A Look Inside

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• Skull Base Program

• Stroke Care
• Residents’ Corner
• Clinical Trials
Dear Colleagues and Friends,

This issue of Synapse highlights the many ways we are achieving our vision of a patient-centered, neuroscience department of tomorrow, providing hope to our patients, while transforming their lives through world-class translational research and treatment.

FOCUSING ON SPINE SURGERY OUTCOMES

The Michigan Spine Surgery Improvement Collaborative (MSSIC) continues to drive quality improvement (QI) at hospitals throughout the State of Michigan, improving patient outcomes and reducing rates of adverse events. We now have nearly 10 million data points and almost 50,000 patients to begin to optimize care and best practices. The lessons learned from this QI initiative will almost certainly change the standard of care and elevate the practice of spine surgery around the world.

PROVIDING THE MOST ADVANCED TREATMENTS

Our team recently performed the first deep brain stimulation (DBS) procedure for epilepsy in Michigan, building on a long heritage of advanced epilepsy treatment. In addition, our growing Skull Base, Pituitary and Endoscopy Center provides expert, multidisciplinary treatment for the most complex skull base and intracranial conditions, including skull base reconstruction.

LEADING ON STROKE CARE

Our Comprehensive Stroke Center is one of few in Michigan with this specific Joint Commission designation, and is delivering results that significantly surpass national benchmarks. We are also working to advance the field of stroke care through our participation in the 2nd Annual Detroit Stroke Conference we hosted recently as well as a new neuroendovascular fellowship that is in development.

DRIVING NEW RESEARCH

We currently have the highest number of active research grants in our department’s history, and our physicians and scientists continue to break new ground through clinical trials and publications. This extensive research effort includes our dedicated and accomplished residents, who are working to help shape the field of neurosurgery in their own way.

I could not be more proud of our team, and look forward to our residents, who are working to help shape the field of neurosurgery in extensive research effort includes our dedicated and accomplished

Team members in our department have established themselves as leaders in the field through many regional, national and global roles. Some recent highlights include:

- ARNS: At the 2018 American Association of Neurological Surgeons (AANS) meeting, Dr. Steven Kalkanis was recognized for his election as a Director of the American Board of Neurological Surgery (ARNS).
- CNS: Dr. Kalkanis also is President-elect of the Congress of Neurological Surgeons (CNS). His term begins October 2019.
- Joint Section on Pain, MANS & ASSFN: Dr. Jason Schwaibl is the current President of the AANS/CNS Joint Section on Pain. He also serves as Vice President of the Michigan Association of Neurological Surgeons and on the Executive Committee of the American Society for Stereotactic and Functional Neurosurgery (ASSFN). (See related FACULTY SPOTLIGHT on back cover)
- ASSFN/WINS: Dr. Ellen Air serves on the Executive Committee of ASSFN along with Dr. Schwaibl. Henry Ford, Cleveland Clinic and Case Western Reserve University are the only centers with multiple representatives on the ASSFN Executive Committee. Dr. Air also is active in the Women In Neurosurgery (WINS) Speakers Bureau in the Education, Epidemiology and Pain/Functional areas.
- Joint Section on Tumors: Dr. Ian Lee and Dr. Adam Robin both serve on the AANS/CNS Joint Section on Tumors Executive Committee.
- SNDO: Henry Ford Neurosurgery had a significant presence at the annual Meeting of the Society of Neuro-oncology (SNDO) in November 2018. Our physicians and researchers presented over a dozen different topics, from genomic treatments to quality of life.
- FIENS: Through his work with the Federation for International Education in Neurosurgery (FIENS), Dr. Jack Reck has volunteered in Thailand, Vietnam and Ethiopia, providing hands-on training and education to local neurosurgeons and critical patient care assistance. (See related SOUTHEAST ASIA story on p. 5.)
- CMS: Dr. David Nerenz recently served as lead author on a landmark study that evaluated the Star Rating system used to rank all hospitals across the country in terms of quality metrics, which was introduced by the Centers for Medicare & Medicaid Services (CMS) in 2016. (Study: https://bit.ly/2U1Albk).
- Dr. Nerenz and his team of researchers demonstrated how an alternative approach to the current scoring system in the Safety of Care domain could help produce more accurate and informative results.

