A biannual news briefing for members and collaborators of the Department of Neurology, University of Colorado School of Medicine.

From the Chair

This is the first newsletter for the 2016 calendar year. We have just finished our Residency applicant review season with a record 98 interviews, selected from among nearly 500 applications received by the Program. The number of resident applicants has risen every year in the last five and this is again a new program record. We estimate that nearly two-thirds of senior medical students in U.S. medical schools applying for neurology residencies now apply to our program! We continue to be listed on Doximity as one of the top 5 residency programs in the Western U.S. and top thirty in the nation. Our US News & World Report ranking jumped to #26 (a remarkable 14 positions and the largest jump of any program in the top 50). The number of available fellowships was enhanced with the inauguration of a Neuro-Infectious Disease Fellowship, the accreditation by the Association of University Professors of Ophthalmology-AUPO of our Neuro-Ophthalmology Fellowship, and the accreditation by the United Council on Neurological Subspecialties (UCNS) of a Headache Medicine Fellowship. These fellowships join established ACGME fellowships in Vascular Neurology, Neuromuscular Disease, and Epilepsy, and existing UCNS fellowships in Behavioral Neurology & Neuropsychiatry, Critical Neurovascular Pathology, and Neuro-Oncology, as well as our fellowships in Movement Disorders, Neuroimmunology, and both Stroke Research and Molecular-Virology-Neurovirology Research.

On the financial side, we ended the 2015 fiscal year (July 1, 2014-June 30, 2015) with record numbers on both the Hospital system (UCH) and practice (UPI) side. The first 6 months of FY16 show continued new growth. Our UPI charges in FY15 were up 18% and collections up an impressive 17% compared to FY14. Outpatient clinical visits (new and established patients) grew 9% from the last FY and reached ~25,000, and this increased growth has continued into the first half of FY16. On the inpatient side, consults and initial and subsequent patient visits were up 9% in FY15 v. FY14 and exceeded 7,000. The first 6 months of FY16 are up 10% from FY15, and should break 7,750 for the year if the pace continues. Procedural activities have grown dramatically, including boxot administration, DBS programming, epilepsy monitoring, and electromyography and nerve conduction velocity studies. The net result has been nearly 108,000 wRVUs for FY15, and the pace again is even more rapid in the first half of FY16. By almost any metric, activity in the Department has more than doubled in the last five years, and Neurology remains one of the fastest growing Departments in the School of Medicine for this period. Data from the Colorado Hospital Association (based on FY15 data on inpatient admissions) now shows that we rank first in market share in Neurology overall, and in almost all subspecialty areas, including Epilepsy, Neuromuscular, Movement Disorders and Neuro-Oncology.

Our Telestroke Program continues to grow, with the 12 existing Adeptus/UCHealth ‘freestanding’ Emergency Rooms set to go online in March, 2016. We inaugurated a Mobile Stroke Treatment Unit, becoming the third site in the nation to do so (after Houston and the Cleveland Clinic). Our Teleneurology Program was inaugurated with the first consultation performed between Dr. Augusto Miravalle and our MS/Neuroimmunology Section and a Metro Community Provider Network Neurology patient. The Movement Disorders Group is poised to become the next extension of this program, which is a first at UCHealth. The latest addition to our new programs includes our designation as a Huntington Disease Society of America Center of Excellence, joining 38 other sites holding this designation nationally. This was made possible through the efforts of Dr. Lauren Seeberger (Center Director) and with the help of the infrastructure provided by our Clinical Research Teamunder the leadership of Mr. AJ Stein.

Recruitments continued across a variety of disciplines since those reported in the last newsletter. Dr. Haley Burke and Dr. Armando da Silva joined the Headache/Pain Medicine subspecialty in July, 2015. Haley completed a fellowship at MD Anderson in July, 2015. Armando da Silva was on the staff of the Michigan Head-Pain and Neurological Institute in Ann Arbor after completing a fellowship at the Cleveland Clinic. Dr. Drew Kern joined the Movement Disorders group from fellowship at the University of Toronto; Dr. Daniel Pastula joined our Neuro-Infectious Disease section from the Arborvirus Branch of the CDC at Fort Collins; and Dr. Arash Hadipour-Niktarash joined the Epilepsy section and our Denver Health Neurology Division. Drs. Karen Orjuela and Daniel Vela-Duarte will be joining the Vascular Neurology/Neurohospitalist group in July, 2016 from stroke fellowships at Loyola and the Cleveland Clinic respectively, and Dr. Peter Pressman will be joining the Behavioral Neurology section from fellowship at UCSF in September, 2016. Ms. Dana Couts recently became the Department’s first Neurohospitalist Advanced Practice Provider (APP) and our second inpatient APP (joining Carol Hennessy in Epilepsy and the Epilepsy Monitoring Unit), bringing the number of APPs in the Department to a dozen.

We maintain our designation as a National Association of Epilepsy Centers (NAEC) Level 4 Epilepsy Center (the highest designation), with active and growing programs in Epilepsy Monitoring and Epilepsy Surgery, including both resections and use of the new implantable devices including vagal nerve stimulators and NeuroPace. We also maintain the region’s only formally designated Muscular Dystrophy Association Clinic. We are one of ten Pediatric MS Centers recognized by the National MS Society (NMSS) as well as an NMSS Collaborative MS Research Center (one of 9 nationally), and one of the busiest Neuromuscular/Ms programs in the nation. We are a Bugher/AHA/ASA Comprehensive Stroke Research Center (one of 3 nationally), and are one of fewer than 100 institutions nationally to have achieved designation as a Comprehensive Stroke Center by JCAHO, just recently having successfully passed our third recertification cycle. We are also certified as a Center of Excellence by NeuStrategy in Neuroscience, Specialty Neurology, Neuroradiology, and Neurostimulation, Cranial Tumors, Spine, and Neurovascular/Stroke. As noted, we remain the region’s only Neurology Program in US News & World Report’s list of the 50 best Neurology Programs (#26).

