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UR Medicine's Neurocritical Care Reduces Morbidity, Saves Lives

When Joey Dauphinat arrived at Strong Memorial Hospital, the young man in his 30s had suffered a hemorrhagic stroke and a ruptured aneurysm, rendering him unconscious and in critical condition. Neurosurgeon Tarun Bhalala, MD, PhD, performed surgery to secure the aneurysm and stopped the bleeding in Joey's brain, but this was only the beginning of the patient's challenges. Soon fluid built up in his lungs causing him to develop acute respiratory distress syndrome (ARDS). He needed intensive care—not only for his respiratory illness, but also for the beginning of his long recovery from the aneurysm and stroke.

As serious as his case was, Joey was lucky: Strong has a Neurointensive Care Unit, the only of its kind in the region, where doctors, nurses, therapists and technicians are trained in the care of patients who have undergone neurological injury. These staff members have the skills and knowledge to address all of the issues these patients face, whether their illness is confined to the brain or it affects other major organs throughout the body.

Joey received the supervision and treatment he needed to beat ARDS and begin the process of healing from his stroke and aneurysm. He moved from being an inpatient at Strong into rehabilitation, and continued his recovery at home with his family.

UR Medicine's Comprehensive Stroke Center provides the most advanced care for patients with many kinds of brain injury, long after surgical interventions are performed. In the neurointensive care unit, a team of neurointensivists—specialists who are fellowship-trained in neuromedicine—keep careful watch for signs that a patient is developing complications, worsening, or declining.



Christopher Zammit, MD

"We have patients with TBI (traumatic brain injury), ruptured brain aneurysms, brain hemorrhages, ischemic strokes, refractory seizures from status epilepticus, brain injury after cardiac arrest, and infections of the brain or spinal cord," said Christopher Zammit, M.D., Assistant Professor of Emergency Medicine and a fellowship-trained specialist in Neurocritical Care. "We are particularly skilled in caring for patients with hemorrhages from an aneurysm directly in the brain, or large strokes that were the result of blockage to the blood vessel."

Patients who receive the clot-busting drug, tPA, also spend at least 24 hours under observation in the Neuro-ICU, to be sure that additional bleeding in the brain does not occur.

Zammit, together with fellow colleague Debra Roberts, MD, PhD and their team, keep watch for life-threatening complications, such as brain swelling or continued bleeding after a hemorrhagic stroke. "For larger strokes or strokes due to bleeding, we are concerned with swelling, which can lead to further injury and decline," he said.

If swelling starts, quick action can save a patient's life. "When we see brain swelling occur, our neurosurgeons are available right away and perform a craniectomy," a procedure that involves removing a portion of the skull to allow the brain to expand, thus avoiding brain compression and death."



Neurointensive Care Unit Staff

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Specialists in All Aspects of Care

Care in the Neuro ICU is administered by specialists with a wide range of skills. Neurologists look for new or worsening symptoms, or evidence of a further disorder of the nervous system. Neurosurgeons are prepared to remove new blood clots, relieve pressure and swelling, and perform many other procedures as needed. Neurointensivists monitor symptoms and supervise the patient's medications and other therapies.



Debra Roberts, MD, PhD and Tarun Bhalla, MD, PhD, consulting on a Neuro-ICU patient

"Our neurointensivists have decades of experience," said Zammit. "It's helpful to have a team of people who are familiar with the details of a neurological exam, how to read an EEG, and how to read and interpret neuroimaging, as well as an elevated level of comfort with diagnostic tools. We are the only ICU in the region with fellowship-trained neurointensivists."

Neuro ICU nurses, therapists and technicians provide extensive knowledge and experience as well, maintaining a one-to-one ratio of nurses to patients. With most patients arriving on ventilators, the Neuro ICU requires dedicated respiratory therapists who can respond immediately when required. Nutritionists supervise patients who have gastric feeding tubes, to help them maintain strength during the healing process.

This comprehensive ICU care is only part of the picture for Zammit and his team, however. Emergent cases are often many miles away, where regional hospitals cannot provide the scope of options available at Strong. As an intensivist who trained first as an emergency care physician, Zammit can see the big picture—the connection between ER care when patients arrive and their needs post-procedure, when they come under his care in the Neuro ICU.

"I look at how can we work even more with our pre-hospital providers, both here locally and in the surrounding counties," he said. "Using our critical care transport team, we can accept patients from regional locations, while they are suffering a time-dependent process. At URMC, we can remove a blood clot from someone's brain, or address a subarachnoid hemorrhage or a traumatic injury. I am passionate about enhancing this systems-based care throughout the region, to minimize logistical barriers and give the patient the best chance for a good outcome. Zammit pursued his education and fellowship training in some of the most highly ranked hospitals in the country, but the standard of care and commitment to collaboration at Strong made him choose to practice medicine here.

"I've been places where there are some wonderfully talented people; wonderful mentors and role models," he said. "But bar none, this is the most collaborative institution I've ever been part of. The open-mindedness, the desire for constant communication between neurology, neurosurgery, internal medicine, and ER—here we find all the inches that can get us closer to optimizing anything possible for the patients we care for both in the Rochester community and in the greater region. It's inspiring and exciting."