MSSIC UPDATE

Support for the Michigan Spine Surgery Improvement Collaborative (MSSIC) is provided by Blue Cross Blue Shield of Michigan (BCBSM) and Blue Care Network (BCN) as part of the BCBSM Value Partnerships program.

Henry Ford Health System is the Coordinating Center for MSSIC, which has 26 hospital sites. The Collaborative has followed nearly 50,000 patient cases for up to two years so far, and implemented three quality improvement (QI) initiatives: surgical site infection, urinary retention and readmissions.

CONTINUED SUCCESS IN QUALITY IMPROVEMENT

Active, organized quality improvement work began in 2017, and MSSIC has continued its success in quality improvement in 2018 (see sidebar at right). These upgrades don’t happen by accident – they are the result of careful analysis to identify QI opportunities and hard work by Coordinating Center staff as well as clinicians and administrators at participating hospitals.

MSSIC OPEN HOUSE IS FIRST OF ITS KIND

In November 2018, Henry Ford West Bloomfield Hospital hosted an open house for MSSIC participants. This type of site visit was the first of its kind among all 26 quality improvement collaboratives in Michigan. Sixty-nine patients from MSSIC hospitals were present, including surgeons, data abstractors, spine coordinators, clinical nurse specialists, nurses/managers/directors, mid-level providers and QI Leaders. The open house focused on Henry Ford West Bloomfield’s success in reducing urinary retention rates and how the hospital implemented and sustained a very successful early ambulation program.

EXPANDING TO NEW AREAS AND INVOLVING PCPS

MSSIC is expanding the QI agenda to include a focus on one or more patient-reported outcomes, and to expand collaboration with primary care physicians in important areas such as inudi management. In preparation for a postoperative collaboration with PCPs, an AT RISK FOR MEDICAL READMISSION (ARMR) tool was developed by MSSIC staff to help surgeons determine which patients are at high risk for readmission. Surgeons will request that patients at high risk schedule an appointment to see their PCPs within 7-10 days of discharge for medical management and to catch exacerbations or complications early. The ARMR tool was presented at the November collaborative-wide meeting and several surgeons volunteered to be involved with the pilot test, which started in February.

DISCLAIMER STATEMENT: Although Blue Cross Blue Shield of Michigan and MSSIC work collaboratively the sponsor’s beliefs and viewpoints expressed by the author do not necessarily reflect the opinions: beliefs and viewpoints of BCBSM or any of its areas.

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The Henry Ford Department of Neurosurgery has earned the most National Institutes of Health, Department of Defense and other sponsored research grants in its history — putting us in the top academic programs in the country based on research funding.

**TARGETING ONCOGENE AMPLIFICATION IN Glioblastoma**

**AGENCY:** Department of Defense (DOD) **PRINCIPAL INVESTIGATOR:** Ana deCarvalho, Ph.D. **CO-INVESTIGATORS:** Lalita Poisson, Ph.D. **COLLABORATOR:** James Snyder, M.D.

**TREATMENT OF TRAUMATIC BRAIN INJURY WITH VEPOLOXAMER**

**AGENCY:** National Institutes of Health – Acute Neural Injury & Epilepsy (NINDS) **PRINCIPAL INVESTIGATOR:** Yani Zhang, M.D. **CO-INVESTIGATORS:** Ye Xiong, M.D., Quan Jiang, Ph.D., Michael Chopp, Ph.D., Mei Lu, Ph.D.

**EPIGENOMIC MASTER REGULATORS THAT DEFINE IDH1/2 MUTANT GLIOMA TUMOR PROGRESSION**

**AGENCY:** Department of Defense (DOD) **Idea Award** **PRINCIPAL INVESTIGATOR:** Houtan Noushmehr, Ph.D. **CO-INVESTIGATORS:** Ana deCarvalho, Ph.D., Lalita Poisson, Ph.D.

**MOLECULAR AND CLINICAL EVALUATION OF THE GLIOMA PATIENT EXPERIENCE TO ANTICIPATE MODERN OUTCOMES AND GUIDE PATIENT CARE**

**AGENCY:** National Institutes of Health – National Cancer Institute **PRINCIPAL INVESTIGATOR:** Lalita Poisson, Ph.D. **CO-INVESTIGATORS:** Ana deCarvalho, Ph.D., Lalita Poisson, Ph.D. **CO-INVESTIGators (NEURO-PHARMACOLOGY):** Alia Makker, Ph.D. **CLINICAL SUPPORT:** Steven N. Kalkanis, M.D., Tom Mikkelsen, M.D., Tobias Walbert, M.D., Ph.D., James Snyder, D.O.