On the research front, despite the persistence of a challenging and uncertain financial environment, the Department has continued to expand significantly. We currently rank among the top thirty Neurology Programs nationally in NIH Funding (#28) with $5.6 million in NIH grants in the latest available tabulation (CY2014). The SOM’s Office of Grants and Contracts (OGC) data for FY15 shows us with almost $10 million in total grant awards (direct and F&A amounts). The initial data for FY16 looks even brighter, with $4.4 million in grant funded booked in the first four months of FY16. Our two recent Patient-Centered Outcomes Research Institute (PCORI) (Neuropalliative Care in Parkinson’s Disease - Dr. Benzi Kluger, PI, and Termination of Disease Modifying Therapies in MS - Dr. John Corboy, PI), now make us second only to the Mayo Clinic in funding from the federally funded Patient Centered Outcomes Research Institute. We remain one of the SOM’s largest clinical trials entities, with nearly 120 current clinical trials in progress across a variety of disciplines. A complete list of active clinical trials by division can be found on the Department’s website.
2015 was another remarkable year for the Department, and the trend continues in early 2016. I am sure I will have lots of exciting news to add for the next newsletter edition!

Welcome Newcomers!

NEW FACULTY

Haley Burke, MD, has joined the Headache/Pain Medicine division as Assistant Clinical Professor of Neurology. Dr. Burke completed her fellowship in Interventional Pain Medicine at the MD Anderson Cancer Center in Houston, and has been in private practice since her 2013 graduation from our Residency program. Dr. Burke’s research includes spinal cord stimulation, splanchnic plexus neurolysis, and investigational imaging of migraine with aura. Welcome to our faculty, Dr. Burke!

INSTRUCTORS/FELLOWS

Jessica Barr, PA-C, Instructor, who joined the Movement Disorders Center on August 1st, writes, “I grew up in Boulder, Colorado, and received a bachelor’s degree in Biological Science with a minor in Biomedical Sciences from Colorado State University. I then moved to Seattle, Washington, where I worked as a Medical Assistant in the Emergency Department at Harborview Medical Center. I returned to Colorado to earn my Physician Assistant training at the University of Colorado. I look forward to being a part of this extraordinary medical team.”

Christina Coughlan, PhD, BSc, began working as a Research Instructor with Dr. Potter in December. She has a long-standing interest in Alzheimer’s disease research that began with studies of memory formation for her Honors project in Dr. Ciaran Regan’s lab at University College Dublin, Ireland. Dr. Coughlan’s research path has taken her to many great cities and universities that include UCD in Dublin, Ninewells Hospital and Medical School in Dundee, the Instituto de Investigaciones Biomedicas in Madrid, University of Zurich, Switzerland, University of Pennsylvania, University of Pittsburgh, University of Denver and University of Colorado Denver. UCD Anschutz has been her home for research since 2011. Alzheimer’s, Down syndrome and Protein folding are particular areas of research interest, but she enjoys all and any science.

Dana Coutts, PA-C, Instructor, writes, “I joined the Neurohospitalist team in August after completing my Advanced Practice Fellowship in hospital medicine here at the University of Colorado. Previously, I worked as a physician assistant in outpatient internal medicine in the Denver Metro area. Neurology will be a new area of practice for me and I am excited for the learning opportunities.”

Dallas Jones, PhD, PostDoctoral Researcher, received his PhD from the University of Nebraska Medical Center, where he researched early B-cell development and B-lineage acute lymphoblastic leukemia. He joins Dr. Don Gilden’s research team that focuses on varicella zoster virus (VZV), and will investigate the immunological aspects of VZV infection.
NEW ADMINISTRATORS AND PRAs

Anna Blackmon graduated from Metropolitan State University of Denver with a BS in Biology last year. She previously worked as an intern in Dr. Ravi Mahalingam’s lab, and is now working as a PRA in Dr. Maria Nagel’s lab, investigating the role of perineurial cells in arterial inflammation related to VZV infection. Welcome back, Anna!

Brianna Blume, MS, joined us in September as a Professional Research Assistant to work on multiple clinical research trials. She graduated from Colorado State University with a Master of Science in Biomedical Science concentrating in Neurobiology, and previously worked for Rocky Mountain Lions Eye Bank coordinating cornea transplants for recipients worldwide.

Heidi Chial, PhD, joins the Department of Neurology as a Writing Specialist/Research Associate. Heidi graduated from CU-Boulder with a PhD in Molecular, Cellular, and Developmental Biology. She carried out postdoctoral research in cancer biology at the Mayo Clinic and Wake Forest University School of Medicine, and most recently at Stanford University, where she studied neurotrophin-mediated signaling pathways and links to neurodegenerative disease. She has diverse experience in biomedical research, biotech patent law, science education, scientific writing and editing, and project management. In 2010, she launched BioMed Bridge, LLC, a biomedical writing, editing, and consulting company. She particularly enjoys grant writing and looks forward to working with Dr. Potter and other members of the research community at CU-Anschutz.

Mary Cook, BSN, who joined the Department in August, writes, "I earned my BSN from Regis University. I have been working in clinical research for 14 years and I spent 10 of those years working on melanoma trials. My experience ranges from Phase I to IV and I have worked all aspects from research coordinator/RN, regulatory, budget and team management. I will be working on various neurology studies including MS, Huntington's disease and Stroke. I am very happy to be a part of the Neurology team.”

Elaine Hsu, BA, graduated from the University of Colorado Denver. Elaine shares, "I started working in the Neurology department as a student worker, and realized that I never wanted to leave. I graduated in May, and in August began working as a Professional Research Assistant with Dr. Bennett’s team, focusing on neuromyelitis optica studies.”

Lindsay Hosford, BA, is a Colorado native who graduated from CU Boulder with a degree in Molecular Biology. She has previously worked as a professional research assistant and clinical research coordinator in CU's Gastroenterology and Hepatology Division since 2010. She joins the MS clinical research team as a research coordinator.
Kirsten Kamna, Master of Music, has joined the Neurohospitalist/Stroke group as an Administrative Assistant. Originally from Oregon, Kirsten moved to Colorado in 2011 to pursue her Master’s in Opera Performance at the University of Colorado-Boulder. Kirsten also currently works part time as a professional singer in the Denver metro area.

