuroscience discipline in the absence of MRI. MRI, more than any other neuroimaging modality has truly revolutionized our ability to diagnose and subsequently treat a wide spectrum of neurologic disease. It is simply and without question our pre-eminent neurodiagnostic tool and its implementation and interpretation is of critical importance in the formation of a viable neuroscience institute.

KRMC now boasts three superconducting magnets after a 1.5 Tesla platform was sited adjacent to our Emergency Department recently and joined our pre-existing 3 Tesla and 1.5 Tesla units. The 3 Tesla platform is a dedicated neuro magnet with a full complement of coils and post-processing software sufficient to generate heavily penetrated conventional sequences, MRA, MRV, diffusion, susceptibility, dynamic perfusion, spectroscopy and functional MR (fMRI). fMRI incidentally has been invaluable to our neurosurgeons when planning tumor resections in eloquent brain.

I remain duly impressed each time I watch Dr. Thomas Origitano plan a tumor resection in eloquent brain based on fMRI and subsequently see an intact patient post-operatively. As a fellowship-trained neuroimager, I am pleased with our MR capability and thankful to our administration for recognizing how invaluable this technology is for our patients with neurologic disease.

I am also pleased to work with our talented neuroradiologists, Dr. James Schumacher and Dr. Nicholas Satovick, who recognize the importance of their work. I look forward to the future of neuroimaging and suspect that MR will ultimately supplant every other neuroimaging modality. Having said that, I still recognize the virtue of well-performed CTA and DSA.

Education
The Neurology Department has recently been approached and approved to host fourth-year medical students from the University of Washington for their required month-long clerkships in neurology. I have committed to four students in 2017 and I am looking forward to this opportunity. I think that most of us in medicine have had mentors whose enduring influence has shaped us as physicians and people and to give back that gift is meaningful.

Our young medical students will further invigorate our already deeply insinuated dedication to education into the future.

Bret Lindsay, MD
**Telestroke Program**

<table>
<thead>
<tr>
<th>Year</th>
<th>Telestroke Consults</th>
<th>tPA Administration</th>
<th>Transfers to KRMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>8</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2014</td>
<td>10</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2015</td>
<td>21</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>2016</td>
<td>22</td>
<td>17</td>
<td>11</td>
</tr>
</tbody>
</table>

**Department of Neurology Total Productivity**

<table>
<thead>
<tr>
<th>Year</th>
<th>New Patients</th>
<th>Established Patients</th>
<th>EEG</th>
<th>EMG</th>
<th>Botox</th>
<th>Total Encounters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>2,131</td>
<td>6,373</td>
<td>821</td>
<td>1,202</td>
<td>330</td>
<td>10,857</td>
</tr>
</tbody>
</table>
The Kalispell Regional Healthcare (KRH) Telestroke program continues to grow and provide modern stroke care to Critical Access Hospitals and the rural communities they serve throughout Northwest Montana.

Started in 2007, with help from state tobacco settlement funds, placement of the Telestroke robots in Libby, Ronan and Plains, our local team of neurologists utilize secure audio and video technology to join rural hospital providers in real-time consultation for acute stroke patients. This service has dramatically improved care and has increased utilization of intravenous tissue plasminogen activator (IV tPA) – a time sensitive, potentially life-saving medication for acute stroke.

In 2014, the KRH Telestroke program secured a large USDA Distance Learning and Telemedicine grant which allowed for expansion of six additional sites. Whitefish, Cut Bank, Shelby, Conrad and Chester are already onboard, and we anticipate adding one additional site by the summer of 2017.

KRH also purchased a robot for their own Emergency Department in 2014 to provide residents of the Flathead Valley the same brain-saving service our neighbors in rural communities receive.

Thus far in 2016, acute Telestroke consultations have continued to increase in comparison to 2015, and the tPA administration rate has risen 120% from 2015. Thus far in 2016, with thoughtful collaboration between expert KRH neurologists and remote, rural acute care providers, IV tPA has been utilized on 17 occasions – at times with dramatic improvement in symptoms. Some of the rural Critical Access Hospitals had never utilized this potentially life-changing medication prior to their involvement in this program.

In addition to improvements in acute stroke treatment, the Telestroke sites have benefited from extensive education programs directed toward providers and nursing services. These seminars and lectures, provided both in person and via teleconferencing, have significantly raised the bar for stroke care in these rural hospitals; from emergency medical assessment to inpatient management, to improving access to dedicated rehabilitation services.

We look forward to continued collaboration with our rural hospitals and providers to collectively deliver quality stroke care for the people of Northwest Montana.
King of the Mountain | Glacier National Park
The past year has been dynamic at The Montana Center for Wellness and Pain Management. We have stayed on the vanguard of interdisciplinary pain management and have witnessed a dramatic increase in new patient referrals. This increase has resulted from two factors:

- Earlier this year, The Centers for Disease Control released their guidelines for the use of opioid medications in the treatment of chronic pain. These guidelines, combined with those from other international organizations, have resulted in an increased unwillingness to prescribe chronic opioid medications outside specialty pain management clinics. Fortunately, The Montana Center for Wellness and Pain Management has been well positioned for the safe treatment of chronic pain. In fact, we have followed all points of the CDC guidelines for over seven years.

- Our reputation has spread and we have seen a significant increase in referrals based on positive recommendations from friends and families.

Meanwhile, we continue to strive to improve access to our unique clinic. To do so, we have added several services:

- Daily acute care appointments that allow our providers to see patients the same day for urgent needs;
- Telemedicine technology to remotely offer the services of our experts to patients in other cities without the need to travel to see us at our Kalispell location;
- Numerous group classes to help our patients improve wellness through diet, exercise, mindfulness meditation, cognitive behavioral therapy, and others;
- The addition of Kelly Brewer, LCSW, to our mental health team.

Our staff continues to grow with the addition of a new Clinic Operations Manager, C.J. Hanson, and we have expanded our physical facility to include a new procedural area that will be the future home of interventional pain procedures. This expansion has resulted in an improvement in our complementary alternative therapies including acupuncture, massage, chiropractic, and naturopathic services. We are very fortunate to have a beautiful interdisciplinary facility.

Dr. Camden Kneeland is excited to be able to offer two new kinds of advanced neuromodulation therapies known as Burst and Dorsal Root Ganglion stimulation. These new technologies, approved for the United States in 2016, will allow more patients to be free from pain. Dr. Kneeland was honored to be among the first physicians in the country to be selected to deliver these new technologies.

2017 will, undoubtedly, present new challenges and new opportunities. We are looking forward to our future and to improving the lives of those we serve.