**MRI SIGNATURES OF RESPONSE TO HIGH-DOSE RADIOTHERAPY IN RAT MODELS OF CEREBRAL TUMOR DISRUPTION ASSOCIATED WITH LASER INTERSTITIAL THERAPY**

**AGENCY:** Department of Defense (DOD) **PRINCIPAL INVESTIGATOR:** Brent Griffith, M.D. **CO-INVESTIGATORS:** Michael Chopp, Ph.D., Asim Mahmood, MBBS, Yi Zhang, Ph.D., Mei Lu, Ph.D.

**EXOSOME-BASED THERAPEUTICS IN TRAUMATIC BRAIN INJURY (TBI)**

**AGENCY:** National Institutes of Health – National Institute of Neurological Disorders and Stroke (NINDS) **PRINCIPAL INVESTIGATOR:** Ye Xiong, M.D., Ph.D. **CO-INVESTIGATORS:** Michael Chopp, Ph.D., Asim Mahmood, MBBS, Yi Zhang, Ph.D., Mei Lu, Ph.D.

**THERAPEUTIC USE OF BRYOSTATIN-I TO EXTEND 1PA TIME WINDOW FOLLOWING MCAO**

**AGENCY:** National Institutes of Health – National Institute of Biomedical Imaging and Bioengineering (NIBIB) **PRINCIPAL INVESTIGATOR:** Ana deCarvalho, Ph.D., Lalita Poisson, Ph.D. **CO-INVESTIGATORS:** YCircle N. Kalkanis, M.D., Tom Mikkelsen, M.D., Tobias Walbert, M.D., Ph.D., James Snyder, D.O.

**EXTRACELLULAR PH MAPPING AS THERAPEUTIC READOUT OF DRUG DELIVERY IN GLIOBLASTOMA**

**AGENCY:** National Institutes of Health – National Institute of Biomedical Imaging and Bioengineering (NIBIB) **PRINCIPAL INVESTIGATOR:** Jason Hufer, Ph.D., M.D. **CO-INVESTIGATORS:** in collaboration with the University of West Virginia (Sub-Contract)

**TREATMENT OF GLIOMA WITH NANOCOMBRETASTATIN WITH MRI MONITORING**

**AGENCY:** National Institutes of Health – National Cancer Institute (NCI) **PRINCIPAL INVESTIGATOR:** Meser Ali, Ph.D. **CO-INVESTIGATORS:** James R. Ewing, Ph.D., Steven Brown, Ph.D., Ana deCarvalho, Ph.D., Li Zhang, Ph.D., Tom Mikkelsen, M.D.

**WSU MICHIGAN TRANSLATIONAL RESEARCH AND COMMERICALIZATION PROGRAM (MTRAC)**

**AGENCY:** Wayne State University **PRINCIPAL INVESTIGATOR:** Steven N. Kalkanis, M.D., in collaboration with Wayne State University, including Gregory Auner, Ph.D., and Michelle Bruatori, Ph.D.

**TARGETING CELL CYCLE CHECKPOINTS IN GLIOMA**

**AGENCY:** Canadian Institutes for Health Research **PRINCIPAL INVESTIGATOR:** Lisa Porter, Ph.D. (University of Windsor), in collaboration with the University of Windsor **CO-INVESTIGATOR:** Ana deCarvalho, Ph.D.

**DETECTION OF PITUITARY TUMOR EPIGENETIC MARKERS FROM CELL FREE DNA OBTAINED BY A NONINVASIVE LIQUID BIOPSY**

**AGENCY:** Henry Ford Health System – Proposal Development Grant **PRINCIPAL INVESTIGATOR:** AnaViercas Castro, M.D., Ph.D. **NEUROSURGERY RESIDENT:** Karam Asmaro, M.D. **M.D. (HENRY FORD HEALTH SYSTEM – Graduate Medical Education Research Grant Award)**

**CHARACTERIZATION OF BLOOD-BRAIN BARRIER DISRUPTION ASSOCIATED WITH LASER INTERSTITIAL THERMAL THERAPY FOR HIGH GRADE GLIOMA**

**AGENCY:** Henry Ford Health System – Physician Scientist Grant **PRINCIPAL INVESTIGATOR:** Ian Lee, M.D. **CO-INVESTIGATORS:** Tavarekere Nagaraja, Ph.D., James R. Ewing, Ph.D., Tobias Walbert, M.D., Ph.D., Brent Griffith, M.D. **MENTOR:** Panos Varlas, M.D., Ph.D.