Christine Martin, BS, (8/15/15) graduated with a degree in Psychology from the University of Colorado Denver. She began working in August as a PRA with Dr. Benzì Kluger, primarily on the Parkinson’s Cognition TMS study. She will also be sharing some of her hours with Dr. Mark Laudenslager in the Department of Psychiatry, looking at the effects of stress on caregivers.

Ildiko Torok, MD, has joined our research team as Clinical Coordinator of the NeuroNEXT Clinical Trials. She received her medical degree from the University of Debrecen in Hungary and began participating in Stroke research in her home state of New Jersey. She is excited to expand her research field to include neurodegenerative and neuromuscular diseases and is looking forward to exploring all that Colorado has to offer.

Nassim Zanganeh, MS, is working as a PRA with Dr. Enrique Alvarez and will assist in research projects related to Multiple Sclerosis. She recently received a Master of Science Degree in Biomedical Sciences from Regis University, where she completed an externship with Dr. Sharon Poisson.

**STATUS UPDATES**

Kevin Blauth, PhD, was promoted to Research Instructor effective October 2015. Dr. Blauth joined Dr. Greg Owens’ laboratory as a postdoctoral fellow in 2012, and has been working to characterize the CNS damage and corresponding functional deficiencies caused by IgG from MS CSF-derived plasma cells.

John Sladek, Jr., PhD, Professor of Neurology, Pediatrics, and Neuroscience, became emeritus January 1st this year. As Professor Emeritus, Dr. Sladek will continue various activities on campus; off-campus, look for him to swoosh by on his road bicycle!

Eric Engebretson, BS, who has worked since 2013 as a Professional Research Assistant on patient reported outcomes with the MS team, and has been promoted to PCORI Project Management Specialist for the multi-year, multi-center PCORI (Patient-Centered Outcomes Research Institute) program, as the coordinating center under the leadership of Dr. John Corboy, PI, of a trial studying the potential discontinuation of disease-modifying therapies (DMTs) in multiple sclerosis (MS). Nicola Haakonsen, BS, was promoted from clinical trials Professional Research Assistant to Recruitment Specialist in January 2016; in her new role, Nikola will identify prospective clinical study participants and manage prescreening activities.

Leah Lleras, BA, was promoted in October 2015 to Business Services Program Director. In her new role, she will serve as the point-of-contact for all human resource, finance, and research concerns, under the direction of our Director of Finance and Administration, Kathy Illian, MA. With the ongoing growth of the Department, she will be joined on March 1st by Stefanie Brown, also as Business Services Program Director, coming to us from the Department of Anesthesiology. Leah will support the Epilepsy, Movement Disorders, Neuromuscular, Neuro-Ophthalmology, and Virology divisions. Stephanie will support the Behavioral Neurology, Consultative, Headache/Pain Medicine, MS, Neurohospitalist, Neurology-Oncology, and Stroke divisions, in addition to the core Administrative group. This model may be subject to change.

Best wishes to Amber Tucker, who has moved from our Residency Coordinator to a position with the Family Medicine and Public Health Programs.
THE GROWING NEUROLOGY FAMILY

Congratulations to Jason Fleming, MD (Fellow, Neuromuscular) and his wife on the July 18, 2015 birth of their daughter, Whitney Louise, who arrived weighing 6 lbs., 7.1 oz.

Congratulations to Jennifer Simpson, MD (Assistant Professor, Hospitalist/Vascular Neurology) and husband Ian on the July 27, 2015 birth of their daughter, Tegan Delilah Griffin, who arrived weighing 6 lbs., 14 oz., and 18" long. Welcome, Tegan!

We extend warm congratulations to Asher Jones, MD (PGY2 Resident) and wife Alla, who welcomed their son, Calvin Sergei Jones, on July 27, 2015. Calvin weighed 7 lbs. 8oz. and was 20.5" long. Very best wishes to the Jones family!

Samantha Holden, MD (Fellow, Behavioral Neurology) and her husband, Patrick, who welcomed their daughter, Eleanor Louisa Holden, on August 24 at 1:06 AM. Eleanor weighed 6 lbs. 5 oz. and measured 18.5" long. Welcome, Eleanor, to the growing Neurology family!

Shannon Cornell, NP (Instructor, MS Division) and family welcomed baby Noah Ames Cornell on October 9, 2015. Noah weighed 6 lbs. 3 oz. and was 19" long. Welcome to the world, Noah!

Alanna Ritchie (PRA, Bennett Lab), husband Chris and son Sebastian were joined by sister, Ilsabet Annika Ritchie, on October 23, weighing 8 lbs. 7 oz. Congratulations, Alanna and family!
Elana Russell, NP (Instructor, Movement Disorders), welcomed her daughter, Brielle Love Russell, with an early arrival on January 25th. Brielle weighed 4 lbs. 11 oz., was 18” long, and is doing well! Every good wish to the Russell family!

Congratulations to Mesha-Gay Brown, MD (Assistant Professor, Epilepsy) and her husband Rene on the birth of their daughter, Morgan Evangeline Naylor, who arrived before just midnight on Sunday, February 7th, weighing 7 lbs. 8 oz. and 21” long. Welcome, Morgan, and congratulations, Dr. Brown!

Awards and Publications

The Department of Neurology’s Rocky Mountain Alzheimer Disease Center, directed by Dr. Huntington Potter, has received two generous multi-year gifts that will provide a total of $1 million annually in support for each of the next five years. These gifts will help support the Center’s application for an NIA-funded Alzheimer Disease Core Center (ADCC, P30) Grant, and support the research of Dr. Potter’s lab.

The Department and Center for NeuroScience celebrated Dr. John Sladek’s retirement at the October 22nd “Repairable Brain” educational symposium. Among esteemed guests and speakers were Dr. Sladek mentors, Teri Schreiner, MD, MPH, and Dr. Augusto Miravalle, who presented workshops on medication management, surgical treatments, and PD symptoms, alongside presentations by SOM colleague Dr. Margaret Schenkman, who addressed exercise, and guest speaker Dr. Samantha Hutten. The Emerging Leaders in Education, Administration, and Research ("LEAdR"). The ABPN issues two, highly competitive “Faculty Innovation in Education Awards” yearly, and Dr. Miravalle and Team are one of the 2016 recipients. The award provides $100,000 in salary support over 2 years for work to develop a research project in medical education. Our Department will collaborate with Dr. Ralph Jozefowicz, Professor of Neurology and Chair for Education, and his colleagues at the University of Rochester. The project, titled "Development of a Competency-based Assessment Program for a Neurology Residency Program" ("CAP") is intended to map and link assessment tools to EPA ("Entrustable Professional Activities") milestones and ACGME competencies. The goal is to develop a framework that could be used in any residency program that will allow the ABPN board to have a consistent and validated metric of professional entrustment.

