

Bronson Methodist Hospital's Neurosurgery Team Builds a Comprehensive Minimally Invasive Surgery Program

A New Age of Neurosurgery

By Gretchen Johnson

In February, Alain Fabi, M.D., renowned for his expertise in such cutting-edge treatments as deep brain stimulation for Parkinson's disease and minimally invasive spine surgery, joined Bronson Methodist Hospital neurosurgeons Bratislav Velimirovic, M.D., Ph.D., and Daryl Warder, M.D., Ph.D. Dr. Fabi has been

practicing in southwest Michigan since 2000, most recently in Grand Rapids. He says he missed being part of an established team, and Bronson Methodist Hospital's commitment to quality and patient-centered care enables him to practice at a nationally recognized health care system.

Bronson Methodist Hospital neurosurgeons Alain Fabi, M.D.; Bratislav Velimirovic, M.D., Ph.D.; and Daryl Warder, M.D., Ph.D.



“Neurosurgery is a difficult branch of medicine, a labor-intensive one, and there are a lot of things going on. I joined two excellent surgeons with skills that complement my own,” Dr. Fabi says. “At Bronson, we have an award-winning health care system behind us, and we work with a broad range of specialists and ancillary service providers to support neurosurgery. It’s a great and exciting opportunity.”

Dr. Velimirovic has served as Medical Director of Neurosurgery since he joined Bronson Methodist Hospital in 2005. He is a fellowship-trained endovascular surgeon who specializes in spine surgery, neurointerventional and endovascular procedures. Dr. Velimirovic also currently serves as an assistant professor in neurosurgery at University of Illinois at Chicago. Dr. Warder is the Kalamazoo region’s only dual-fellowship-trained pediatric and adult neurosurgeon, with more than 13 years of neurosurgery experience. The Bronson Methodist Hospital neurosurgery team has established a reputation as leaders in meeting complex neurological challenges using a broad, collaborative network of experts.

“Team collaboration is an important component of the Bronson neurosciences program,” Dr. Velimirovic says. “We consult with some of the region’s top specialists right here at Bronson, including neurology, neuro critical care, epileptology, oncology, neuroradiology, physical therapy, chiropractic, physiatry, orthopaedics and rehab. For example, the full Bronson neurovascular team includes Kalamazoo’s only fellowship-trained neurointensivist, board-certified vascular neurologist for stroke patients and board-certified geriatric psychiatrist. Such unprecedented multispecialty cooperation translates into the best possible treatment plan for each individual patient.”



PHOTO BY ANTHONY DUGAL PHOTOGRAPHY

Pediatric neurosurgeon Dr. Daryl Warder examines a patient for a neurosurgical consultation.

A NEW AGE OF NEUROSURGERY

Dr. Warder believes Dr. Fabi will help usher in a new age of neurosurgery at Bronson Methodist Hospital, a change that has been building steadily.

“When you stand back and look at our capabilities, they are significant and may surprise people,” Dr. Warder says. “Each new surgical skill set — like the addition of Dr. Fabi — expands the broad range of specialty services that we can offer the region. Bronson’s focus on patient-centered care and its commitment to excellence have made our growth possible.”

Dr. Fabi joins the Bronson Methodist Hospital neurosurgery team at a time when the practice has just expanded into Battle Creek and Paw Paw in addition to Kalamazoo.

Neurointerventional Surgery: Collaboration Is the Key to Effective Treatment

One of the individuals who works closely with the neurosurgeons is Patrick Noonan, M.D., a neurointerventional surgeon — formerly called a neurointerventional radiologist — with Bronson Advanced Radiology Services. This relatively new, but growing, specialty uses minimally invasive image-guided procedures to diagnose and treat disorders of the blood vessels of the spine, neck and head. He works with Bronson Methodist Hospital’s neurosurgeons using microcatheters, stents, balloons and similar devices to diagnose and treat conditions such as aneurysms, vascular formations, clots and strokes.

“Bronson is an acute stroke center, and we offer all of the FDA-approved therapies and devices for treating stroke syndromes, including the Merci device, Penumbra device and the Wingspan stent,” Dr. Noonan says. “Early treatment is critical, but it requires excellent coordination from a team of specialists working together closely and quickly.”

Dr. Noonan is one of the principal investigators for a clinical trial that is investigating new treatment options for stroke. Bronson Methodist Hospital is one of 53 hospitals nationwide participating in MR Rescue, testing the efficacy of a device called the Merci Retrieval System; it is approved for removal of clots and foreign bodies in the vessels of the brain, but does not have an approval specifically for treatment of stroke.

