UW Medicine

A Publication of the Department of Neurological Surgery UW Medicine Health Care



The Montlake Cut

A View From Puget Sound



Richard G. Ellenbogen M.D., F.A.C.S.

Welcome to the Winter 2015 issue of The Montlake Cut.

Professor Jeff Ojemann was academically reinvigorated by a sabbatical in Germany last summer and took his family to enjoy travel in Europe. In addition, R-4 Kelly Collins (who started out to be an engineer) got to spend the summer there too, working on better chronically implantable high-density microelectrode grids for use in humans, brain-machine interface applications, and pretend rubber arms that seem real.

At HMC, the staff got ready for the Ebola problems we hope never arrive, and the culture of the hospital rose to the occasion as it somehow always does. The reasons for that are many, and some of them are described in this issue.

We rediscovered one of our residents who graduated several decades ago and turned into the John Raaf Professor of Neurological Surgery at OHSU. Our department is proud to have trained Kim Burchiel, and the condensed story of his enviable career is told below.

Last month we said happy retirement but not farewell to Adele Wirch after 35 years of service at UWMC. She has occupied many roles during her tenure at UW Medicine, and it will likely take several replacements to fill her shoes. We will all miss her, and wish her well.

The Neurological Surgery and Spine Clinic at HMC has some new faces, including a new manager and director of business operations. We've taken time to introduce both of them, as well as all the staff in that clinic who work so hard.

A UW startup that includes Per Reinhall, Professor and Chair of the Department of Mechanical Engineering, Samuel Browd, Associate Professor of Neurological Surgery, and Jonathan Posner, Associate Professor of Mechanical Engineering are winners of the Head Health Challenge II. The grant, a collaboration between the NFL, General Electric Co. and Under Armour sports apparel company, is for further development of their innovative new football helmet design.

Professors John Loeser and Gary Franklin remind us all why chronic narcotics for non-cancer chronic pain remain a chronically really bad idea, and Assistant Professor Misha Gelfenbeyn recommends a good book.

Sincerely, Richard G. Ellenbogen, MD, FACS Professor & Chairman, Department of Neurological Surgery

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Where Are They Now: Kim J. Burchiel, M.D. John Raaf Professor & Chairman, Department of Neurological Surgery Oregon Health and Science University

The first time I saw the University of Washington, I immediately knew that I wanted to train there. During my interview, I met the then Chief Resident, Rick Rapport, who further increased my interest. This was in the days before the "match" and applicants simply got a call from the "Chief" inviting them into the program. I remember that call from Arthur Ward asking me if I was interested in a residency position when I was a student at the UCSD, and was thrilled beyond words. I took my first year of surgical training at Harbor General Hospital in Los Angeles, and then moved to Seattle.

The UW program gave me a sound foundation in surgical technique and patient management, plus a wonderful opportunity to pursue research with Allen Wyler, Bill Calvin, John Loeser, George Ojemann and many other departmental faculty members. I finished in 1982, looked at a number of jobs, but knew what I really wanted to do was stay in Seattle; we all did. Bill Kelly was Interim Chairman and I became Chief at the VA, but worked at every hospital in the system. As is true for most neurosurgeons, my first few years in practice were an accelerated learning curve. The VA section added Marc Mayberg, Frank Emmons, and Bob Goodkin. As a result, both the clinical and training opportunities expanded. The VA was a great place to practice and engage in funded basic research. I also worked at the University Hospital with John Loeser in the Multidisciplinary Pain Clinic.

In 1983, there was a regime change in the UW Department. Much has been both said and written about the developments in the Department during the next two decades. I was there for the first five years. I will not dwell on that era, except to say that having trained at UW, and then staying on as a young faculty member, I had a unique vantage. I often reflect on a time when the UW Neurosurgery faculty included Ralph Dacey, Sean Grady, Mitch Berger, Marc Mayberg, and I, all five destined to become Chairman of major neurosurgical programs and leaders of organized neurosurgery in the US. It was an exciting time and exceptional opportunity for me.

In 1988 I took the job as Chief of the then Division of Neurosurgery at Oregon Health Sciences University. I remember Buz Hoff telling me it would be a "labor of love," and it certainly was. In the first years we reestablished a fully accredited training program with expanded clinical and research programs. I continued my personal interest in pain, facial pain in particular, and in the surgical treatment of movement disorders. In 1997, the Division became the Department of Neurological Surgery. OHSU is now Oregon Health and Science University, and is in the top 1 percent of institutions receiving NIH neuroscience research funding. In 2014, the Department received the Neurosurgery Excellence Award from Healthgrades, and I'm proud to say that your University of Washington Department was similarly recognized!