Housed in the Academy of Medical Educators, the Leadership in Educational Administration Program (LEAP) strives to develop a cadre of highly skilled educational leaders who will move education forward locally, nationally, and internationally. Combined with the existing faculty programs on campus, this program will position the CUSOM as a national leader in health professions education. Selected to participate in the inaugural class of LEAP members, Dr. Augusto Miravalle is developing a mission-based budgeting project for the SOM intended to engage faculty members in activities related to education.

At summer’s end 2015, Dr. Miravalle graduated in a ceremony at Minneapolis AAN headquarters from the Emerging Leaders Forum, a highly selective program to identify emerging Neurology leaders and provide opportunities to develop a national portfolio. Participants gained service experience within the AAN by participating in an assigned group project to the benefit of the Academy and its membership. Dr Miravalle worked on a project to engage and retain a younger generation of Neurologists at the Academy, and to provide member-centered services that will result in more efficient career pathways. Joining the honor roll, Teri Schreiner, MD, MPH, was selected as one of 12 AAN members from 85 candidates for the 2015-2016 Emerging Leaders Forum class. The 10-month program kicked off in October 2015 at the AAN Fall Conference. Participants were separated into two cohorts and will work on tasks, share experiences, and network. Each cohort will be assigned a specific issue facing neurologists and be asked to investigate solutions to the problem. Each participant has been paired with a high-level AAN leader who will serve as a mentor. The Emerging Leaders will meet again in March 2016 at the 68th AAN Annual Meeting in Vancouver, BC, and then at the June 2016 AAN Board Meeting, where they will share the solutions to their cohort assignments.

Organized by Dr. Olga Klepitskaya, the Movement Disorders Center (MDC) hosted a July 25, 2015 Parkinson’s Disease patient education event in Glenwood Springs. 150 patients, families, and caregivers learned about advances in pharmacological, surgical, and rehabilitation treatments for Parkinson Disease and Essential Tremor, and participated in physical and speech therapy exercises. During the Q&A discussion, participants spoke about how their UCH care, DBS surgery, and clinical trials have positively impacted their quality of life.

On Saturday, September 26 the Movement Disorders Center held “To the Future and Back II,” the successor of last year’s Michael J. Fox Foundation Parkinson’s Disease event, at the UHealth Bruce Schroffel Conference Center. Conference attendance was at-capacity with nearly 300 patients, family and caregivers attending the day-long function. Drs. Maureen Leehey, Brian Berman, Olga Klepitskaya, and Benzi Kluger presented workshops on medication management, surgical treatments, and PD symptoms, alongside presentations by SOM colleague Dr. Margaret Schenkman, who addressed exercise, and guest speaker Dr. Samantha Hutten. The Michael J. Fox Foundation, who spoke on genetics and causes of PD. With such strong support and turn-out, the MDC looks forward to hosting future community education events annually. Event videos and presentations can be viewed on the MDC website, under the “Resources” tab.
For the past three years, the Department of Neurology has formed a team to fundraise and participate in the annual Alzheimer's Association Walk to End Alzheimer’s®. It is the nation's largest event to raise awareness and funds for Alzheimer's care, support and research. The successful 2015 event held on September 19, 2015 raised $915,871.66 within the Denver metro area alone! There were 548 teams and 5,081 active walkers. This year’s Walk will take place on September 17, 2016.

Team Neurology - Denver Walk to End Alzheimer’s®
September 19, 2015

Back row, left to right: Dr. Athena Wang, Dr. Timothy Boyd, Dr. Brianne Bettcher, Angela Kirkpatrick & Dr. Jeanne Feuerstein
Front row: Joseph Daniels, Kathy Illian, Dr. Huntington Potter, Helen Gray & Dr. Glen Simon and son

Pike’s Peak or Bust! Several Neurology faculty and staff participated in the annual Rocky Mountain MS Center’s Multiple Summits for Multiple Sclerosis (MS4MS) event on August 8, 2015. The “RMMSC Summiteers” raised nearly $3,000 with their climb. The RMMSC provides patients and their families with educational opportunities and support.

Drs. Corboy, Miravalle, Schreiner and Alvarez set off for Pike’s Peak on August 8th for the Rocky Mountain MS Center’s event.

Drs. Augusto Miravalle, John Corboy, Timothy Vollmer, Teri Schreiner, and Enrique Alvarez at the summit of Pike’s Peak.
The artwork of Sarah Richter, a patient at the Rocky Mountain MS Center, is on exhibit at the Fulginiti Center through March 3. Ms. Richter spoke to Colorado Public Radio about her experience with MS and its expression in her creations.

The story of Dr. Mark Spitz’s patient, competitive distance runner Diane Van Deren, is one of four in the Radiolab program titled “When Brains Attack!” Ms. Van Deren describes working with Dr. Spitz and the UCH team during her journey with epilepsy.

The Cerebrawls enjoyed their second season and came out of it having a great time, if not winning much. In the end our league was more about having fun and forging great working relationships than winning games!

View a list of our faculty’s most recent publications.

**In Our Clinics**

UCHealth emerged as the state’s top hospital in the July 2015 “Best Hospitals” report from U.S. News & World Report. The report ranks 16 specialty programs in some 4,700 U.S. hospitals. It’s the fourth consecutive year UCH has earned the distinction. UCH also climbed in the report’s national rankings, placing 11 specialties among the top 50 in the United States, up from nine last year. Neurology jumped from position #40 to #26 in the rankings for adult neurology and neurosurgery.

Dr. Lauren Seeberger received Huntington’s Disease Society of America (HSDA) grant designation as one of 39 Level 3 HDSA Centers of Excellence in 2016, one of only two in Colorado. The award provides medical and social services support for Colorado Huntington’s Disease families, and facilitates application for next levels of funding.