N. Camden Kneeland, MD
Montana Center Productivity

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional therapy visits, less new patients</td>
<td>13,342</td>
<td>10,137</td>
<td>12,622</td>
<td>13,987</td>
<td>11%</td>
</tr>
<tr>
<td>Traditional therapy new patient visits</td>
<td>942</td>
<td>945</td>
<td>1,082</td>
<td>1,237</td>
<td>14%</td>
</tr>
<tr>
<td>Procedures</td>
<td>1,631</td>
<td>1,218</td>
<td>1,541</td>
<td>1,535</td>
<td>0%</td>
</tr>
<tr>
<td>Complementary therapy visits, less new patients</td>
<td>4,382</td>
<td>4,980</td>
<td>5,882</td>
<td>6,935</td>
<td>18%</td>
</tr>
<tr>
<td>Complementary therapy new patient visits</td>
<td>538</td>
<td>563</td>
<td>878</td>
<td>681</td>
<td>-22%</td>
</tr>
<tr>
<td>Total activity</td>
<td>20,835</td>
<td>17,843</td>
<td>22,005</td>
<td>24,375</td>
<td>11%</td>
</tr>
</tbody>
</table>

* Traditional therapies include medical management, mental & behavioral health, and physical therapy.
* Complementary therapies include acupuncture, massage, chiropractic, and naturopathic medicine.

Evolution in the Management of Complex Chronic Pain

For the vast majority of people with complex chronic pain conditions traditional medical treatments have failed. An important reason for many of those failures is a reliance on passive treatment models. These treatment models encourage the patient to believe that a specific modality can be delivered to them that will make a dramatic and lasting difference in their pain. Very often, this is simply not possible. On the contrary, the best outcomes in chronic pain occur when there is active patient participation in their treatment.

The Montana Center for Wellness and Pain Management is very excited to begin a fundamental shift in the way we involve our patients in their wellness plan. Beginning in early 2017, we will launch our Patient Centered Care program. This program will include a formal comprehensive personal evaluation of each patient’s needs, goals, and interests performed by our psychologist during one of their initial visits. This visit will, at the beginning of the treatment relationship, set the stage for active patient participation in a care plan that is tailored to their specific needs. The patient will be given a personalized written care plan and a notebook which contains tools to allow them to participate in their care, track their progress, and share this information with their healthcare team. This program will also include significantly increased access to group educational programs focused on movement therapies and mental/behavioral health techniques that have been proven to make a significant difference in chronic pain.

We are extremely fortunate to have the resources and personnel in place to offer such a unique approach to chronic pain and wellness. We look forward to all of the wonderful things for our patients that are likely to come as a result of this new model.
Awareness, Original Articles, Presentations, Abstracts, and Community Service

Medical Tourism
Grey Matter Dragon Boat

Concussion Prevention/Management
Clinical Research and Education

FVCC School of Nursing
Boot Camp for Mid-levels
Peer Reviewed Publications


Published Abstracts


2) Origitano TC, Griffin Tep: Subspecialty Training of Mid-Level Providers: Initial Experience With a Neurosurgical Primary Technical Skills Boot Camp With Evolution Into a Mid-Level Fellowship Program. Presented at the Society of University Neurosurgeons Annual Meeting, Phoenix, Arizona, March 10-13, 2016


4) Origitano TC: Developing a Tertiary Care Neuroscience and Spine Institute in a State Without a University Medical Center. Presented at the 51st Annual Meeting of the Rocky Mountain Neurosurgical Society, Whitefish, MT, June 19-22, 2016


Presentations

1) Origitano TC: Hotel Management and the Art of Managing the Psycho-Socio-Economic and Practical Aspects of Delivering Neurological Care: To Treat, To Cure: and Or To Heal. Presented at the Neuroscience Staff Educational Conference, Kalispell, Montana, August 20, 2015.

2) Origitano TC: Cerebrovascular Physiology and CBF Direct Application To the Bedside Management of Patients. Presented at the 3rd Annual Neurosurgical Boot Camp for Midlevel Providers, Whitefish, Montana, October 1-2, 2015


Presented at the Society of Neurological Surgeons Annual Meeting, Indianapolis, Indiana, June 4-7, 2016.


27) Krass, Joshua: Save the Brain Concussion Program: Useful Information for Diagnosis, Treatment, and Prevention for Your Community, Presented at the Montana Osteopathic Medical Association Meeting, Bozeman, Mt, August 4, 2016


29) Krass, Joshua: Cervical, Thoracic, and Lumbar Anatomy Review for Radiology Tech Students, Presented at Kalispell Regional Medical Center, Kalispell, Mt, August 10, 2016


32) Krass, Joshua: Emergency Neurological Life Support Course, Presented at Kalispell Regional Medical Center, Kalispell, Mt, October 8-9, 2016

33) Krass, Joshua: Adjunct Clinical Faculty Appointment Pacific Northwest University of Health Sciences, Yakima, Wa, October 28, 2016
A concussion or mild traumatic brain injury (mTBI) causes an alteration in how the brain functions. When recognized and treated appropriately, most concussion patients recover within 1-2 weeks. When a concussion goes unrecognized, is ignored, or is treated inappropriately, the impact can be long term and affect every aspect of life. Adverse effects can include, abnormal thinking, persistent headache, emotional instability, irritability, impaired learning, and poor balance and coordination.

The Centers for Disease Control and Prevention estimates that annually in the US there are 1.6 to 3.8 million concussions (CDC 2016). Initially we perceived the high risk sports, such as boxing and football, to be the primary contributors to mTBI. This thought has since been debunked. Individuals of all ages and all activity levels are susceptible to concussion, with the young and the old being the most susceptible (Kerr et al 2016). Worldwide estimates are that up to 42 million people suffer from mTBI annually (Cassidy et al 2004) and that less than half of these people see a medical provider (Setnik et al. 2007).

Currently, there is a great deal of disagreement on how to diagnose and treat a concussed person. A pubmed search for concussion reveals over 8,000 articles on concussion, many of which have conflicting guidelines and methods of diagnosis. The last 30 years have produced remarkable variability. Initially concussed individuals were often returned to play or work the same day or within several days. Fifteen years ago the focus was on resting a concussed individual until all post concussive symptoms resolved. The last 5 years of literature has emphasized the benefits of gradual return to play or work, and the importance of rehabilitative therapies. The current hot topics of research are focused on trying to find testable blood biomarkers of a concussion, using these to help predict severity and studying the effects of repetitive subconcussive head trauma on the developing brain (Bahrami et al. 2016).