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**DEPARTMENT AWARDED MOST RESEARCH GRANTS IN HISTORY**

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**SOUTHEAST ASIA PROJECT EXPANDS**

Team members from Henry Ford Neurosurgery, led by Jack Rock, M.D., recently completed two more trips to Yangon, Myanmar. Dr. Rock has worked for years in the developing nation to advance neuroscience and make the field of neurosurgery more accessible in several ways.

This includes providing education and hands-on training for neurosurgical procedures through a “boot camp” — an intense two-day training session featuring a combination of lectures, case discussions and skill stations.

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**BRAIN TUMOR CENTER RECEIVES FUNDRAISER DONATION**

In December 2018, the Cardillos family organized a local fundraiser that resulted in a nearly $7,000 donation to the Hermlin Brain Tumor Center.

The Cardillos family knows what it’s like to get a shocking diagnosis — twice. In 2014, Dominic Cardillo had a grand mal seizure, was diagnosed with a brain tumor and underwent a craniotomy at Henry Ford Hospital. A few years later, his wife Lisa experienced a sudden heart attack that left her in a coma for five days.

For years, the family has paid it forward by donating gifts to families battling similar conditions. During the 2018 holiday season, the Cardillos added a new element when they organized and hosted a fundraiser at a local pub owned by Dominic’s parents.

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**HOUR DETROIT AWARDS HENRY FORD NEUROSURGEONS**

In October 2018, Hour Detroit Magazine presented Henry Ford Health System with an Excellence in Care Award for treating brain tumor patient Tiffany Crowe with Modus™ and BrightMatter™ Plan and Guide.

When most teenagers were preparing for college, Tiffany Crowe was preparing for her first brain cancer surgery. Over the course of the next decade she underwent five operations, chemotherapy and radiation to keep the cancer at bay. Then it stubbornly returned, this time in an area of the brain that made surgery more perilous with the potential to leave her with permanent left-side extremity weakness. Drs. Ian Lee, Tobias Walbert and Steven N. Kalkanis used the BrightMatter system to identify the brain’s white matter tracts and remove the tumor without affecting her motor skills.

Henry Ford Hospital was the first in Michigan to offer BrightMatter, a robot-assisted brain surgery system, which helps surgeons preserve parts of the brain important for body movement, speech, strength and vision. It provides highly detailed images of the brain, as close as an actual red blood cell traveling through an artery. A high-powered digital microscope has a larger and deeper field of view, and more natural color. Diffusion tensor imaging (DTI), previously only available for research purposes, gives visuals of complex white matter tracts in the brain.

Today, Henry Ford neurosurgeons use advanced technology, in conjunction with precision medicine, to perform less invasive procedures with more accuracy: It also makes brain surgery safer, with fewer complications, less postoperative pain and shorter recovery time.

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**ASIA PROJECT EXPANDS TO REFER A PATIENT, GO TO **

Henry Ford also earned almost half of the total 2018 Hour Detroit “Top Doc” awards for the Neurosurgery category, the most in the department’s history. In addition, Dr. Rock and Dr. Kalkanis shared this year’s honor of the top vote-getters in neurosurgery.
A Grayling-area man is the first in Michigan with a complete deep brain stimulation (DBS) system surgically implanted for the treatment of epilepsy.

Neurosurgeon Jason Schwalb, M.D., with help from the team at the Henry Ford Comprehensive Epilepsy Center, implanted targeted electrodes in 32-year-old Steven Rennie’s brain on February 12, and a pacemaker-like device known as an internal pulse generator in his chest on February 28.

The electrodes are attached to the internal pulse generator, their power source, via thin extension cords below the skin. Together, these components make a complete DBS system—something that provides hope for Rennie, who has not seen a significant reduction in seizures from other therapies. Epilepsy treatments

Rennie’s journey with epilepsy began at age 24 when he experienced his first seizure while sleeping. His mother discovered him having a seizure on October 30, 2012—exactly one year to the day after his first.