The UCH Epilepsy Center is one of only two facilities in the state approved to implant the NeuroPace RNS (Responsive Neurostimulation) device, a sort of brain pacemaker. It’s the first closed-loop device for treating brain conditions; it looks at biomarkers that tell it that a seizure is about to happen and delivers the stimulating therapy; when the brain’s activity returns to normal, the stimulation stops and resumes again only when the device detects another imminent seizure. The NeuroPace is designed for patients whose seizures have not stopped despite many epilepsy medications, says Cornelia Drees, MD, Assistant Professor of Neurology. It is not indicated for patients whose epilepsy is generalized; those who have epilepsy that can be treated by surgical removal or laser ablation of a single brain location; or those whose condition arises from more than two discrete brain locations. Dr. Aviva Abosch, Professor of Neurosurgery and Neurology and Director of Stereotactic and Epilepsy Surgery, performs the surgeries. While the NeuroPace RNS System won U.S. Food and Drug Administration pre-market approval in 2013, implant patients will also be part of a mandated trial to assess the safety and efficacy of the device. As a Level 4 Epilepsy Center, UCH can provide the pre- and post-operative specialized care to support the procedure. Dr. Drees remarked that the information obtained may provide rich research information, with a peek into brain activity over the long term.

The Mobile Stroke Treatment Unit (MSTU), just the third in the country, arrived July 3 in Colorado at the Poudre Valley Hospital. Essentially a rolling ED, the MSTU is specially built on a 4-wheel drive Dodge Ram 4500 chassis. Its LiquidSpring suspension system enables the truck rear to be dropped a foot to easily load patients. Logistical, regulatory, legal, and IT details are being tackled by a large group of people. The MSTU will be staffed by a stroke-trained clinical nurse specialist, a paramedic, and a CT tech and an emergency medical technician. Dr. William Jones, Director of the MSTU program, and our Vascular Neurologists will connect via a telehealth directly to the ambulance, assessing the patient as well as CT scans and other data coming over cellular wireless network connections. If it’s an ischemic stroke, the neurologist can give the go-ahead for administering tPA. The MSTU will service Metro Denver and Colorado Springs. The MSTU officially went into operation on Wednesday January 13th.

Riding for a Day in the Mobile Stroke Treatment Unit (-by Alexander "AJ" Stein, Clinical Research Program Development Manager)

January 29, 2016. For now, every weekday before 8am is spent checking the Mobile Stroke Treatment Unit (MSTU), ensuring supplies are adequate, verifying that the vehicle is operating smoothly, and even that the generator is functioning. The MSTU team has spent more than a year getting ready and won’t allow anything to keep them off the road. The MSTU team consists of several paramedics, EMTs, critical care nurses, and CT techs. Though there will only be 4 members of the team on the unit at any time, there are more than 20 people involved in operating just the Aurora unit. This number will continue to grow, especially with the unit also set to operate in Colorado Springs. Brandi Schimpf, the MSTU Program Manager, is in charge to ensure the entire program is running and operating, and though she has only been in this position since September, makes sure everyone is doing what is required.

It is now 8 AM. The vehicle has been checked and the team is ready. The MSTU has only been in service since January 13th. Thus far, there have been more than 20 dispatches, 6 transports, but no tissue plasminogen activator (tPA) has yet been administered. Vicky Reynolds, the paramedic, contacts Aurora Fire Dispatch to let them know “CAT 1,” the MSTU’s call designation, is in service for the shift. The ambulance slowly leaves its home base in the UCH loading docks towards a more accessible location in Aurora. Dr. William Jones and the Aurora Fire Department analyzed geographic data for stroke patients over the last several years to determine the best MSTU station location to minimize response times. Based on this information, a UCH Freestanding ER Clinic on Mississippi and Chambers was chosen. Ironically, this ER clinic is across the street from a KFC and Jack-in-the-Box and caddy corner to a Wendy’s.
The clock is approaching 10:30 AM, and there have been no calls yet. Despite the slow morning, the MSTU team waits eagerly and impatiently. It’s pretty clear they want to be on the road helping others. Vicky and Desmond McNeal (the EMT and paramedic) keep their dispatch radio close to their ears. They are listening to every single call that goes through the dispatch for any possible stroke calls. John Violette (aka Bass, the CT tech) refuses to sit still and begins doing some exercises (pushups/squats) to keep ready. Mary Bass, the critical care nurse, is going over protocols and learning how to use a new pump. Time keeps passing.

Suddenly, around 11:30 AM, an announcement has been made over the dispatch indicating a possible stroke. Per protocol, Aurora Fire dispatches a local EMS first before dispatching the MSTU. This doesn’t matter though, because as soon as the dispatch mentions a possible stroke, the entire team yells to get on the ambulance. After running to the ambulance and strapping in, the ambulance pulls out of the parking lot and starts heading towards the scene. Quickly after, Aurora Fire sends another dispatch, “CAT 1, possible stroke.” Before the dispatcher even finishes talking, the MSTU is emergent and zipping towards the scene. Minutes later, Dr. Jones is visible on the telehealth screen located in the back of the ambulance. Per protocol, the MSTU has exactly 10 minutes to arrive on scene, or the local EMS will be responsible for the treatment and care of the patient. So far, the MSTU is getting on scene in about 6 minutes (with the 20 or so dispatches they have had so far).

We arrive on scene at 11:35 AM. Once here, the team moves quickly. Our nurse, Mary, is the first to approach the patient’s home and get an update from the EMS team already on scene. From there, she assesses the patient and performs her stroke scale. After a few tense moments, she determines that the patient may have a stroke, and that the MSTU will be taking over care for the patient. The EMT and Paramedic quickly transport the patient to the unit to prep for the CT Scan. Mary quickly updates Dr. Jones on her assessment. The CT Tech is ready and waiting, and the non-contrast head CT scan is performed in less than 2 minutes. No evidence of hemorrhage is seen. The patient is a possible tPA candidate. After the scan, labs are taken while Dr. Jones begins administering his own assessment and more comprehensive stroke scale. Ultimately, this patient was not a tPA candidate and would be transferred to the nearest stroke center. The arrival time on scene to the decision point not to give tPA took approximately 20 minutes.