Because of this variability in management and new recommendations for management, the Neuroscience and Spine Institute helped create the Save The Brain Campaign which is a researched and vetted program that is now in its third year of existence. It originated to help create uniformity in management of concussion within the Flathead Valley, however, the Save The Brain information has disseminated far outside the confines of our valley. Providers from primary care, pediatrics, physiatry, neurology, neurosurgery, orthopedics, and multiple therapies including physical, occupational, and speech therapy convened. Guidelines from their respective disciplines were presented, and universal guidelines were created to help manage patients with concussion in our community.

Five key areas were addressed including baseline testing, sideline management, post-concussive care, return to learning, and return to play. Over 200 providers are now trained in our community to help provide the most appropriate care. Save The Brain providers have delivered educational sessions at most local schools and most recently at the Montana Education Association and Montana Federation of Teachers (MEA-MFT) yearly meeting.
Since the creation of the Save The Brain Campaign and its quick acceptance into the community, it has become apparent that providing the best concussion care requires a centralized interdisciplinary approach. Due to the expertise and training of physiatrists in managing brain injured patients, the Concussion Clinic is now centered out of the Physical Medicine & Rehabilitation (PM&R) department, which recently moved to The Summit Medical Fitness Center.

The Summit also houses many of the therapists and trainers that are helping in the management of concussion care. Over the last year, 129 new concussion patients were evaluated by our PM&R practitioners. Initially the target audience for concussion referrals were middle school and high school age athletes. However, it has become evident that individuals of all ages and of all activity levels are in need of advanced concussion care.

Currently, PM&R's Concussion Clinic is treating individuals age 5 years and up. Children less than 5 years old are being treated by Dr. Marcus Wheeler, Pediatric Neurologist, located at the Neuroscience and Spine Institute. Dr. Wheeler was also a founding provider for the Save The Brain Campaign.

As the Save The Brain Campaign looks into the future, we hope to place more emphasis on collaboration with other providers in the community, and continue to grow the multidisciplinary Concussion Clinic at The Summit.

We will continue to research concussion and review the literature in an attempt to incorporate the most up to date methods of treatment for concussion into our guidelines and practice. With this collaboration amongst providers, therapists, patients, and the community we can continue to improve the patient outcomes, and improve the wellbeing in the Flathead Valley and beyond.

Literature Cited:

Andrew Cole, MD
Why boot camps and post-graduate training for advanced practice providers?

Rapid and radical changes in health care and education are impacting the delivery of neurosurgical services. Work hour restrictions, changes in medical school technical training, and overall preparedness of medical students for neurological surgery, in part, promoted the development of boot camp courses. These courses for both PGY-1 and PGY-2 years have been developed, implemented and validated as durable learning tools.

Present and impending changes in health care economics (value based payments), are further driving changes in the make-up of health care delivery paradigms as teams, consisting of a spectrum of providers (physicians, surgeons, nurses, advanced practice providers) will manage the health care of a population of patients.

Over the last decade, advanced practice providers (certified physician assistants, nurse practitioners, etc.) have played an ever increasing role. Many of these originally were in primary care, and in rural areas where physician shortages were most acute. There has been an expanding role and penetration of advanced practice providers in the subspecialties driven in part by changes in resident work hour restrictions, changes in the methodology of compensation and movement toward population health models.

Care teams now are compromising multiple mid-level providers per physician/surgeon to allow for higher and more efficient patient throughput (average physician assistant sees a mean of 70 patients per week). These changes are reflected in the rapid growth of the core number of certified physician assistants (PA-C): 43,500 in 2003 to 95,583 in 2014 representing a 219% growth over ten years.

The role and scope of practice can vary related to advanced nurse practitioner (ANP) versus physician assistant (PA-C) and on a state-by-state basis. Their clinical practices include: independent clinics, assistance in clinic, assistance in operating room, hospital rounding, emergency room and hospital consultations, night call, in-clinic procedures (myofascial injections, shunt adjustments, pain and spasticity pump adjustments and refills, and deep brain, spinal cord, and vagal nerve stimulator adjustments).

In-hospital procedures can include: intracranial pressure monitors, external ventricular drains, lumbar puncture/drains, central lines, arterial lines, and drain removeds. Depending on the state some may have independent medication prescribing privileges.

Why boot camps, courses, and post-graduate training programs for advanced practice providers (APPs)? The future of continued excellence in neurosurgical care is contingent on attracting the best and brightest APPs as part of the care teams. These individuals are highly sought after resources and we compete for their services. Unfortunately, like medical students, they have little, if any, direct exposure of the clinical neurosciences unless they have independent interest and self-pursuit.

Most curriculum for APPs give little exposure and opportunity for a neurosurgical experience.
Compounding this, most neurosurgical training programs do not offer opportunities for clinical rotations which can serve as an introduction to the field. Those that are interested in neurosurgery present themselves for on-the-job training, a process which can be extensive in time and energy and may not lead to fruition. Health systems today also want evidence of skill acquisition as part of the privileging process as the days of “see one, do one, teach one,” are behind us.

The Society of Neurological Surgeon’s PGY-1 boot camp experience was created to fast track new residents on primary neurosurgical procedures. The course underwent scientific validation as to its improvement on procedural performance and durability of performance.

The advanced practice provider’s fundamental boot camp was modeled after the SNS PGY-1 course with modification to accommodate the clinical experience of the participants. The course’s prime directive is: “This is a safe place to learn.” The course curriculum consists of the following didactic and simulation components:

**Day 1**
1) Spinal imaging review
2) Case based management of spinal emergencies
3) Case based common spinal pathologies/diagnoses
4) Review of spinal surgical anatomy
5) Simulation stations: pedicle screw with navigation, pedicle screws without navigation, lumbar puncture/lumbar drain, deep brain stimulation/pain-pump/neuromodulation adjustment, arterial line placement, and wound closure

**Day 2**
1) Cranial imaging review
2) Intracranial pressure/cerebral blood flow considerations in health and pathology
3) Case based cranial emergencies
4) Concussion/closed head injury diagnosis and management
5) Pediatric evaluation and emergencies
6) Simulation stations: ICP monitor, Vp shunt tap/programming, cranial tongs placement, external ventricular drains, and cranial skills (burr holes, craniotomy, dural closure, plate fixation of flap, cranioplasty)

To date, five courses over four years have accommodated 150 advanced practice providers. Post course evaluations were utilized to assess course curriculum and content and to evaluate the interest in a post-graduate advanced practice provider neurosurgical fellowship experience.