“As part of the trial, advanced MRI techniques will help determine what types of acute strokes the device would be most effective in,” Dr. Noonan says.

Trauma is another area that requires collaboration for effective patient treatment. “As a Level 1 Trauma Center, often we receive difficult and challenging cases,” Dr. Noonan says. “Recently, we had a lady with a gunshot wound to the face from less than a 10-foot range. She suffered multiple pellet injuries. One of these pellets entered her vertebral artery and traveled to the top of the basilar artery that is in the center of the brain. I consulted with the neurosurgeons. Courses of action would have been major open surgery or removal from inside the vessel using a Merci Retrieval device. Each course would have incurred risks. Instead, we chose not to remove the pellet and I repaired the hole in the vertebral artery with a special stent to preserve blood flow to the brain. In this case, choosing not to perform surgery was the best course of action for the patient.”

Learn more about the collaborative efforts of Bronson Methodist Hospital’s neurointerventional surgeons and neurosurgeons at bronsonhealth.com/neurosurgery.

“Hospital systems around the country have pulled back rather than investing in neurosurgery. We’re very fortunate to have Bronson’s support, allowing us to create a program that we believe to be unmatched in the region,” says Dr. Fabi.

This program at Bronson Methodist Hospital has been recognized for the past two years by HealthGrades — the nation’s leading health care ratings company — with its Spine Surgery Excellence Award, receiving five out of five stars for back and neck surgery with spinal fusion. It is the only hospital in southwest Michigan to be so recognized. A 2008 independent consumer perception study supports HealthGrades’ high marks. The survey named Bronson Methodist Hospital the region’s preferred hospital for head injury and stroke, spine and back care and neurosurgery.

Moving ahead with the expanded team and a focus on clinical excellence, Bronson Methodist Hospital’s neurosurgery team’s goals include establishing a minimally invasive back and brain center, expanding pediatric neurosurgery and building a more comprehensive epilepsy program.

“The surgical expertise is already in place,” Dr. Fabi says. “But we’d like to develop more functional neurosurgery procedures, like deep brain stimulation, and expand the cerebrovascular surgery that Dr. Velimirovic is doing and the neurointerventional work being done by Dr. Patrick Noonan. We also happen to have the expertise of Kalamazoo’s only epileptologist. In a small number of cases where medication has not worked, we can use stereotactic navigation and electrodes to find those areas of hyperactivity where epileptic seizures occur. There is sound literature that suggests surgical resection of areas that have been deemed hyperactive shows very good promise.”

Compared to other specialties such as cardiovascular or orthopaedic surgery, minimally invasive brain procedures are relatively new, Dr. Fabi says. This is partly due to the complexities of the brain, for which research remains in its relative infancy. He adds, “Technology is a huge component of a good neurosurgery program, and advances

in technology — especially in recent years — have played a significant role in advancing minimally invasive techniques and expanding the scope of what can be done through minimally invasive approaches.”

One area that has benefited is neurovascular and neurospine disorders, an area of specialty for Dr. Velimirovic. Among the many new treatment options is percutaneous vertebral fusion. Vertebral fusion is often a last resort for patients with debilitating back pain. In this procedure, fluorographic navigation directs the surgeon to the appropriate access point, made through the skin. If necessary, decompression is done through an endoscope. The vertebrae are fused together using radiographic control to ensure the accuracy of the instrument placement and decompression.

“In the past, vertebral fusion required open surgery,” Dr. Velimirovic says. “By performing this procedure percutaneously, it dramatically reduces muscle and tissue impact, causes less bleeding, reduces postoperative pain, shortens hospital stays and can speed recovery time. And, patients have responded with positive feedback and satisfaction.”

Improvements in the endoscope contribute to these neurosurgical advancements. “The visualization is better than it’s ever been,” Dr. Fabi says. “We can do pituitary tumors with these endoscopes and literally go in through the nostrils of the nose rather than making bigger approaches through the lip, which takes more bone and means increased bleeding and risk.”

In some cases, technology has enabled procedures that were recognized but not possible. “In pediatric neurosurgery, some of the minimally invasive operations we’re doing were recognized 90 years ago,” says Dr. Warder. “There just wasn’t technology suitable then. As endoscopy and neuroendoscopy have blossomed, those same surgical procedures have re-emerged. The technology has caught up, and now we are able to perform them relatively safely.”