The MSTU team is able to drop the patient off at the destination hospital, copy the CT images to a disc, and release the other required patient information. As we get ready to leave, the entire team meets in the back of the ambulance to discuss what they could have done differently to help the patient have a better outcome. It is incredible to see the rapport between the team members and their eagerness to improve. Their preparation and training have paid off.

The day ended with just one call. Moving forward, education and awareness in the community will be emphasized, while the MSTU is in service and ready. As of February 24th, there had been 45 dispatches, 15 transports, and 2 tPA administrations on the MSTU.

![Mobile Stroke Treatment Unit (MSTU) on the first live call, January 12, 2016.](image1)
![Dr. William Jones on the MSTU unit's telestroke robot screen.](image2)
![First tPA for MSTU patient](image3)
![The MSTU team rolls a patient into the UCH Emergency Department.](image4)

**Dr. William Jones** and the **Mobile Stroke Treatment Unit (MSTU)** team have been working closely with **Dr. Margaret Sande**, Medical Director of the WELS (Work, Education, and Lifelong Learning Simulation) Center, to troubleshoot the deployment of the MSTU. As a result of several trainings, the WELS Center is pursuing IRB approval to develop guidelines for training futures Mobile Stroke Treatment Units.

Only a year and a half after the commencement of the Telestroke program, **Dr. Augusto Miravalle** inaugurated a **Tele-MS program** on December 8th. The initiative, another Departmental vanguard effort, is the first outpatient telehealth program for the entire UCHealth system. In addition to providing more patient capacity, Tele-MS will give current patients more frequent physician access.

**Dr. Daniel Pastula**, neurologist, medical epidemiologist and aboviral disease expert, has addressed growing global concerns about the **Zika virus**. Dr. Pastula notes the full manifestation of the Zika virus is not known, and **preventing mosquito bites** in Zika-endemic areas is very important. He recommends prevention by use of insect repellent, wearing long sleeves and pants, and using screens or closing windows and using air-conditioning.

The Aedes mosquito species known to carry the virus has never been found in Colorado, and researchers are investigating a possible link with birth defects.

**Dr. David Beckham**, Associate Professor of Medicine, Neurology, & Immunology/Microbiology, reported in July 2015 on the various factors affecting mosquitoes carrying the **West Nile Virus**, including lifecycles of infected birds. The City of Loveland continued its 29th year of integrated management operations with Colorado Mosquito Control, which focuses most of its efforts on suppressing the development of adult mosquitoes. According to Dr. Beckham, not much is known about the 80% asymptomatic folks who contract the virus, while “20% percent develop symptoms of a bad flu: headaches, high fever and rashes. Less than 1 percent get the infection in the nervous system.” With no anti-viral medicine to treat the virus, the research goal is to “find a specific drug that can stop injury process in the brain and reverse injury infection.”

UCH has recently been designated an **Erdheim-Chester Disease (ECD) Care Center** by the **Erdheim Chester Disease Global Alliance** (ECDGA). ECD is a multi-system disorder characterized by accumulation of histiocytes largely in connective tissue. Many cases manifest in the CNS, but can also occur in the heart, skin, and long-bones. The care center designation is based upon experience and expertise in treating this rare disease, and the core group of UCH specialists. A global registry for patients with ECD is being developed and should be open for registration soon. **Dr. Douglas Ney**, Associate Professor of Neurology, hopes UCH will become a leader in treatment of this rare disease and welcomes collaboration. He credits **Dr. Timothy Volin** at the heart of this effort for many years, for the establishment of this Center.

**Maintenance of Certification (MOC) Update** - by **Laura Palmer**, Quality and Process Improvement Manager

The American Board of Psychiatry and Neurology (ABPN) implemented a Maintenance of Certification (MOC) Patient Safety requirement at the start of 2016 for all diplomates. An approved Patient Safety Course will be required within the three years prior to certification/recertification, or this requirement can be fulfilled during the first three-year Continuous-MOC block. Methods for fulfilling this requirement within the Department of Neurology are in progress and will be distributed soon. Please contact Laura Palmer (laura.palmer@ucdenver.edu or 303-724-8287) to address any MOC questions.
Do you need MOC Self-Assessment (SA) CME credits? The AAN offers 10 SA CME credits if you are attending the 2016 AAN Annual Meeting in Vancouver, BC, Canada. To gain these credits, you must: (1) Take the online pre-test by April 14, 2016 by going to www.AAN.com/view/NeuroSAEAM; (2) Register and attend the annual meeting; and (3) After attending the meeting, complete the online post-test. Earn a score of 70% or higher to receive a score report and 10 free SA CME credits.

Q1 UPDATE (~by Dr. Jennifer Simpson, Director of Quality Improvement)

Pilot Site for the AAN’s Axon Registry

The Department of Neurology is participating in the first round of pilot sites for the AAN’s Axon Clinical Data Registry. The Registry is focused on quality improvement through selective academic participation in the extraction, calculation and reporting of quality measures. Currently, various methods to auto-extract clinical data from Epic are being evaluated to determine the best approach for data collection at our site. Current AAN quality measure selections for the initiation of the Registry include:

- Croscutting: Falls Risk Assessment and Documentation of Current Medications in the Medical Record
- Dementia: Screening for Depressive Symptom, Staging of Dementia, and Functional Status Assessment
- Distal Symmetric Polyneuropathy: Diabetes/ Pre-diabetes Screening and Screening for Unhealthy Alcohol Use
- Epilepsy: Seizure Frequency and Screening for Psychiatric or Behavioral Health Disorders

Quality Case Reviews

From inception in December 2013 through December 2015, 74 cases have been referred for Quality Case Reviews (QCR). Nineteen cases were referred for review between January and August 2015, averaging 2.4 cases per month. This compares with 3.8 cases per month on average during 2014. Cases that have quality or patient safety concerns should be referred to Dr. Jennifer Simpson as they occur so that follow up of process or system issues to prevent reoccurrence can occur in a timely fashion.