Post-graduate fellowship opportunities for physician’s assistants in many other subspecialties (orthopedics, cardiovascular, emergency medicine, oncology, pediatric surgery) are numerous throughout the United States. However, in neurological surgery only two formally exist.

A neurosurgical post-graduate advanced practice fellowship (primarily focused on physician assistance) was created based on the feedback from our exit surveys, physician assistant students rotating on neurosurgery exit interviews, employer feedback, and analysis of national need. The curriculum consisted of 50 modules of education content and 12 months of clinical rotation. The educational content of the modules consisted of recommended readings, set objectives and self-assessment testing. The clinical rotations consisted of the following:

1) Neurosurgery: 3 months consisting of clinic, emergency room, hospital, intensive care unit and operating room experience
2) Neurology: 2 months, primarily clinic based and electrophysiology
3) Pain Center: 1 month with exposure to
interventional and chronic pain management

4) Anesthesia: 2 weeks focused on intubation and line placement skills
5) Radiology: 2 weeks focused on neuroimaging
6) Neuropathology/Research: 1 month preparation of frozen sections, clinical research paper
7) Physical and Rehabilitative Medicine: 1 month exposure to both inpatient and outpatient practices including injections, orthotics, and traumatic brain injury recovery
8) Neurological Surgery: 3 months consisting of more independent clinic experience and advanced surgical exposure and experience

The fellowship is designed to be tailored to the individual fellow's interest. Elective time outside of neurological surgery can be expanded to enhance exposure and expertise (pain management, interventional injection therapies, etc.). The fellow is primarily mentored by the lead PA-C who is also the program director. Fellows rotate with each surgeon in the department to acquire a broad knowledge of the subtleties of practice styles. Fellows initially take second call with a staff PA-C and are transitioned to primary call during their second neurosurgical rotation with a staff PA-C as back up.

Because the fellows are certified and licensed they can bill for their services. This creates a revenue stream which can make the fellowship budget neutral. The fellowship de facto serves as a recruitment tool, yearlong job interview and source of clinical improvement project. The fellowship program is currently pending Accreditation Review Commission on Education for the Physician Assistant.

Our experience with advanced practice provider boot camp and neurosurgical fellowship program raises a significant challenge for organized neurological surgery. Neurological surgery teams need dedicated, well trained, advanced practice providers. The pool for these individuals is limited. We must compete and provide educational venues to attract and retain the best and brightest.

We offer for consideration the following recommendations:

1) Neurological surgery rotations for advanced practice provider students which are organized in parallel to those for medical students. These rotations would be offered and advocated as elective rotations within APP schools.
2) The SNS PGY-1 boot camp courses be expanded to accommodate APPs by running the courses in a series (1.5 days PGY-1.5 days APPs), as the simulation equipment and faculty are present on site.
3) The SNS CAST committee in collaboration with the ANP and PA-C certifying authorities work to standardize and certify advanced practice providers neurological surgery with experience much like they have for endovascular and critical care neurological surgery.

Advanced practice providers will play an ever increasing role in neurosurgical patient care and outcomes. They represent a new and growing educational concern for organized neurological surgery. We in neurological surgery, as we have in resident education, should lead and model the integration, education, and implementation of these valuable providers in our field.
Functional Neurosurgery Program at Kalispell Regional Healthcare

Functional neurosurgery is that subspecialty of neurosurgery which is concerned with physiological techniques, including electrical recording, and electrical stimulation for localization and treatment of target structures in the central and peripheral nervous system and the surgical alteration of the nervous system, (either by ablation or augmentation), to treat neurological diseases such as movement disorders, epilepsy, chronic pain, degenerative diseases, neurological injuries, and psychiatric disorders.

The Functional Neurosurgical program began in 2013 with the arrival of Dr. Joseph Sramek and Robert Griffin, PA-C. Procedurally, the program provides deep brain stimulation for Parkinson's disease and essential tremor, vagal nerve stimulation to reduce seizure activity, intrathecal pump placement for pain and spasticity, and spinal cord stimulation for pain augmentation.

These procedures offer significant new options for the treatment of serious chronic neurological disorders through physiological modulation. Previous to 2013, these procedures were not available in Northwest Montana. Vitally associated with the modulation procedures is the management, adjustment and maintenance of the implantable devices to optimize patient outcomes (including pump refills and battery changes). Since the inception of the program 121 functional procedures have been performed.
Changes in resident work hours, population health, and sub-specialization are having a significant impact on the neurosurgical workforce. Advanced practice providers (AAP) (nurse practitioners and physician assistants) are populating these care teams and playing an increasingly significant role, especially in patient care and triage. The physician assistant is the fastest growing group of advanced practice providers across all specialties. Their numbers have grown more than 219% in the past decade. Their core training requires 12 months of basic sciences and 12 months of clinical experience, often with little exposure to surgical subspecialties. Neurological surgery (both academic and non-academic practices) competes with all other medical and surgical subspecialties for these valuable resources. Opportunities for APP exposure to neurological surgery are limited, further complicating recruitment and leading to inexperienced personnel when recruitment is successful.

To create opportunities for awareness and exposure to neurosurgery for APPs, the Department of Neurological Surgery at Kalispell Regional Healthcare has created an educational program focused on training and recruitment of physician assistants consisting of: 1) PA-student rotations; 2) a one year focused neurosurgical fellowship; and 3) an annual hands on boot camp simulation course based on the SNS PGY-1 course.

Over the past two years, eight physician assistant students have completed a six-week rotation with nine scheduled in 2017. Over the past four years, 125 APPs attended our annual hands on boot camp. We have completed our first Neurosurgical APP Fellowship and this fellow will be joining our practice after having spent one year with us and completing a 50 module study curriculum with clinical rotations featuring operative and clinic neurosurgery (six months), neurology (two months), rehabilitative medicine (one month), pain medicine (one month), neuroradiology, anesthesia, neuropathology (one month) and research (one month). Currently, we have eight applicants for next year’s fellowship position.

Advanced practice providers are essential for the future of neurological surgery. They represent a non-conventional workforce and educational opportunity. Neurosurgery must compete if we expect to attract the best and brightest of these individuals. To do so we must create awareness and opportunity for training of this population.
Decrease in Death and Disability only a Click Away – Buckle Up

Across Montana, White Cross Memorial Markers can be found along roadsides designating the site of a fatal accident. Motor vehicle accidents represent a significant number of traumatic injuries treated by the trauma services at Kalispell Regional Healthcare. Montana is rated fourth in the nation for highway mortalities.