Shortly afterward, he was diagnosed with epilepsy.

A LONG JOURNEY
In the time since his diagnosis, Rennie has experienced more than 200 seizures, sometimes up to eight in one day. While some are severe and debilitating, others are so mild that he isn’t aware he is having one.

“The seizures can be very hit-or-miss,” Rennie says. “I underwent surgery to place electrodes on my brain at Henry Ford Hospital so my doctors could monitor my brain activity when a seizure happened. For two weeks, I did not have a single seizure. I then had to go back to the operating room to have the electrodes removed. The day after I went home, I had one.”

For many epilepsy patients, medication or a Vagus Nerve Stimulator provides moderate relief, and it was clear that he needed a different option. Thanks to the FDA’s approval of anterior nucleus of the thalamus (ANT)-DBS for the treatment of localization-related epilepsy, and the expert team at the Henry Ford Comprehensive Epilepsy Center, Rennie now has a promising alternative.

“From the initial clinical trial that was done in the U.S., long-term results showed that 70 percent of patients had a greater than 50 percent reduction in how frequently they were having seizures,” Dr. Schwalb says. “We are optimistic that Mr. Rennie will see significant improvement from DBS. However, it may take a couple of years to determine exactly how effective DBS is for him.”

UNDERTREATMENT: A WIDESPREAD PROBLEM
The ideal treatment for localized-related epilepsy that does not respond to medication or Vagus Nerve Stimulation is resective surgery to remove the part of the brain causing the seizures. Unfortunately, this is an underutilized option. In Rennie’s case, tests have not been able to determine exactly where within the brain his seizures originate, ruling out the possibility of resective surgery.

“In the U.S., there are 100,000 patients every year who would benefit from epilepsy surgery, but there are only 4,500 epilepsy surgical procedures performed each year,” Dr. Schwalb says. “Less than five percent are getting the appropriate surgery. For a patient who has three grand mal seizures per year, the likelihood that the patient will die from epilepsy within a decade is 15 percent. That’s higher than some cancers.”

Anyone who has two or more seizures per year with altered levels of consciousness—not knowing what is going on, or not remembering what happened during the seizures—after two appropriately chosen medications at appropriate doses, should be considered for epilepsy surgery, Dr. Schwalb says.

If surgery is not an option, such as in Rennie’s case, treatments such as DBS may significantly improve symptoms and reduce the damage caused by seizures.

GROWING SKULL BASE CENTER OFFERS ADVANCED TREATMENT
In the last four years, we have formalized the Henry Ford Skull Base, Pituitary and Endoscopy Center. We treat all types of skull base conditions.

Our team also includes experts from ophthalmology, endocrinology, plastics, medical oncology, radiation oncology and interventional neuroradiology—providing multidisciplinary, coordinated care for patients who need it. Our surgical team offers special expertise in skull base reconstruction, which improves functional and cosmetic outcomes, and reduces the risk of postoperative cerebrospinal fluid leaks and infection.

In addition, each new tumor case is reviewed by our multidisciplinary Skull Base Tumor Board to determine the best treatment options for the patient, which may include surgery, tumor embolization or stereotactic radiation therapy. Our program also utilizes the most advanced minimally invasive endoscopic approaches and image-guided surgical navigation systems, including intraoperative MRI.

SKULL BASE AND INTRACRANIAL TUMORS
We offer diagnosis and treatment for all types of skull base and intracranial tumors, as well as related conditions, including:

- Acoustic neuroma (vestibular schwannoma)
- Adenoma
- Cerebrosal fluid leak
- Chordoma
- Chondrosarcoma
- Chordoma
- Cranopharyngioma
- Encaphalocele
- Fibrous dysplasia
- Giant cell tumor
- Hemangiopericytoma

- Meningioma
- Metastatic brain tumors
- Nasopharyngeal angiofibroma
- Neurofibroma
- Olfactory neuroblastoma (esthesioneuroblastoma)
- Osteoma
- Paranasal sinus cancer
- Petrous apex lesions
- Rathke’s cleft cyst
- Pharyngolaryngosarcoma

Led by Co-Director Jack Rock, M.D., FACS (Neurosurgery) and John Craig, M.D. (Otolaryngology) and Senior Staff Neurosurgeon Adam Robins, M.D., the center offers patients a guaranteed appointment with a neurosurgeon or otolaryngologist within 24 business hours.