The Edge on Education

Education Programs Update

The Parkinson’s Disease Foundation award-funded Conference on Palliative Care and Parkinson’s Disease (PD), organized by Dr. Benzi Kluger, took place October 3rd–4th in Aurora. The well-received meeting, attended by 42 individuals from across the nation and around the world, included renowned specialist and faculty who facilitated the extraction, calculation and reporting of quality measures. Currently, various methods to auto-extract clinical data from Epic are being evaluated to determine the best approach for data collection at our site. Current AAN quality measure selections for the initiation of the Registry include:

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Fellowships

In July 2016, twelve clinical Neurology Fellowships will be available. The most recent fellowship program to receive accreditation (Association of University Professors of Ophthalmology-AUPO) is Neuro-Ophthalmology. We have been newly accredited by ACGME for Epilepsy Fellowship, the United Council on Neurological Subspecialties (UCNS) for Headache Medicine Fellowship, and have inaugurated a Neuro-Infectious Disease Fellowship, in conjunction with the Department of Infectious Diseases. ACGME accreditation continues for our Fellowships in Neuromuscular Medicine and Vascular Neurology, and UCNS accreditation for Behavioral Neurology & Neuropsychiatry, Clinical Neuromuscular Medicine and Neuro-Oncology. We have active clinical fellowships in Movement Disorders, Neuroimmunology/MS, and Stroke Research (ANA/ASA/Bugher Foundation), and a thirteenth NIH-funded Neurovirology Research Fellowship.

Neurology Clerkship

In July 2015, the Department hosted the University of Colorado’s inaugural Camp Neuro, a one week summer camp for local high school students interested in a career in medicine, with a particular focus on Neurology and Psychiatry. Camp Neuro is run by local medical students in 18 cities across the nation. William Silkworth, a 2nd year medical student at the University of Colorado School of Medicine, spearheaded the camp after hearing about Camp Neuro at a Student Interest Group in Neurology (SIGN) meeting. Silkworth asked Dr. Brian Berman to be the campus contact and Department of Neurology representative. He then worked closely with Camp Neuro and Dr. Berman to enlist about ten physicians, as well as half a dozen other healthcare professionals from fields including nursing, physician assistant, pharmacy, and anatomy, who volunteered their time to assist with various activities aimed at introducing the students to healthcare professions. These activities included a pig brain dissection, medical student forum, healthcare career panel, patient history and physical exam skills, lectures on neurology and psychiatry, and campus tour. Neurology faculty participants included Drs. Pearce Korb, Brian Berman, Benzi Kluger, Enrique Alvarez, and Samantha Holden. The student reviews were overwhelmingly positive, paving the way for the Department of Neurology to continue hosting the camp in the future.

Thanks to a grant from the MaggieGeorge Foundation, the Department hosted over 70 middle school students at the WELLS (Work, Education, and Lifelong Learning) Simulation Center. Students learned how to take vital signs and provide CPR on the Centerâ€™s mannequins. They also took a tour of the central nervous system with Dr. Augusto Miravalle on the Virtual Human Dissector. Role playing various medical professions, students experienced a medical emergency simulation in order to “save” the “patientâ€™s” life. Each time students come on campus for the Wellness, Lifelong Learning and Career Orientation Mentorship (WeLL-COMe) Program, we receive positive reviews, such as this from one of the students: “It changed my outlook of being a doctor. I hope you continue to teach kids about healthcare.”
Dr. Pearce Korb, Director for the Neurologic Care Clerkship, and Holly Ables, Clerkship Coordinator and co-investigator, have developed an IRB-approved research project entitled "Turning Neurophobia into Neurophoria: A Needs Assessment of Medical Student Education." Implemented in April 2015, the objective is to measure levels of confidence of third year medical students before and after a four week clinical clerkship in Neurology, and identify reasons for this lack of confidence or "neurophobia" in order to direct future curriculum design. Positive influences on confidence noted were teaching, practice and patient exposure during clerkship, as well as previous clinical experiences and mentorship. Negative factors were lack of clinical experience, neuroanatomy, and amount of knowledge necessary. The implementation of a neuroanatomy bridge pilot, will include workstations for students to participate in clinical cases that emphasize neuro-anatomy and localization skills. With the availability of 3D imaging, the clerkship is exploring other campus tools to ameliorate the knowledge gap. The pilot and the control group data will be compared to verify if intervention is successful before wider implementation.

Opened in March 2015, the DAWN (Dedicated to Aurora’s Wellness and Needs) Clinic, an interdisciplinary student-managed free clinic in Aurora, has already held over 435 patient visits. The clinic design reflects the desire and well-considered plan of our students and residents to practically engage their education, and to develop their medical skills in a local community care setting. Participants in this project will gain valuable insights into the healthcare needs of the population, learn about building a practice, and engage in cooperative 'team-based' medical care. The effort will help to build bridges with an under-served demographic, enhance provision of primary care in an underserved demographic, and may also encourage the community to learn more and potentially participate in clinical research projects.

**On the Research Front**

In 2011, Dr. Timothy Volmer led the effort to win a 7-year, $1.7 million National Institute of Neurological Disorders and Strokes (NINDS) grant as part of NeuroNEXT, a network that includes 28 academic medical centers. The Massachusetts General Hospital-based initiative combines centralized project and data management to launch and sustain trials for neurological diseases. We are currently in the grant’s 5th year, with 7 funded studies (5 adult, 2 pediatric). Results of the first project, a study on spinal muscular atrophy infant biomarkers, are recently published. AJ Stein, Clinical Research Program Development Manager, and Kathryn Connelly, PRA, worked with our site PI, Dr. Julie Parsons, Associate Professor of Pediatrics and Neurology. Dr. Lauren Seeberger will attend the February Investigator Meeting for the newest project, NN105- STAIR (SRX246: Safety, Tolerability, and Activity in Irritable Subjects with HD). The Annual NeuroNEXT Meeting will take place March 1st-2nd in Denver. Two new studies are likely to be announced, and we are hopeful Neurology will be selected as one awardee.