There are a number of environmental issues which contribute to mortality: 1) The roads are elevated on both sides which increases the probability that cars will flip and roll during an accident; 2) Montana roads tend to have high speed limits, few lights and tend to have long runs with swallow curves (where many monument markers can be found); and 3) They seem to be where the deer and antelope play.

These environmental issues are difficult to mitigate being fixed infrastructure. The Neuroscience and Spine Institute and Trauma Services sought to evaluate potential reversible factors that could lead to decreasing the severity of motor vehicle accidents in Montana.

Over a three year period (2013-2015) Kalispell Regional Healthcare treated 1,083 traumatically injured patients. Of those, 393 were involved in motor vehicle accidents. Patients were analyzed for a number of demographics including age, sex, use of seatbelts, alcohol level, death, length of stay (LOS), and injury severity score (ISS). Initial analysis looked at the use of seatbelts in the face of presence of alcohol. Ninety six of the 393 patients (24.5%) were positive for alcohol intoxication (ethanol level >.08) with an average level of .203 (2.5 times the legal limit).

Patients whom were intoxicated and did not wear seat belts had an average ISS of 13.0, LOS 5.1. Intoxicated patients whom wore seat belts had an average ISS 8.5 and LOS of 1.5. Patients whom did not wear seat belts regardless of their alcohol level had a 42% higher ISS and an LOS 3.4 times greater.

When patients were analyzed without regard for alcohol use there were 186 whom wore seatbelts and 211 whom did not. In the seat belt group the average ISS was 8.3, average LOS 2.1days, average age 45 years, and total number of deaths was six. In the group who did not utilize seat belts, the average ISS was 11.7, average LOS 4.5 days, average age 35.5 years and total number of deaths was 11. Wearing a seat belt reduced severity of injury by 34%, LOS by 73% and death rate by 59%.

Whether driving intoxicated or not, wearing a seatbelt significantly decreases injury, death, and length of stay in the hospital. Length of stay in a hospital and injury severity score are surrogates for extent of time off work and overall healthcare expense. If we were to compare seat belt use to vaccination for a potentially deadly disease, who would forego vaccination knowing that this simple intervention would reduce your potential to die by 59%, length of disease by 73% and severity of disease by 34% even if you participated in high risk behaviors?

People participate in preventative healthcare measures all the time with weight control, dietary choices and exercise. We must begin to look at buckling up as a preventative healthcare measure and part of our responsibilities as citizens to control healthcare costs and expenditures.
Long-term video EEG monitoring has arrived at KRMC. Once available only at tertiary epilepsy centers, this important diagnostic tool has found its way into centers the size of KRMC by virtue of improvements in technology and cost. In the two years this advanced equipment has been available at KRMC, the number of studies and total study days has doubled as medical providers have come to appreciate its utility in defining difficult seizure-like spells. It is the standard in determining whether a patient suffers from epilepsy, psychogenic nonepileptic seizures or both.

Routine EEG is familiar to community health care practitioners. Most ordering providers are also aware of the extremely low likelihood of capturing an actual epileptic seizure or seizure-like episode during a typical forty minute study. Rather, the goal is to identify epileptiform brain waves between events (interictal activity). Medical providers are probably less aware of the low sensitivity of a single EEG in finding decisive epileptiform activity, with a detection rate of only about 40% in patients with proven epilepsy.

When abnormal interictal activity is identified, a routine EEG does not establish whether that activity indicates epilepsy if the behaviors in question are not recorded at the time of the electrographic findings. This is often the conundrum in patients with both epileptic seizures and psychogenic episodes.

Long-term video EEG permits simultaneous recording of both electrographic activity and clinical behaviors over hours, and usually days. The prolonged recording time, which should include periods of sleep, increase the odds of identifying interictal abnormalities to greater than 80% after two days of recording. More importantly, the chances of capturing one of the clinical events in question improve tremendously. The ability to correlate the recorded behaviors with the EEG findings firmly establishes whether the events are epileptic or not in almost all cases. In addition, recorded events can be viewed repeatedly to detect subtle behaviors which along with the electrographic changes may clarify type of seizure and localizes its onset. For that reason, long term video EEG is the essential tool to determining whether patients require referral to an epilepsy surgery program.

Patients with uncertain seizure-like events not defined by routine EEG, may be admitted to KRMC for long-term studies from one to seven days on average. Seizure precautions are maintained and the patient stays in the assigned room with limited visitation to maximize video surveillance. Anticonvulsants are maintained or withheld at the discretion of the attending neurologist. EEG leads are placed and frequently checked by EEG technologists.

With advances in digital recording and information transmission, patients can be monitored from almost any KRMC room, eliminating the need for dedicated epilepsy units. Small EEG machines with tiny cameras sit unobtrusively in the patient’s room recording gigabytes of EEG data and high-definition video. Infrared illumination allows nighttime recording, when most seizures and epileptiform EEG abnormalities occur. By virtue of KRMC’s
The updated wireless, high-bandwidth infrastructure, the video EEG data can be viewed by both the EEG technician and neurologist in real time, enabling prompt medical decision making.

Internet connectivity allows protected access to the study from anywhere there is a computer. Finally, EEG analysis is now greatly assisted by recently developed computer programs. Hours of data can be reviewed in seconds to reveal not only seizure activity, but otherwise undetected cerebral injury.

KRMC’s high-tech EEG system works particularly well in the intensive care unit, where there has been increasing interest in searching for subclinical seizure activity and reducing brain injury. Recent studies reveal that, on average, one third of patients in the ICU with brain insults ranging from cerebral hemorrhages to brain tumors to infections suffer from undetected seizures. Up to half of patient who are admitted to the ICU with a prolonged convulsive seizure, status epilepticus, will continue to have seizures without convulsions. These so-called nonconvulsive seizures may exhibit only subtle or no findings on bedside examination and contribute to a persistently diminished level of consciousness. Studies suggest without detection and treatment of these events, patients may suffer from additional brain injury.

Nonconvulsive seizures can be confidently identified only with prolonged EEG recording video helps distinguish subtle movements due to seizures from other reflexive movements. Again, the flexible, sophisticated IT infrastructure at KRMC permits immediate access to the data from any ICU room, so that the neuroscience team can intervene promptly and reduce brain injury.

