

Pushing the Boundaries of a Stroke

“Stepdown” Unit: Our Interdisciplinary Approach to Care

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Introduction

Morgantown, West Virginia is located along the Monongahela river about 75 miles south of Pittsburgh, Pennsylvania in North Central West Virginia, and is primarily known as the location for West Virginia University. Known as the mountain state, West Virginia is entirely located within the Appalachian Mountains providing it with a wide range of landscapes, from rolling hills, to mountains, winding rivers, and dense forests. West Virginia has a population of approximately 1.77 million people. Given the unique location of Ruby Memorial Hospital, patients from all over the state of West Virginia, as well as the surrounding states of Ohio, Maryland, Virginia and Pennsylvania travel to Morgantown for acute stroke care.

This article presents our highly specialized stepdown unit which provides care to neuroscience and acute stroke patients at Ruby Memorial Hospital in Morgantown, West Virginia USA.



Photo: Map of West Virginia and Surrounding States.¹ The red arrow points to the location of Morgantown, West Virginia, the location of the authors' specialized neuroscience/stroke stepdown unit. Patients are received from across the state of West Virginia, as well as Pennsylvania, Maryland, Virginia, and Ohio.

Our Hospital and Stroke Service

Ruby Memorial Hospital is the largest hospital in the West Virginia University Hospital Health System with 690 beds, and is the only Joint Commission certified comprehensive stroke center in West





Photo: West Virginia University Health System – Ruby Memorial Hospital Main Campus.²

Virginia since 2017. Approximately 1,200 total stroke patient admissions occurred at the hospital in 2024, including ischemic and hemorrhagic stroke, and transient ischemic attacks.

Our inpatient interdisciplinary stroke service is made up of a vascular neurologist, a stroke fellow, one ANVP-BC stroke nurse practitioner, a senior neurology resident and several junior residents, as well as a stroke coordinator. Our team also has a dedicated stroke pharmacist, which has improved patient satisfaction, education, and medication compliance after discharge. Having a pharmacist on the team enhances positive outcomes for our patients given a primary focus on medication management and drug interactions, and expertise in anticoagulation, antiplatelets, blood pressure lowering agents, and lipid management. As an academic hospital, there are also many rotating internal medicine residents, undergraduate nursing and nurse practitioner students, and medical students that join our team during service rotations.

Our stroke team resides in the center of our unit which consists of 23 neuroscience and

stroke unit beds, with an additional 6 epilepsy monitoring unit beds. Our unit is classified as a “stepdown” or intermediate-care unit, yet has capabilities that exceed what most hospitals would permit within the typical stepdown environment. The close proximity of our stroke team to both patients and nursing staff makes for easy communication and rapport building that highly benefits stroke patient and family care. We conduct nursing rounds in parallel with the stroke team at bedside with patients and their families. We also have specialized care managers in the unit that help with post-hospital discharge management and hospital throughput, with the goal of minimizing delays and readmissions. Given the diverse locations our patients originate from, we prioritize helping our patients to discharge with access to facilities close to their homes.

Our stroke team is also supported by specialized physical, occupational, and speech and language therapists that are able to be hands-on with our patients within the first 24 hours of admission. The early initiation of therapy services aids with rehabilitation, helps with fall prevention, and

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contributes to restoration of functional independence. Unfortunately, many of our patients lack medical insurance leading to long hospital stays and difficult discharge planning. In conjunction with our physical medicine and rehabilitation program, we recently implemented the option for patients to participate in the new *Mobile Intensive Rehabilitation Team* (MIRT) program. This new program allows patients to work with therapy services while in the hospital in a newly renovated therapy gym, similar to how they would during inpatient rehabilitation. Inpatient gyms are novel for most hospitals in the USA, although considered standard in most European stroke units. Similar to the 3-hour intensive therapy requirement of inpatient rehabilitation, MIRT program patients spend at least 3-hours a day, 5 days a week working with the different therapy services, with the goal being to rehabilitate patients enough to be discharged home since many lack insurance coverage for post-hospitalization rehabilitation services. We also work with uninsured patients to help them establish medical insurance coverage during their participation in the MIRT program.

Care Pathway and Patient Journey

A key stroke team goal is to keep patients in the same room with the same staff throughout their hospitalization, and to avoid transfers and trips off the unit. We collaborate with other services, such as cardiology, to ensure workups (e.g. cardiac monitoring, transthoracic echocardiograms [TTE]) are completed at patients' bedsides; this also

keeps our stroke nurses on the unit instead of causing them to transport and monitor patients in other areas of the hospital. By keeping patients on the unit and bringing services to them, our lengths of stay, discharge planning services, and patient satisfaction have benefitted from more rapid diagnostic workups.

Along with bedside TTE's, we have also implemented a bedside implantable loop recorder (ILR) insertion program for our cryptogenic stroke patients that have embolic strokes of uncertain source. In the setting of unknown etiology, many patients need long term cardiac monitoring to detect paroxysmal atrial fibrillation, and we have transitioned to placement of ILRs instead of using 14-day external cardiac rhythm monitors for the majority of our patients. Our stroke bedside nurses have all completed education and training to assist our electrophysiology nurse practitioners in placing ILRs, and the ILR company representative is then available to educate the patient and family members about the monitor at the patient's bedside.

Nursing Leadership

Our unit at Ruby Memorial Hospital is a highly specialized and distinguished neuroscience/stroke unit and our expert nursing staff are key to making it so. Our nurses provide around-the-clock care for critically ill and complex acute neurovascular patients and are highly skilled in managing external ventricular devices, IIRRA flow systems for irrigation, monitoring and drainage of intracranial pressure (ICP) systems, lumbar drains, post-thrombolytic

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care, post-endovascular interventions, mechanical ventilators, arterial lines, and post-craniotomy patient care. In addition, our nurses are proficient in titrating and administering medications often limited to critical care settings, such as those used for blood pressure control and arterial pressure perfusion augmentation with elevated ICP including nicardipine and amiodarone to name a few, as well as hypertonic fluids. Our unit leads in providing exceptional, comprehensive care for the most critical patient needs.



Photo: Nurse of Year Award Nominees from the stepdown neuroscience/stroke unit.

Acute stroke patients admitted to Ruby Memorial Hospital receive exceptional care from our highly experienced nurses, with expertise spanning from recent graduates to

professionals with over 30 years of service. Our nurses are deeply committed to continuous professional development, research, and the implementation of evidence-based practices. A total of 10 nurses have achieved the CNRN certification, while 4 hold the SCRNC credential. In recent years, several of our nurses have showcased their research at national conferences through posters and podium presentations focused on stroke and neuroscience nursing. Additionally, many of our nurses hold bachelor's degrees in nursing, underscoring our commitment to employing highly educated and skilled staff dedicated to advancing care in the neurosciences and stroke.

Conclusions

Ruby Memorial Hospital's stepdown neuroscience/stroke unit demonstrates that patients often admitted routinely to critical care units can successfully be managed on a specialized intermediate care inpatient hospital unit, when there is an investment in nursing education and training and stroke team specialists reside in close proximity. These patients and their families benefit greatly from continuity of care, staying in the same hospital bed throughout hospitalization and supported by highly specialized expert interdisciplinary providers.

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