Dr. Warder cites endoscopic third ventriculostomy for hydrocephalus as an example. “That treatment has been around since 1910. But as you can imagine, microscopes, magnification and intraoperative lighting weren’t very good. The outcomes were terrible. That operation fell by the wayside only to be picked up several decades later.”

Dr. Warder says hydrocephalus accounts for some 50% of pediatric neurosurgeries. Since the 1960s, state-of-the-art treatment required shunts or other implantable devices. But they have their own associated challenges, including the risk of failure, which requires subsequent surgeries. “With an endoscopic third ventriculostomy, the patient doesn’t have a shunt, so the issues associated with the implanted device are eliminated.”

COLLABORATIVE TEAM APPROACH

Pediatric neurosurgery is an example of a subspecialty that benefits from the broad spectrum of services provided by Bronson Methodist Hospital, Dr. Warder says. “Pediatric neurosurgery requires a vast

Neurosurgeon Dr. Bratislav Velimirovic performs a minimally invasive percutaneous fusion surgery.





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Bronson Methodist Hospital neurosciences team: First row (l-r): Daryl Warder, M.D., Ph.D.; Dennis Jewett, M.D.; Anita Buitenwerf, N.P.; Kelly Ybema, M.D. Second row (l-r): Nadeem Mirza, M.D.; Kellie Sweet, D.O.; Alain Fabi, M.D.; Emily Yonker, PA-C. Third row (l-r): Lori Tatay, PA-C; Hisanori Hasegawa, M.D.; Jason Peterman, PA-C; Vie Saylor, PA-C; Jeff Fletcher, M.D. Fourth row (l-r): Rose Roth-Bowersock, R.N., CPNP, NNP; Daniel Fain, M.D.; Bratislav Velimirovic, M.D., Ph.D.; Dean Kindler, M.D., M.A.; Patrick Noonan, M.D.

Alain Y. Fabi, M.D., serves as Administrative Director of Neurosurgery at Bronson Methodist Hospital and is a board-certified neurosurgeon. He completed his residency in neurological surgery and an internship in general surgery at the Mayo Clinic. He received his medical degree from Wayne State University School of Medicine.

Bratislav Velimirovic, M.D., Ph.D., serves as Medical Director of Neurosurgery at Bronson Methodist Hospital. He received his medical degree from the University of Belgrade College of Medicine and a doctorate degree in pharmacology from the University of Illinois at Chicago. He completed his residency and internship in neurosurgery at McGaw Medical Center at Northwestern University. In addition to his full-time neurosurgery practice at Bronson Methodist Hospital, Dr. Velimirovic is participating in an endovascular surgery fellowship at the University of Illinois at Chicago, with an anticipated completion date later this year.

Daryl Warder, M.D., Ph.D., is a board-certified adult and pediatric neurosurgeon. He completed fellowships in both skull base neurosurgery and pediatric neurosurgery at Allegheny General Hospital in Pittsburgh and The Children's Hospital of Philadelphia, respectively. He completed his residency in neurosurgery at Duke University Medical Center in Durham, NC. Dr. Warder received his medical and doctorate degrees from the Johns Hopkins University School of Medicine in Baltimore.

Patrick Noonan, M.D., received his medical degree from Georgetown University of Medicine in Washington, DC; completed his residency in diagnostic radiology at the Naval Medical Center in San Diego, CA; and completed a fellowship in diagnostic neuroradiology and interventional neuroradiology at Massachusetts General Hospital, Boston, MA.

range of support, including pediatric ICU, neonatal ICU, pediatric intensivists, anesthesiologists — all of which are available here. The Children's Hospital at Bronson is the only hospital in southwest Michigan that provides inpatient pediatric care."

Bronson Methodist Hospital is also a Level 1 Trauma Center. This is especially important when treating stroke and brain aneurysms. "It's important for the medical community in the region to recognize the breadth and scope of services available here," Dr. Fabi says. "We also want to expand our collaboration to work more closely with the vast group of area experts who either refer patients or provide support services to our neurosciences program."

Dr. Velimirovic agrees. "We have a team approach where we look at everything and decide what's the best plan for this patient? It may be minimally invasive surgery. It may be open surgery. It may be no surgery."

Offering the best plan for each patient means continuing to broaden the range of subspecialty services as new treatment options and new procedures evolve, Dr. Fabi says. "There isn't a piece of neurological treatment that we can't offer. And it is only going to get better." ■

For more information, call Bronson Neurosurgery at (269) 341-7500 or visit bronsonhealth.com/neurosurgery.