Clearly, offering a modern long-term video EEG system does not make KRMC a tertiary epilepsy center, but it does help identify the small number of patients who may benefit from a referral to such a program. For the remaining, vast majority of patients, this important technology represents a tremendous step forward in their neurological care here in Montana.
For years, school aged children have lined up to lean forward and have someone look at their spines in screening for scoliosis. Statistically, about 2.5% of most populations are found to have a thoracolumbar curve of ten degrees or more. Unfortunately, the recognition and treatment of such scoliosis deformities has not progressed with the pace of advancement in other areas of medicine. Our understanding of the etiology and the best practice recommendations remain indefinite and variable. Largely because the disease entity of scoliosis is asymptomatic often times for years, the impetus to do much in the way of treatment often is neglected by many patients. In the setting of idiopathic adolescent scoliosis in particular, other factors such as the patient participation, appropriate nutrition and adherence to treatment recommendations often interfere with the social development of the young patient and, thus, their compliance with treatment.

Scoliosis is a wide ranging disease process. It is often categorized based upon onset: infantile (<three years), juvenile (five to eight years), adolescent (10 years to end of growth) and degenerative. The causes are vast and sometimes not fully recognized. Pathologies such as Ehlers-Danlos Syndrome, syringomyelia, neurofibromatosis, Chiari malformations, spinal cord syrinx, cerebral palsy, tethered cord and others are recognized as presenting with an increased risk of developing a scoliosis deformity. Unfortunately, the etiology is usually not readily identifiable, yet there is a clear genetic predisposition to the disorder. As we age, degenerative disc disease may promote the development or progression of such curves within the spine due to asymmetric degeneration of the intervertebral discs.

Today in the Flathead Valley, we now have an established program for the recognition and treatment of scoliosis throughout the spectrum of all ages and disease severity. Last year, the Department of Physical Medicine & Rehabilitation evaluated and treated 87 patients referred specifically for scoliosis. Often these patients present with back pain, functional impairments and impacts upon their quality of life. As we develop our service line to this population, we are working to create a comprehensive plan for these patients that consists of appropriate and evidence-based surveillance, specialized therapy methods, nutritional counseling, specialized and modern bracing modalities. If needed, we have the ability to refer to pediatric surgical specialists and are capable of providing post-operative rehabilitative care so that patients do not have to travel outside of the Flathead Valley.

Based upon current studies and treatment guidelines, we strive to help patients avoid surgical intervention. Although successful in helping to restore function for patients and reduce further deformity and disability, surgery is not considered a primary treatment for scoliosis. If adolescent scoliosis is recognized early and treated appropriately, much can be
done in an effort to reduce impacts of pain, functional ability, deformity and disability for these patients. This disorder impacts females to males at a ratio of 5.4:1. As patients begin to accelerate long bone growth, the curves can progress at impressive rates. If bracing is needed, use of correct bracing is of utmost importance. Used correctly, bracing can be effective. In the Bracing in Adolescents with Idiopathic Scoliosis Trial (NEJM October 2013), strong evidence for bracing was shown to make the “case for the brace.”

Historically, bracing has been large, uncomfortable, unsightly and embarrassing for patients, which decreases compliance. Only with adherence to its use is bracing effective. Today, Physical Medicine & Rehabilitation is bringing a new method of bracing to the patients of Kalispell Regional Medical Center which brings bracing into the 21st Century. Using laser contouring of the patient's torso and computer aided modeling; a thin, lightweight, comfortable and customized brace can be made uniquely to fit each patient. We have reached out to leaders in this field who are willing to assist our program in bringing this technology to the local community. Appropriate bracing has been shown to prevent 20-40% of curves from progressing greater than six degrees.

In an effort to avoid reaching this point of treatment, we are also employing many local physical therapists to help treat the symptoms of back pain as well as the deformity with more specialized treatment modalities. We are pursuing an effort to train and certify select physical therapists in a method called the Schroth Method of physical therapy. This treatment regimen has been shown to actually help reverse the lateral and rotational deformity that often develops. Historically, mainstream thought was that the curves of scoliosis could not be reduced without surgery. The Schroth Method is now being recognized as a means to obtain excellent results using conservative treatment measures.

Physical Medicine & Rehabilitation has developed a relationship with KRMC dieticians to provide nutritional counseling for our adolescent patients that may not possess adequate dietary intake and may benefit from improved dietary consumption of fats, proteins and calories necessary for appropriate skeletal development.

The next phase of developing our scoliosis program will be to create community support groups where existing and past patients may help to provide support for patients and family members facing this disorder. Scoliosis is often difficult for young female patients as it progresses rapidly amid adolescence where wearing a brace impacts the outward appearance and can affect self-image. In one study, females with a curve of greater than 40 degrees were 39% more likely to have a psychological disturbance. For this reason, a support group directed by medical professionals may help increase compliance and improve outcomes for our patients.

Finally, for our patients with degenerative scoliosis deformities, we continue to provide a spectrum of comprehensive spine care. For those patients, there remain many treatment modalities that may be effective. From choosing appropriate imaging to providing targeted therapy, we help to counsel patients on their treatment options. These patients often feel as though they have exhausted all treatment options, however, we can often
provide significant symptom relief. Partnering with our colleagues at The Montana Center, we can often reduce pain symptoms through targeted interventional pain procedures. Through our local prosthetists, we are able to make a customized adult scoliosis orthosis that can often help mitigate patient's pain symptoms and allow them to participate in daily activities with less pain and increased endurance.

As we move forward in advancing treatments, we invite our local referring providers to consider Physical Medicine & Rehabilitation when looking for resources to help patients young and old with spinal deformity. Our clinicians bring a breadth of knowledge and experience in working to bring a holistic approach to diagnosing and treating patients with an emphasis on improved function and quality of life.
A Multidisciplinary Approach to Prosthetics and Orthotics

Each year more than 150,000 people are admitted to hospitals for amputation due to vascular problems or diabetes, and it is estimated that as of 2005 more than 1.5 million people live in the United States with amputation. Vascular disease accounts for 93%, trauma for about 6%, and cancer for less than 1% of these amputations. Twenty-five percent of the patients undergoing amputation for vascular problems will require a subsequent amputation procedure in the next year. These patients often have significant changes in the way they walk and function and are at risk for further surgery if appropriate care and education is not given.

The Department of Physical Medicine & Rehabilitation within the Neuroscience and Spine Institute has worked to improve the care for these patients in the Flathead Valley and beyond. We provide preoperative consultation for patients considering amputation to discuss life after surgery, the course of rehabilitation required, and the potential complications that may arise. We consult on patients in the hospital shortly after their surgeries to discuss appropriate rehabilitation needs and sometimes are able to bring them to our inpatient rehab unit as well to jumpstart their multidisciplinary rehabilitation plan.

In addition, the Department of Physical Medicine & Rehabilitation has developed a comprehensive outpatient program for patients with amputation and those with bracing needs. Similar programs are usually not found except at larger, academic centers. Our team includes a physician, physician assistant, prosthetist, orthotist, and physical therapist that specialize in amputee and gait training. We currently hold a clinic once a month where each of these disciplines is involved.