During my career I have had the privilege of serving the AANS, CNS, Western Neurosurgical Society, American Board of Pain Medicine, Society of Neurological Surgeons, the American Board of Neurological Surgeons, and ACGME Residency Review Committee for Neurological Surgery, which I now Chair. Participating in US organized Neurological Surgery has been one of the many pleasures of my professional life.

Last year, Debra and I celebrated 25 years of marriage, and we are very proud of our four children, Jessica, Adrienne, Meridith and Cole. We are not quite "empty nesters" with our six-foot baby boy finishing up high school this year. I consider myself a very lucky guy. I chose a life's work that I continue to find challenging, and fulfilling. I've never regretted the choice, and feel so fortunate that the beginning of my professional neurosurgical life began in what was, and is, a great institution.



Kim J. Burchiel, MD

World Class Innovation Combats Concussion: University of Washington Startup Wins Head Health Challenge II Grant for New Football Helmet Design

The University of Washington and its commercial partner, VICIS, Inc., developers of a new football helmet designed to mitigate forces thought to cause concussion, have been named one of the winners of the National Football League, GE and Under Armour funded Head Health Challenge II.

A collaboration between the NFL, General Electric Co. and Under Armour sports apparel company, the Head Health Challenge II (*www.headhealthchallenge.com*) received more than 500 proposals from 19 countries in a search to measure, prevent, and detect brain injury. First launched in 2013, this year's second global challenge will award up to \$8.5 million for innovations and materials that might protect against traumatic brain injury.

"Our winning this grant validates the helmet's promise as a significant breakthrough in the protection of young athletes against brain injury," said Dave Marver, VICIS CEO and an experienced medical technology executive. The technology UW and VICIS are developing has shown unprecedented reduction in linear and rotational acceleration, the forces likely to cause concussion. The company's innovative design is a result of collaboration between researchers in the Mechanical Engineering and Neurosurgery Departments at UW, including Per Reinhall, Professor and Chair of the Department of Mechanical Engineering, Samuel Browd, Associate Professor of Neurological Surgery, a pediatric neurosurgeon as well as the Medical Director of Seattle Children's Sports Concussion Program, and Jonathan Posner, Associate Professor of Mechanical Engineering. Together with business leaders and public health experts, Reinhall and Browd say the UW/VICIS team is committed to using science to protect young athletes.

Reinhall and Posner will coordinate the project that includes the Mechanical Engineering research team to design, model and develop a prototype, and run impact testing on the new helmet.

Browd, who initially formed the VICIS team and co-invented the technology with Reinhall, said that since football helmets have not changed significantly in the last 50 years, innovation in helmet technology is long overdue.

"UW Neurological Surgery and our partners throughout UW Medicine and Seattle Children's are at the forefront of concussion research, diagnosis, prevention, treatment and advocacy," Browd said. "We are confident this new helmet will help diminish the risk of concussion among young athletes."

VICIS has received funding from the UW Center for Commercialization (C4C), the Coulter Foundation, and investments from Seattle-based Alliance of Angels and the W-Fund, a venture capital fund that provides early-stage investment to accelerate the success of promising technology-based startup companies state wide.

About the University of Washington Center for Commercialization (C4C)

As one of the leading recipients of federal funding for research, UW is producing innovations that have the potential to change the world—from biofuel alternatives, to more effective treatments for Alzheimer's disease and brain cancer, to purification technology for drinking water in the developing world. The UW Center for Commercialization (C4C) is dedicated to helping UW researchers achieve the greatest impact from these efforts.

How (and why) Harborview Works

The great American writer and philosopher (and farmer) Wendell Berry doesn't think a lot of corporations. He's more inclined to think of communities. In his novels and stories this has to do usually with the fictitious community of Port William, Kentucky, a place Berry invented much as Faulkner invented Yoknapatawpha County, and for the same reasons. But Berry sees communities and potential communities everywhere; he once even wrote convincingly about the community of Kentucky tobacco farmers. The product was, in the end, even too big an issue for that community to stand the heat and smoke, however.

Harborview Medical Center is a community in Berry's meaning that a collection of people within a certain geography are all bound together by a common purpose. And that purpose is usually directed outward rather than inward, that is, in the direction of "the other." Such devotion can be found in contemplative communities as well, but in that case the devotion is metaphysical.