EXPERT, MULTIDISCIPLINARY CARE
The Henry Ford skull base program is a multidisciplinary day of lectures about the complex management of patients with skull base pathology.

ANNUAL FALL SKULL BASE SURGERY LECTURE AND CAVERNA DISSECTION COURSE
This successful spring course invites outside speakers from across the country who help with the dissection lab.

RESEARCH
We collect all preoperative, intraoperative and postoperative data prospectively in an online database, and follow all of our patients for life.

PROGRAM HIGHLIGHTS
INCREASED VOLUME OF COMPLEX ENDOSCOPIC SKULL BASE SURGERIES
Excellent results with very low complication rates

DECREASED LENGTH OF HOSPITAL STAY
Since adopting endoscopic surgical approaches for skull base tumors

ANNUAL FALL SKULL BASE SURGERY SYMPOSIUM
A multidisciplinary day of lectures about the complex management of patients with skull base pathology

TO REFER A PATIENT, GO TO henryford.com/neuros or call (313) 916-1340

1,000 patient visits annually

200 new consultations each year

24 hours or less to guarantee to see skull base specialist, from time of initial consultation
STROKE CENTER OFFERS EXPERT CARE, DRIVES INNOVATION

Ischemic and hemorrhagic stroke patients referred to Henry Ford have access to the most advanced technology and specialized treatment available day or night, and a uniquely educated and highly trained team prepared to act at a moment’s notice.

LEADING ON NEUROENDOVASCULAR TREATMENT

The neuroendovascular surgery service, led by neurointerventional experts Max Kole, M.D., and Horia Marin, M.D., is one of the main drivers of our Comprehensive Stroke Center designation. The unique clinical and invasive nature of this subspecialty requires special training and skills. It is essential for neurosurgeons, neurologists and neuroradiologists to gain experience in this rapidly evolving field, which is why Henry Ford has been working to develop a new neuroendovascular fellowship.

NEUROENDOVASCULAR FELLOWSHIP

This fellowship has been approved by the Henry Ford Graduate Medical Education Committee (GMEC) and will be accredited by The Society of Neurological Surgeons (SNS) Committee on Accreditation of Subspecialty Training (CAST) and administered by the sponsoring Henry Ford Hospital Neurological Surgery Program. The goals and objectives will align with the CAST program and ACGME regulations. The fellowship will be one or two years depending on the prerequisite training of the entering fellow. Fellows will be selected from neurosurgical, neurological and neuroradiologic backgrounds as per the CAST common program guidelines. The core neuroendovascular surgery faculty are Dr. Kole, a fellowship-trained dual endovascular cerebrovascular neurosurgeon, Dr. Marin, a fellowship-trained interventional neuroradiologist, and Alex Chebl, M.D., a neurovascular/endovascular trained neurologist. Dr. Kole will serve as the program director and Drs. Marin and Chebl as associate program directors.

HENRY FORD HONORED WITH QUALITY AWARDS

The American Heart Association/American Stroke Association once again awarded our center a GET WITH THE GUIDELINES® STROKE GOLD PLUS QUALITY AWARD, indicating excellence in clinical volume, outcomes and quality metrics, as well as the TARGET: STROKE HONOR ROLL ELITE AWARD for exceeding time targets for stroke treatment.

2018 DETROIT STROKE CONFERENCE

In November 2018, the Henry Ford Neuroscience Institute hosted its 2nd Annual Detroit Stroke Conference, which focused on all aspects of stroke management. Several experts from Henry Ford shared advancements in diagnosing, treatment and post-stroke care to a crowd of about 300, using TED-style talks. The conference also featured four keynote presentations from other stroke leaders around the country:

- **CT ON WHEELS: MOBILE STROKE UNITS:** Andrii Alexandrov, M.D., University of Tennessee Health Science Center
- **COMPETENCE AND CONFIDENCE: ENSURING EXCELLENT STROKE NURSING CARE:** Anne Alexandrov, Ph.D., University of Tennessee Health Science Center
- **MINIMALLY INVASIVE SURGERY FOR INTRACRANIAL HEMORRHAGE:** Christopher Kellner, M.D., Mount Sinai Hospital
- **INNOVATIONS IN STROKE CARE:** Osama Zaidat, M.D., Mercy Health St. Vincent

Henry Ford Neuroendovascular Experts

MAX KOLE, M.D.  HORIA MARIN, M.D.  ALEX CHEBL, M.D.