Since starting this program in 2015, we have served 51 patients in that specific clinic and multiple others in the time periods between those clinics. Prior to the inception of this clinic, each specialty (Physical Medicine & Rehabilitation, Orthopedics, Prosthetics and Orthotics, and Physical Therapy) functioned independently. This often led to reduced quality of care because of denial of prosthetics and orthotics by insurance carriers due to inadequate documentation, unrecognized skin care issues, and lack of access to advanced technology.

Since developing this collaboration, we have opened lines of communication between the various specialties both during the multidisciplinary clinic and beyond. This has resulted in patients receiving appropriate prosthetics and orthotics in a timely manner, assurance for the patient that their entire treatment team is on the same page, and a single cohesive treatment plan. Our clinic has also improved care for adult and pediatric patients who have complicated bracing needs including those with cerebral palsy, spinal cord injury, spina bifida, traumatic brain injury, and post-polio syndrome. Previously, this service was lacking in the Flathead Valley.

In the past year we have made great strides for patients with amputation and bracing needs and we hope to further expand to new services. At this time we are excited to partner with The Summit’s Competitive Edge Gait Laboratory and plan to utilize computerized gait analysis in the coming months for patients with complicated gait mechanics. We anticipate that this will allow us to provide even more detailed information about our patients’ gait allowing us to provide a personally tailored medical and rehabilitation plan and customized prosthetics to improve patient outcomes and quality of life.
Cancer is a significant problem in the Flathead Valley, and the United States in general. One of the most feared diagnoses in a cancer patient is distant metastases to the brain. Traditionally, these brain lesions have been treated with whole brain radiation and chemotherapy. This often produces side effects such as memory loss and cognitive decline. Technology has been developed, and proven, over the past 15 years that greatly improves the delivery of radiation to targets within the brain. Stereotactic radiosurgery (SRS) allows very precise treatment of brain lesions while minimizing the effect on surrounding tissue. Kalispell Regional Healthcare has the very latest technology and is expanding its stereotactic radiosurgery program.

Neurosurgeons from the KRH Neuroscience and Spine Institute are partnering with Northwest Montana Radiation Oncology to provide comprehensive stereotactic radiosurgery services. Doctors Joshua Krass and Stephen Campbell are spearheading the effort within the Neuroscience and Spine Institute, while Doctors Jeffrey Eshleman and Gordon Stillie are the SRS experts at Northwest Montana Radiation Oncology.

The equipment used for these procedures is a Varian Truebeam STx with an optical surface monitoring system (OSMS). This allows accurate treatment of tumors without the invasiveness of a traditional head frame. CT and MRI data are transferred to the Varian planning station and the radiation oncologist, neurosurgeon, and medical physicist generate a radiation plan. The patient is then treated with one to five 20 minute sessions according to the plan.

Comprehensive care can be delivered with the neurosurgeon providing initial surgery, followed by evaluation for SRS, radiation planning, radiation treatment, and follow-up care. The neurosurgeon has a unique role in this process. There is critical information that is accessible to the neurosurgeon regarding the extent of resection, the local anatomy adjacent to the tumor bed, the regional anatomy near the radiation treatment area, and trade-offs between dose/margins and risk of re-operation.

The impact of the SRS program at KRH is wide-ranging. Previously, patients had to travel to Spokane to get stereotactic radiosurgery. Now, all aspects of their cancer care can be provided in Kalispell. This will allow KRH’s cancer program to grow without limitation. Future plans for expanding the SRS program include treating arteriovenous malformations, trigeminal neuralgia, and certain primary brain tumors with SRS.

The Song of the Wolf | Montana
Across the United States there are 1300 critical access hospitals (less than 25 beds, greater than 25 miles from another hospital) of which approximately two-thirds are staffed by general surgeons practicing rural surgery, characterized as a combination of open and endoscopic abdominal surgery, orthopedics, obstetrical surgery, gynecological surgery, trauma surgery and head injury management.

The number of these brave souls is declining, while the demand for them is increasing. Most residencies in general surgery cannot provide this unique training experience. Most no longer formally rotate their residents on neurological surgery with their only experience being on a trauma rotation.

Montana is home to 50 critical access hospitals spread out over 147,000 square miles. Kalispell Regional Medical Center serves as a clinical neuroscience resource hub for 12 critical access hospitals and three community hospitals in a 150 mile radius. The health system is engaged in providing a general surgery fellow with a rural surgery experience.

It is not uncommon for rural surgeons to be initial responders to patients with neurological trauma. As part of the fellowship, the Department of Neurological Surgery was asked to provide basic neurosurgical training to the rural fellow. The training paradigm consisted of a one month neurosurgery rotation, a two day simulation hands-on boot camp course, and a one day Emergency Neurological Life Support (ENLS) course.

The fellow’s experience included: emergency evaluation of the neuro-trauma patient, management of increase intracranial pressure, triage of spine pain, and operative exposure to burr holes.

The training of non-neurological surgeons has long been a hotly debated topic. In rural areas, providing such training to rural surgeons advances patient care with early evaluation and implementation of emergency neurological life support and should be supported by organized neurological surgery.
This year, Dr. Joshua Krass and Robert Griffin, PA-C, provided a two-day training program designed to help healthcare professionals improve patient care and outcomes during the first critical hours of a neurologic emergency. The ENLS program demonstrates a collaborative, multidisciplinary approach and provides a consistent set of protocols, practical check lists, decision points, and suggested communication pathways to be utilized during patient management. More than 100 KRMC staff members attended the programs that were provided in May and October of 2016.

The ENLS program is made up of 14 protocols. Each protocol was designed and developed by a collaboration of neurointensivists, neurologists, neurosurgeons and emergency medicine physicians from across the United States. These protocols are designed to provide the same advice an expert in neurocritical care would provide if you called the physician for a consult and asked “What should I do in the first hour to best help this patient and transfer them into your care?”

The ENLS program covers a broad range of material and is extremely clinically oriented. The faculty provided a current consensus about the protocols of care for patients and highlighted areas of controversy and ongoing research. The turnout for both courses this year was excellent and the overall response from the nurses and staff who attended was that it was an amazing compilation of important and succinct information with practical implications.