There is nothing beyond the purely physical at HMC. Here there is little ambiguity or reason to speculate much about what is the matter with people, even when the patients are less than forthcoming to suit their own purpose. The first job is to make sure they don't die if that can be prevented. The second job is to make sure that the inherent disruption of the place is limited by taking care of the community itself.

Almost everyone at HMC knows most everyone else in some sense. Even though the residents rotate frequently they still remain connected over the span of years. And there are nurses, custodians, technicians and some doctors and administrators who have worked at Harborview for decades. All of these people, like "the boys in the boat" must both maintain their balance and torque on their oar at the same rate, in the same rhythm, with the same force, and the same dedication of purpose, or they go nowhere. There is a respect for the status of skill and experience, but not much genuflection in the direction of title.

At a place like HMC there is always a catastrophe in progress or about to begin. It never stops. When the teams meet and then disperse to the wards and units for 6 AM rounds, there may be exhaustion, concern, even confusion, but there is always the community working together to make patients better. The nurses are unfailingly prepared, pleasant, and hard at taking care of those in their charge. So are the nursing assistants, the techs, the custodians, the managers, the cashiers in the cafeteria; everyone is pulling together on their oar. Even the people huddled at the bus stop on the corner of 9th and Jefferson, or wandering in to the ED door at that hour seem to know their role.

Occasionally someone is grumpy, but one never hears anybody say, "I hate this place and I can't wait until I retire." In fact, some people have retired so that they could come back to work in this community.

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Harborview Medical Center (HMC) Ebola Response Update

The potential threat and associated hazard of a global dissemination of the Ebola virus will probably not have a direct impact on neurological surgery, but it certainly might have an effect on everyone involved in health care. Although much has appeared in the lay media and on the Internet, as is often the case, not all of it is reliable.

In addition to the substantial resources found in the UW Departments of Infectious Diseases and of Global Health, Johnese Spisso, Chief Health System Officer, UW Medicine & Vice President, Medical Affairs, University of Washington and HMC Medical Director Rick Goss recently provided these links.

HMC

Harborview Medical Center has activated the Incident Command Structure (<u>https://hmc.uwmedicine.org/</u> <u>BU/DisasterPlan/Pages/default.aspx</u>) to increase resources to the Ebola Response. This process ensures improved communication of recommendations, protocols and plans throughout the hospital. Incident commanders are Johnese Spisso, Chief Health Systems Officer, UW Medicine and Dr. Rick Goss, Medical Director, HMC.

The Ebola Response protocols, FAQs and other information are available on the HMC intranet front page and through the HMC Infection Control website.

The Medical Center has now conducted two extensive tests of the Ebola emergency system, and more than 80 healthcare workers (primarily critical care physicians, critical nurses and respiratory therapists) have completed the initial 4-hour Personal Protective Equipment (PPE) training.

REGIONAL

The Washington State Department of Health has fact sheets on Ebola in English, Spanish, French, Chinese, Korean, Russian, Somali, Ukrainian and Vietnamese available on-line (<u>https://hmc.uwmedicine.org/BU/</u> <u>DisasterPlan/Pages/default.aspx</u>).

There continue to be no cases of known or suspected EVD in Washington State.

The Washington State Department of Health recently announced that eight Washington hospital systems are preparing to care for patients with confirmed or at high risk for Ebola infection as part of the regional response.

TIT

These systems are:

- UW Medicine (HMC, UWMC and Valley Medical Center)
- Swedish Issaquah
- Franciscan Health Harrison Medical Center
- Multicare Tacoma General Hospital
- Providence Regional Medical Center, Everett
- Providence Sacred Heart Medical Center and Children's Hospital
- Seattle Children's Hospital
 - Virginia Mason Hospital

All hospitals will continue to be prepared to screen for and isolate all patients at risk, but only the above hospitals would provide direct patient care.

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When NOT To Prescribe Narcotics: They Really Aren't That Good for Treating Non-Cancer Chronic Pain, and Produce Much Mischief

From UW Medicine Online News 10-24-14

Gary Franklin, a UW professor with appointments in Neurology and Occupational and Environmental Health Sciences, has been reporting on opioid-related deaths for more than 10 years. In an article requested by the American Academy of Neurology, he traces this trajectory and proposes steps that should be taken to bring opioid-related deaths to an end. The article, published September 30th in the Journal of Neurology, has been endorsed as an official position paper of the American Academy of Neurology.