**PROGRAM HIGHLIGHTS**

- **2,600** stroke patients in 2018
- **298** patients received thrombolytic therapy from 2017 to 2018
- **214%** increase in patients treated with endovascular stroke treatment from 2017 to 2018
- **84%** successful reperfusion after endovascular stroke treatment
- **35** active stroke studies

**GET WITH THE GUIDELINES® STROKE Gold Plus Award**

**2018 Detroit Stroke Conference**

**Modiﬁed Rankin Score**

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**HFH IV tPA Volume – All Patients**

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**HFH Endovascular Stroke Treatment Patient Volume**

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**CSTK-10 Modified Rankin Score**

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**HFH IV tPA Volume – All Patients**

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**Percent of Patients with Door to IV tPA © 45 Minutes**

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Opera singer Renée Fleming is passionate about the central importance of music and the arts in our society. Inspired by the Sound Health initiative she spearheads at the John F. Kennedy Center for Performing Arts in Washington, D.C., Fleming has created a presentation called "MUSIC AND THE MIND," which explores the power of music as it relates to health and the brain. Topics include childhood development, music therapy, and cognitive neuroscience.

As part of her presentations, Fleming invites experts around the country to present their research and discuss their experience in various related areas.

During her visit to Henry Ford, Jason Schwalb, M.D., co-director of the Functional Neurosurgery Program at Henry Ford, presented on medical care for chronic tinnitus, including the types and the potential effects of this debilitating condition on a person’s quality of life.
Introducing research methodology into the neurosurgical training program is a focus of the curriculum in the Henry Ford Department of Neurosurgery. The outcome of this strategy has facilitated a tremendous increase in the number of resident publications from the department, as well as regional and national awards for the research work and the residents themselves. Not only does this provide research design, implementation and documentation in the form of manuscript experience and increased knowledge and exposure to details of neurosurgical training to the trainees, it also opens new areas of research within the neurosurgical community at large.

Two Henry Ford residents, Dr. Lara Masrie (PGY-7) and Dr. Hesham Zakaria (PGY-6), have explored and provided groundbreaking research in the fields of anatomical variations in human anatomy that may predict the propensity for certain outcomes – desirable and undesirable – in patients presenting for neurosurgical treatments.

**BREAST SIZE AND SPINAL OUTCOMES**

Dr. Masrie’s area of interest is in the field of female breast size as an indicator of outcomes in spinal surgery. For plastic surgeons whose patients are seeking breast reduction, one of the key indicators for that surgery is spinal pain. According to Dr. Masrie and her co-investigators, “In female patients undergoing spine surgery, the impact of body habitus on outcome is an underappreciated factor and one that appears to influence patient satisfaction significantly.”

“In the setting of legitimate spinal pathology, female patients with macromastia are significantly less likely to reach a minimal clinically important difference in their disability than their peers, despite undergoing the same surgical procedures as those of patients with back pain without surgical spinal pathology may benefit from referral to physiatry or plastic surgery for consideration of reductive mammoplasty.”

“Simply asking patients to report their bra cup size on intake forms may be a reliable indicator of breast volume, making identification of those who may qualify for reductive mammoplasty (D cup and above) identifiable to spine surgeons without significantly adding to visit time or provider discomfort. These findings could be a point of discussion for any spine surgeon offering surgery to female patients.”

**PSONAS MUSCLE SIZE AND SPINAL CANCER**

Dr. Zakaria has looked extensively into the relationship between the size – usually reduced – of the psoas muscle around the spines of patients with various kinds of spinal cancer. This decreased size of the muscle tissue is referred to as “sarcopenia,” and has been explored in other areas of medicine, but not previously in spinal-related disease. In the era of precision medicine, there has been a concerted effort to establish predictors of outcomes in clinical patients, leading to the establishment of risk calculators, many of which are not applicable to neurological surgery. Currently, most neurosurgeons rely on intuition, or the “eyeball” test, where they look at patients to determine fitness for surgery. Dr. Zakaria and colleagues were interested in assessing whether they could identify a more objective way of determining patient likelihood for desired outcomes with surgery. Recent studies have shown that patient frailty (i.e., lack of resistance to physiologic stressors) is one of the key markers predicting lack of surgical success and is strongly associated with lack of muscle mass (i.e., sarcopenia).