Dr. Krass and Rob Griffin hope to complete this course at other outside hospitals throughout Montana and emergency neurologic care and patient outcomes.
Chicks n Chaps is a 501(c)3 non-profit organization founded originally in 2008 in Missoula, Montana. The idea was brought forth by Shannone Hart, recently impacted by a close family diagnosis of breast cancer. She attended a women’s football clinic at the University of Montana, and thought a similar clinic would be a great option for a fundraiser and to bring awareness to the sport of rodeo. Missoula Chicks n Chaps is affiliated with Tough Enough to Wear Pink, a national organization for breast cancer fund raising and awareness. Chicks n Chaps now hosts similar rodeo clinics all throughout the western United States and continues to grow.

In February of 2015, Mark Campbell, the manager of the Northwest Montana Fair and Rodeo, reached out to Chicks n Chaps National in Missoula to see about starting a program in Kalispell. The Development Director, Kirsten Cooper, then reached out to Amy Tangedahl, PA-C, of Neuroscience and Spine Institute.

Amy frequently gets asked two questions regarding this endeavor: What does rodeo or breast cancer have to do with neurosurgery? And, what does breast cancer have to do with rodeo?

The neurosurgical correlation is an incidental one. Amy is surrounded by resourceful, efficient and hard working women who all jumped on board the committee when she asked for help. The event would not have had near the impact without all of these awesome women donating their time, energy and support.

The fundraiser is a rodeo clinic where women and men are able to get out in the dirt with the cowboys and learn about the different events. This includes how they are scored, how the animal scores points, instruction on technique, and even get to swing a rope and ride a fake bull. Many of the clinic participants have never watched a rodeo and know very little about the sport. This year, over 75% of the attendees had never been to a rodeo! The event also includes a silent auction, live auction and stories of cancer survivors.

This year, the money raised went to two entities. The first was Cancer Support Community which benefits all types of cancer patients and their families. The second was for a woman who was an inspiration to start this whole endeavor. Janelle Cano, Amy’s medical assistant, was diagnosed with breast cancer many years ago and after eight years of remission has had a recurrence with metastases. She is now Stage IV.

Amy has never participated in any type of fundraiser to this degree. She has been the attendee to many dinners, including the very first Missoula Chicks n Chaps event. Amy has learned a great deal about the process, marketing, and non-profits and is proud of the organization’s accomplishments. The success of this year’s inaugural event – raising over $14,000 and being able to hand a check to those people who deserve it – was one of the greatest moments in her life.
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Neuroscience Series

December 5 – Monday – 12:15 p.m. – 1 hr
Lupine/Beargrass Rooms of the BHCC

Title and Speaker

Low Back Pain and Lumbar Disc Surgery
Stephen S. Campbell, MD, MA, Neurosurgery, Neuroscience and Spine Institute, Kalispell Regional Healthcare, Kalispell, MT

Objectives:
- List the structures in the spine that are known to cause back pain.
- Explain the rationale for lumbar discectomy and/or instrumented lumbar fusion.
- Describe the expectations following lumbar discectomy and/or instrumented lumbar fusion.

Neuroscience Series

December 12 – Monday – 12:15 p.m. – 1 hr
Lupine/Beargrass Rooms of the BHCC

Title and Speaker

Headache in the Pediatric Population
Marcus Wheeler, MD, Pediatric Neurology, Neuroscience & Spine Institute, Kalispell Regional Healthcare, Kalispell, MT

Objectives:
- Differentiate migraine versus other primary headaches.
- List the common symptoms and variants of migraine.
- Discuss the abortive and prophylactic treatment of migraine.

Happy Holidays!

Christmas, December 25
New Year's Day, January 1

The CME Noon Conference Series will resume on Monday, January 9, 2017

Kalispell Regional Medical Center is affiliated with University of Washington School of Medicine.

The University of Washington School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The University of Washington School of Medicine designates this live activity for maximum of 42.0 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

This Live series activity, CME Noon Conferences Series, from 01/06/2016-12/19/2016, has been reviewed and is acceptable for up to 42.0 Prescribed credit(s) by the American Academy of Family Physicians. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
2016 Monthly Educational Program Schedule of Events

Neuroimaging
KRMC Cath Lab Conference Room | Bret Lindsay, MD
Wednesday, November 2, 2016 @ 7:00 a.m.

Spine Conference
KRMC Cath Lab Conference Room | T.C. Origitano, MD, PhD
Thursday, November 3, 2016 @ 7:00 a.m.

Neurosurgical Interventions
Department of Neurological Surgery | T.C. Origitano, MD, PhD
Wednesday, November 9, 2016 @ 7:30 a.m.

Neurosurgical Interventions
Department of Neurological Surgery | T.C. Origitano, MD, PhD
Wednesday, November 16, 2016 @ 7:30 a.m.

Neurosurgical Interventions
Department of Neurological Surgery | T.C. Origitano, MD, PhD
Wednesday, November 23, 2016 @ 7:30 a.m.

Neurosurgical Interventions
Department of Neurological Surgery | T.C. Origitano, MD, PhD
Wednesday, November 30, 2016 @ 7:30 a.m.

OBJECTIVES
• State the natural history, evidence-based treatment paradigms, and outcomes for patients with neurological disorders.
• Describe the molecular and physiological basis of clinical neuroscience pathology and treatment.
• Demonstrate a basic knowledge of the application of neuroimaging modalities, their capacities, capabilities, and limitations in the management of disorders of the nervous system.
• Discuss treatment options, including available clinical trials.
• Formulate treatment plans in the council of experienced practitioners and evidence-based literature that exceeds national quality standards.
• Utilize clinical practice guidelines and evidence-based research to manage and optimize medical and surgical treatment of clinical neuroscience disorders.
• Analyze outcomes and recommend appropriate follow up care.

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The University of Washington School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.
The University of Washington School of Medicine designates this live activity for a maximum of 63.0 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity. (Each session is 1.0 credit)
5th Annual Neurosurgical Boot-camp for Mid-Level Practitioners
Whitefish, Montana

2013-2016 Neurosurgical Boot-camp for Mid-Level Practitioners
Advanced, comprehensive brain and spine care for Montana, in Montana.

Contact the Neuroscience & Spine Institute

Neuroscience & Spine Institute
Department of Neurology
200 Commons Way
Kalispell, MT
(406) 752-5095

Neuroscience & Spine Institute
Department of Neurological Surgery
200 Commons Way
Kalispell, MT
(406) 752-5170

Neuroscience & Spine Institute
Physical Medicine & Rehabilitation
205 Sunnyview Lane
Kalispell, MT
(406) 758-7035

Montana Center for Wellness & Pain Management
245 Windward Way
Kalispell, MT
(406) 756-8488

Inpatient Rehabilitation at The HealthCenter
320 Sunnyview Lane
Kalispell, MT
(406) 756-4720

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