The Department of Neurology has been awarded a Patient-Centered Outcomes Research Institute (PCORI) grant as the coordinating center under the leadership of Dr. John Corboy, PI, of a multi-year, multi-center trial studying the potential discontinuation of disease-modifying therapies (DMTs) in MS. Selected from among 483 submitted initial letters of intent and 24 funded projects, this was the only neurologically focused project to receive funding in this round. The project is poised to involve 12 centers nationally for 4-5 years and enroll 300 patients, with a likely budget of $5-6 million in direct costs. This is Neurology’s second major PCORI grant (the first being to Dr. Benzi Kluger to study the effectiveness of palliative care in Neurology), and in combination these two projects makes us one of the nation’s leading neurology departments for studying effectiveness and outcomes related to neurological care.

Dr. Benzi Kluger has been awarded a two-year NIH NINDS R21 grant entitled "Characterizing intrinsic functional cortical networks in Parkinson disease dementia". Dr. Kluger will study patterns of functional connectivity to determine if the subcortical pathology seen in PD dementia disrupts these networks. His particular aims include determining whether there are specific patterns of functional connectivity associated with different PD cognitive phenotypes, seeing if these patterns are usable as "biomarkers," and using an approach called "dynamic causal modeling" to look at subcortical sources on cortical network activity. This follows his 5-year ongoing NINDS R01 award to study "Intrinsic cortical networks and cognitive dysfunction in Parkinson’s disease" that began in 2013.

Maria Nagel, MD, received an NIH R01 award for her grant application entitled, "Purinergic signaling in VZV Vasculopathy." Her exciting work investigates the pathogenesis of VZV-induced vasculopathy. Dr. Nagel has data indicating that purinergic receptors on fibroblasts in cerebral blood vessels mediate VZV infection, and play a key role in subsequent pathological cerebrovascular remodeling leading to stroke. Studies proposed in the grant deal with mechanisms by which activation of these receptors promotes virus infection of arterial vascular fibroblasts and the specific receptors involved. These studies are the follow-up of recent observations by Dr. Nagel and the Gilden Lab linking VZV infection with both giant cell arteritis and other cerebral vasculopathies. Dr. Nagel also secured a University of Colorado Health Foundation grant to support the purchase of 100 Wellness Center passes for caregivers of long-term inpatients.

The 15th Annual Rocky Mountain Virology Meeting, co-organized by Dr. Randy Cohrs, was held September 25-27, 2015 at the Colorado State University Mountain Campus in Pingree Park. Nearly 100 people attended, including: Dr. Cohrs; Nicholas Baird, PhD; Hussain Badani, PhD; Dallas
The keynote address was given by Dr. Bert Semler from University of California, Irvine, who discussed the "Use and Abuse of Host Cell Functions during Picornavirus Replication." The beautiful weather and fall colors in heart of the Colorado Mountains provided a wonderful setting for the meeting.

The 40th International Herpesvirus Workshop was attended by Drs. Dr. Randy Cohrs, Ravi Mahalingam, Nicholas Baird and Hussain Badani. Dr. Badani, Postdoctoral Research Fellow in Dr. Gilden's Lab, was selected to provide an oral presentation, titled "Molecular events towards VZV reactivation in latently infected human trigeminal ganglia at the international herpes virus." The meeting was held in Boise, Idaho from July 25-29, 2015. This is the premier meeting for herpesvirus researchers from around the world, and never fails to produce fruitful discussions and collaborations.

Dr. Huntington Potter, Director of the Rocky Mt. Alzheimer’s Disease Center, spoke with CBS Channel 4 about clinical trials being conducted with Leukine, discovered because individuals with rheumatoid arthritis almost never get Alzheimer’s disease. Dr. Badani, Postdoctoral Research Fellow in Dr. Gilden’s Lab, was selected to provide an oral presentation, titled "Molecular events towards VZV reactivation in latently infected human trigeminal ganglia at the international herpes virus." The meeting was held in Boise, Idaho from July 25-29, 2015. This is the premier meeting for herpesvirus researchers from around the world, and never fails to produce fruitful discussions and collaborations.

The 5th annual Neurology Research Retreat was held on June 17, 2015 in the Richard Krugman Conference Hall and attended by over 100 individuals. 25 oral presentations were offered by faculty and residents, representing clinical translational research, basic neuroscience research and quality improvement and patient safety initiatives. Residents, fellows, professional research assistants and faculty discussed their work in 20 poster presentations.

**Clinical Trials Research (by AJ Stein)**

The Department currently has 120 clinical trials: 21% (n=25) are in the start-up pre-enrollment phase, 53% (n=64) are active and open to enrollment, and 26% (n=31) are active but closed to enrollment. Some new indications of interest include Huntington’s disease. Dr. Lauren Seeberger will be conducting three new Huntington's Disease studies (one through the NeuroNEXT network). Our department continues to achieve PCORI funding and boasts of three PCORI funded studies (Pls: Drs. Benzi Kluger, Dianna Quan, and John Corboy). We continue to apply for further PCORI grants. Interested in starting a study? Need help? The Clinical Research Core team is here to help and take care of your clinical research needs, including clinical trial planning, start-up, maintenance, staffing, training, contracts, budgets, and close-out.

**Alexander “AJ” Stein:** Grant and Trial Identification/Preparation/Support, NeuroNEXT Grant Management, Student/Intern Management [Extension 4-6346 | alexander.stein@ucdenver.edu]

**Haley Steinert:** Coordinator Management and Training, Feasibility/Pre-Award Support, Quality Control [Extension 4-4172 | haley.steinert@ucdenver.edu]

**Nicole Gendelman:** Regulatory Supervision, OGC and IRB Submissions, Feasibility/Pre-Award Support [Extension 4-2200 | Nicole.Gendelman@ucdenver.edu]

**Brooke Valdez:** Project/Logistical Planning and Management, Budget Planning and Negotiations, Pre-Award Support [Extension 4-2704 | brooke.Valdez@ucdenver.edu]

**Donna Wilber:** Post-Award Business Management, Billing/Invoicing Management [Extension 4-4589 | donna.Wilber@ucdenver.edu]

A complete list of active clinical trials is provided and updated weekly on the Neurology Department website. You can also follow us on our Neurology Clinical Research Facebook page.

**Contact NEURO-NEWS**

Please send articles, comments, and suggestions to Diane Strong, MBA, Editor, at: Neurology-newsletter@ucdenver.edu. Newsletter Architect: Kathy Illian, MA. IT and Distribution Manager: David Vu, BS.