In patients with spine metastases, Dr. Zakaria showed that sarcopenia of the key markers predicting lack of surgical success and is strongly associated with patient frailty (i.e., lack of resistance to physiologic stressors) is one of the key markers predicting lack of surgical success and is strongly associated with lack of muscle mass (i.e., sarcopenia).


Dr. Schwalb is the Surgical Director of the Movement Disorder and Comprehensive Epilepsy Centers at Henry Ford Health System and Clinical Professor of Neurosurgery at Wayne State University. He also holds an appointment as a Research Scientist in the Center for Health Policy and Health Services Research at Henry Ford.

Dr. Schwalb’s areas of interest include novel technologies in surgery for movement disorders and epilepsy, laser interstitial thermal therapy, robotic surgery, complex peripheral nerve surgery, normal pressure hydrocephalus, pain (including facial pain and cancer-related pain), racial and economic disparities, health care delivery, quality improvement and registry science. Some of his recent appointments, presentations and other accomplishments include:

- **VICE PRESIDENT OF MANS:** He was recently elected Vice President of the Michigan Association of Neurological Surgeons (MANS). Dr. Schwalb and other Henry Ford neurosurgeons – including Dr. Steven Kalkanis, Dr. Jack Rock and Dr. Ghaus Malik – have a long history of leadership at MANS.

- **PRESIDENT OF AANS/CNS JOINT SECTION ON PAIN:** In October 2017, Dr. Schwalb was elected President of the AANS/CNS Joint Section on Pain. He previously served as the section’s Vice President, a position he held since 2015. In March 2019, Dr. Schwalb presided over the Joint Section on Pain 2019 Biennial Meeting in Miami: **EXPANDING YOUR TOOLBOX: THE TREATMENT OF SPINE AND PERIPHERAL NERVE DISORDERS.** The event featured leaders in the field – including Dr. Ellen Air – who discussed cutting-edge pain technologies, novel surgical techniques and the science to support them.

- **AMA PAIN CARE TASK FORCE:** Dr. Schwalb also was recently appointed to serve as a member on the newly formed American Medical Association Pain Care Task Force, representing all of organized neurosurgery at the national level.

- **NATIONAL GUIDELINES:** Having participated in the formation of National Guidelines in the treatment of Normal Pressure Hydrocephalus (PMID: 26644048), occipital neuralgia (PMID: 26125672) and deep brain stimulation for Parkinson’s Disease (PMID: 29538685), Dr. Schwalb has been appointed Vice Chair of the Guidelines Committee of the American Society for Stereotactic and Functional Neurosurgery, where they are currently working on developing guidelines on best practices in epilepsy surgery. Through his role as President of the Joint Section on Pain, Dr. Schwalb is finalizing guidelines on neuroablative procedures for cancer pain and starting the process on guidelines for spinal cord stimulation, which will be led by Dr. Air.

- **CHAIR, FNSWG, PARKINSON STUDY GROUP:** Dr. Schwalb is the Chair of the Functional Neurosurgery Working Group (FNSWG) of the Parkinson Study Group (PSG), the first neurosurgeon to hold that position. The FNSWG has the largest membership of any working group of the PSG and has spearheaded the formation of the Registry for the Advancement of DBS in Parkinson’s Disease (RAD-PD), along with the NeuroPoint Alliance. This effort (rad-pd.org), supported by the Michael J. Fox Foundation, is a quality improvement patient registry in the United States and Canada, representing a new era of investigation into DBS therapy for Parkinson’s Disease. Henry Ford will be participating as a Tier 1 center and start contributing patients this year. Much of the development was based upon lessons learned from the Michigan Spine Surgery Improvement Collaborative (See related **MSSIC UPDATE** on p. 3), where Dr. Schwalb is a co-Director and Chair of the Publications Committee. He also serves on the Steering Committee and as Chair of the Publications Committee of RAD-PD.

**HASSENBUSCH AWARD:** At the 2019 Texas Association of Neurological Surgeons (TANS) annual meeting, Dr. Schwalb was the Hassenbusch lecturer, presenting a talk entitled **DEFINING AND IMPROVING QUALITY IN THE NEUROSURGICAL TREATMENT OF PAIN.**

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