"We've seen more than 100,000 deaths between 1999 and 2010, almost twice as many as U.S. casualties in the Vietnam War," Franklin said. "In addition, we have millions of people who have become dependent or addicted, who will never be off opioids, and who will never be helped by these drugs."

"What needs to be done, Franklin said, "is first to get doctors to avoid using opioids to treat patients' chronic noncancer pain and instead use non-narcotic pain medicines such as non-steroidal anti-inflammatory drugs (e.g., ibuprofen), graded exercise and cognitive behavioral therapy. [ed: italics added] If physicians must prescribe opioids, they should be certain that the therapy is working, improving not only the patient's pain symptoms but also their physical functioning, and if patients do not substantially improve by the time they reach daily a dose equivalent to 80 -120 milligrams of morphine a day, they should refer the patient to a specialist."

Comment by Professor Emeritus John D. Loeser, MD:

Dr. Franklin has been one of the leaders in pointing out the hazards of long-term opiate prescriptions for patients with chronic pain; there can no longer be any questions about the risks of this form of therapy, both to the patient and, because of diversions, to society. Physicians have fallen into the excessive use of opioids for chronic pain patients because of at least two factors: woefully inadequate education in medical schools and residencies about the treatment of chronic pain, and aggressive marketing of branded opiates to both physicians and patients by drug companies. Both of these factors call for remediation if we are to improve the wellbeing of chronic pain patients and reduce the burden to society of inappropriate opiate prescribing.

Basic science and clinical education in most American medical schools is based on organ systems, and pain has no pre-ordained home in such a scheme. Indeed, chronic pain has been deliberately avoided, as it does not follow Cartesian principles and is inexplicable by the anatomy or physiology that has formed the basis of our medical education. A recent Institute of Medicine report documented the magnitude of the pain problem in the U.S. and strongly recommended educational changes. The NIH has funded Centers of Excellence in Pain Education (one of which exists at the University of Washington) attempting to remedy this problem, but much more needs to be done to inject pain education into both basic science and clinical medical education. Every residency dealing with living patients should include pain management education. Of course, this will require introducing board examination questions on pain, as it is these examinations that drive content in medical education.

As for the marketing of branded opiates, the FDA should play a much more effective role in establishing standards for what information is provided to those who write prescriptions. There are virtually no long-term studies of opiates for chronic pain that establish efficacy, which is the first step in authorizing other drugs for clinical use. The experiences of our Pain Clinic thirty years ago showed that a large number of the patients treated with opiates failed to improve; we spent weeks getting these patients off of opiates and into more successful treatments. Rarely are chronic pain patients cured by pills or surgery alone. Cognitive/behavioral strategies are the cornerstone of their therapy. Finally, neurosurgeons should be very circumspect about allowing acute pain management with opiates to drift over to the chronic pain patients. A good working principle is "Anything that is good for acute pain management is bad for chronic pain patients."

Neurological Surgery Clinic @ 5th Floor NJB

The outpatient clinics for the Department of Neurosurgery at Harborview are located on the fifth floor of the Ninth and Jefferson Building (NJB). Completed in 2009, this King County owned, UW operated addition is the newest building on campus and was awarded LEED Gold Certification status by the U.S. Green Building Council.

Some of the gifted staff who supports the great work being done here includes Laurel Connolly, PCC and Jamie Bergstrom, PSS who work with Manuel Ferreira, MD and the Multi-Disciplinary Pituitary Program. Cecil McClennan, PCC and Robert Lawson, PSS are the staff that help Laligam Sekhar, MD, and Karlie McCormick, PCC is the support behind Fangyi Zhang, MD. Lynnel Barquet, PCC and Cecilia Miller, PSS work with the Randall Chesnut, MD and Drs. Howe and Rapport in the residents' clinic where most of the trauma follow up patients are seen. Amy Owens-Lee, PCC is the person behind Louis Kim, MD and Wanda Valdez, is the PCC that holds down Dr. Ellenbogen's HMC practice. Cydney Moore is our new Business Operations Supervisor and David Nicholson, who also joined the staff this year, is the Clinic Manager.

Complementing the physicians are the PA-C and ARNP staff members. Young Cho, PA-C works alongside Drs. Ellenbogen and Kim. Lucia Paredes, ARNP helps support Drs. Sekhar and Ferreira. The newest addition to this group is Michelle Hafzalla, PA-C, returning in November in her new role as a PA after having worked in the clinic as an MA.

The clinical staff on 5NJB consists of RNs Varinder Heera, Alita Stewart, and the newest addition, Crystal Kelly, who came aboard this summer. Together with MA staff members Anges Tekleyes, Dakota Johnson, and Suzanne Olson, Sandy Kaku, RN3, completes the group as the Nurse Manager.

These are the hardworking, dedicated staff members that make up the Neurosurgery Clinic at Harborview. Thank you for all you do to put our patients first - every patient, every time!



Summer In Germany

Drs. Kelly Collins, Jeff Ojemann, and one of Jeff's bioengineering graduate students, Dev Sarma, spent July through September at the Albert Ludwig University of Freiburg in Germany. The NSF Center for Sensorimotor Neural Engineering - BrainLinks/BrainTools Cluster of Excellence exchange fellowship funded the travel. The visit started with a Joint Roundtable Workshop on the clinical applicability of brain machine interfaces in Freiburg from July 21-23. Participants at this international conference discussed the current state of the art and anticipated directions for future research.

The group established three collaborative projects during this time. First, the Ball lab at the University of Freiburg is engaged with the University of Freiburg Department of Neurosurgery and Epilepsy Center and the neurotechnology company CorTec to develop chronically implantable high-density microelectrode grids for use in humans. Higher density grids may provide better resolution for evaluating cortical areas of seizure generation and also may be beneficial in brain-machine interface applications. They initiated a series of experiments to begin testing the feasibility of electrical stimulation of the brain through the microgrids. The Mehring group, also at the University of Freiburg, joined a second collaboration



Jeff wanted to see what phosphenes looks like. When they turned up the current high enough, he was able to see some. He says they look like UFOs.

looking at grip force in a BCI environment. The third project is with the Ehrsson group at the Karolinska Institute in Sweden, looking at the rubber hand experiment in grid patients, which will be combined with experiments in sensory feedback for BCI systems in the Ojemann group.

Everybody worked hard but had a good time in Europe over the summer.



A rubber hand for Dr. Ojemann; the opposite of phantom limb.



Seeing the future.

Adele Wirch Retires from the UWMC

In November, Adele Wirch ended 35 years of service to the University of Washington. Adele is a special person to us in so many ways and her retirement will be felt throughout the UW Medicine Health Care System.

Adele was a Pioneer in all meanings of the word. Her affiliation with UW Medicine began when she started as an EEG technologist at HMC in 1979, but she later transferred to the University Hospital where she worked in both research and patient care. Adele served as President of both the American Neurodiagnostic Society (ASET) and the American Board of Registration for Neurodiagnostic Technologists (ABRET), and is recognized nationally as a leader in her field. As a result of her efforts, the UWMC team of technologists

is now integrated to provide a cohesive service in performing advanced neurophysiologic testing. Next she helped start a school and train the next generation of Neurodiagnostic technicians. The school and teaching was one her many labors of love. But she decided to move on to a leadership role because her wisdom and collaborative spirit needed an outlet.

Most recently she has worked as the Health Services Manager of the Neurosurgery Clinic, as well as a Senior Clinic Manager and Assistant Director in the Ambulatory Care Division. Adele was instrumental in planning, relocation and launching of the MS Center at Northwest Hospital campus in 2012. She is most proud of launching the Outpatient Advisory Council in 2007 and serving as its first staff co-lead. Adele has received the Golden Eddy award for her creation and sponsorship of patient education materials and also launched the Ambulatory Care Recognition Ambassadors Program. She will be dearly missed by her UWMC colleagues, staff and patients.

Her leadership was the centerpiece of her involvement with neurological surgery. She diffused potential conflicts with intelligence, empathy and calm. She created a Patients Are First Neurosurgery Clinic that both won awards and admirers for it dedication to serving the patients. Adele Wirch is a beloved figure in our Department and we will not say goodbye...We will instead say "Until we see you again our good friend!"

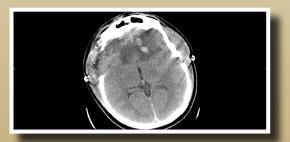
Sometimes It All Works

An eighteen year old young man on his way to a prestigious music school was skate boarding just before he was to leave for the East Coast. He crashed while going very fast and presented to the HMC Emergency Department. After the first CT scan our chief trauma resident crashed him to the OR. The second CT scan shows what happened in the short term. The link to the video shows what happened in the longer term.

http://youtu.be/nRhe8cM00JM



CT Scan #1 Showing Acute Subdural and Contusion



CT Scan #2 Showing Bilateral Decompression

A note from the patient's grandmother: "First I'd like to thank you from the bottom of my heart for your care of my grandson. He is alive and functioning at full speed because of your efforts and those of all the medical professionals who helped with his care. Words can never express my gratitude. He has his final appointment on January 27. I have been told that he will get to meet with several of the doctors who treated him. I sincerely hope so. He and I would both welcome the chance to say thanks in person. He would also like to share his violin skills with you firsthand!"

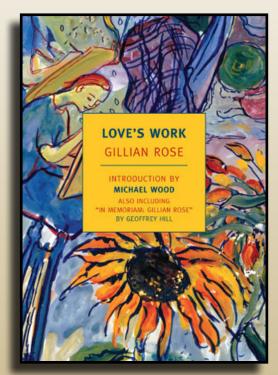
Recommended Reading by Dr. Mikhail Gelfenbeyn

In her last short autobiographical book *"Love's Work"* (1995) Gillian Rose, a British philosopher and writer included a chapter about her two-year fight with ovarian cancer. She died the same year at the age of 48. She is "now recognized as one of the most important and influential critical thinkers."

One of the primary values of the book for doctors is the almost Dickensian portraits of two surgeons, Mr. Wong and Mr. Bates. One of them "always puts all the lights on immediately, even before he enters the room. Whether he is coming to chat or examine you, before his requirements or yours have been exchanged, regardless of whether you have visitors or are you alone, whatever you are doing – reading, watching television, thinking quietly in the twilight – Mr. Wong snaps on the lights."



Dr. Mikhail Gelfenbeyn, Chief of Neurological Surgery at the Seattle VAMC



The other one, Mr. Bates, she first met in the ICU after her first operation. "An unknown man, dressed in brightly coloured sports clothes ... enquired breezily, "How are you, young lady?"

Her first surgery showed an advanced cancer with multiple metastases. It ended in a colostomy. After a course of chemotherapy she underwent a second surgery in the attempt to take down the colostomy, which was unsuccessful due to disease progression. She was getting confusing information about her condition and prognosis from her surgeons when she met them separately.

Mr. Wong: "The "seedlings," pinpricks just visible to the naked eye, had grown to a centimeter and spread further in the bowel lining. In addition, a thin, flat cake of tumour, 15 centimetres in diameter, was attached to the greater curvature of the stomach and the old wound."

Mr. Bates: "You look just the same inside as you did when we closed you up in April. No less cancer but no more either." What about the flat cake of tumour?" she asked, amazed. "That's just adhesion of the old scar tissue to the wound."

She had to ask her oncologist, Dr. Lord how to reconcile the "utterly discrepant opinions, delivered by two surgeons had twice operated on me together."

"Dr. Lord left the room. In a few minutes she returned with Mr. Wong. The bedlam broke loose: "I will not talk to my colleague. I will not change my position. This is my cancer. He returned twenty-four hours later, having spoken to Mr. Bates, with the composite proposition, "There is some progression, but it is minimal."

In her obituary, Professor JM Bernstein called the book "a small miracle." He described it as "a book about illness and death; but the lesson it tells is not how to face death, but rather how to live a human life. She would not demonize cancer. To her, it represented another of life's difficulties which required work and not avoidance."

Puzzler



Dr. Minku Chowdhary Chief, Neurosurgery Overlake Hospital



New Puzzler:

The "Neurosurgery's man of the Century" has never boated on the Moodus Reservoir, but what is their actual connection?

Previous Puzzler: What connection does the ancient city of Thebes have with management of head injury?

Answer: Edwin Smith Papyrus describes how the ancient Egyption's dealt with trauma, including head trauma. It was purchased in Luxor (the site of the ancient Thebes) by Edwin Smith in 1862 and may represent knowledge that was present over a 1000 year's prior to its 1700BC reported publishing date. <u>http://en.wikipedia.org/wiki/Edwin_Smith_Papyrus</u>

Congratulations to **Catherine Amlie-Lefond**, **MD**, Associate Professor of Neurology, Director of Pediatric Vascular Neurology Program Seattle Children's Hospital for the correct answer!

We remain eager to publish stories and photos about all aspects and activities of the Department. Please share your memories, ideas and suggestions for stories and news items that expand our common ground. Please contact us at these email addresses:

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