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Diagnosis and Treatment of a Stroke Patient

The brain is supported by four major blood vessels that branch into a network of smaller blood vessels, each originating from the heart. Blockage of any of these vessels, called arteries, can result in an ischemic stroke, which accounts for about 90 percent of all strokes. A hemorrhagic stroke often involves similar

symptoms, but occurs when a blood vessel in the brain bursts, causing bleeding within the brain. In the United States, nearly 800,000 people suffer a stroke each year.

Following a stroke, diagnostic tests are performed as needed in order to determine the best treatment options. A computed tomography (CT) scan, which can provide information regarding the cause, location and severity of a brain injury, typically is the first test for patients with stroke symptoms. Computer tomographic angiography is another diagnostic test, which provides images of the blood vessels in order to identify major arterial blockages. Depending on the results of these tests, treatment following a stroke may include a blood thinner called tPA (tissue plasminogen activator) and/or a surgical procedure to remove clots from blocked arteries.

In part because of the complexity of the diagnostic tests and treatment options available for stroke, there are a variety of benefits to receiving stroke care from a physician who specializes in neurology. Neurology is a specialty that focuses on medical problems affecting the nervous system. Because their knowledge and experience is highly specialized, neurologists have a deep understanding of brain anatomy and function, including a wide variety of complex and potentially subtle symptoms associated with brain injuries and illnesses.

Treatment following a stroke is influenced by the type and severity of the stroke, as well as its location within the brain. In addition, other conditions with similar symptoms may need to be ruled out in order to diagnose a stroke. A neurologist is

uniquely equipped to understand the complexity of the brain in order to make these important determinations. Compared to less specialized physicians, neurologists also are able to stay more current with any new developments in stroke care. According to the American Academy of Neurology, stroke patients tend to experience lower morbidity rates and better functional outcomes when they are treated by a neurologist.

Because many medical specialists are located in larger metropolitan hospitals, it is less common for patients in community hospitals to be able to receive stroke care from a neurologist. However, Even F. Wang, M.D., who joined Licking Memorial Neurology in 2015, provides comprehensive stroke care throughout every stage of the process. He works quickly to determine the best treatment plan for each patient when they arrive in the Licking Memorial Hospital (LMH) Emergency Department, and he meets with patients at LMH daily until they begin rehabilitation. Because it is so important to receive immediate medical care following a stroke, Dr. Wang's ability to provide these services locally is a great benefit to the Licking County community. Dr. Wang currently is working toward building upon the Health Systems' stroke care practices in order to continuously improve efficiency and ensure that patients receive high-quality care as quickly as possible.

> Diagnosis and Treatment of a Stroke Patient (continued to inside)

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Diagnosis and Treatment of a Stroke Patient (continued from front)

Following the initial treatment of stroke, Dr. Wang typically continues to oversee the care of each patient. "Our main focus is to prevent or minimize any complications that might stem from a stroke, as well as to lower the risk of having another stroke," he explained. "We also aim to identify any undiagnosed medical conditions that may have contributed to the stroke, and prescribe medication or lifestyle changes to help manage those conditions." In addition, Dr. Wang works with patients to manage pain and stiffness caused by stroke, facilitate physical therapy and speech

therapy as needed, and address any adverse changes in mood, memory or concentration.

> Dr. Wang recommends that patients ask any questions they might have following a stroke. "It is particularly important for patients to understand whether any preventable factors may have played a role," he explained. If so, they can begin to work on managing those factors, for example,

by quitting smoking or exercising more regularly. "It also is crucial that patients understand how to recognize when strokerelated complications warrant a visit to the emergency room."

Dr. Wang received his Doctor of Medicine degree from St. George's University in St. George, Grenada. He completed an internal medicine internship, a neurology residency and a fellowship in neurophysiology and electromyography – all at The Ohio State University. He earned his undergraduate degree at Northwestern University in Evanston, Illinois.

Dr. Wang specializes in diagnosing and treating disorders of the nervous system, including disorders of the brain such as stroke, multiple sclerosis, headaches, memory loss, Parkinson's disease and tremors. He also addresses conditions of the spine, such as transverse myelitis and cervical stenosis, as well as peripheral and muscle disorders including neuropathy, ALS, myasthenia gravis and muscular dystrophies.

Health Tips - Headache Hygiene

Headaches are so common that nearly everyone suffers from the pain at some point. Although there are many causes and "triggers" for headaches, simple lifestyle changes may lessen their severity, or even prevent them, altogether. Known as "headache hygiene," poor headache hygiene can lead to increased headaches. Healthy headache habits can decrease and/or alleviate your head pain by following these recommendations:

- Avoid taking over-the-counter pain medications daily, as this may cause chronic headaches.
- Get plenty of sleep and maintain the same sleep schedule every night.
- Get regular aerobic exercise every day.
- Eat regular meals, including breakfast.
- Stay hydrated by drinking plenty of water: 64 oz./day.
- Avoid things that trigger your headaches (e.g., perfume, caffeine, tobacco smoke, or aged cheese).
- Reduce stress and practice yoga or meditation.

Individuals should make an appointment with their primary care physician if headaches are frequent or severe. If an individual notices a new headache different from their usual headaches, they should seek medical attention. Anyone who suffers a severe headache that comes on suddenly or after a head injury should seek emergency medical help, especially if other symptoms are present, such as blurry vision, numbness, slurred speech or difficulty in moving an arm or leg.

Stroke Care – How do we compare?

At Licking Memorial Health Systems (LMHS), we take pride in the care we provide. To monitor the quality of that care, we track specific quality measures and compare them to benchmark measures. Then, we publish them so you can draw your own conclusions regarding your healthcare choices.

Patients who suffer a stroke may be at risk for repeat strokes in the future. It is important that while patients are hospitalized, they receive education about reducing their risk and responding to another stroke in the future. This indicator shows the percentage of patients who had this education noted in their records as being completed.

Stroke education	LMH 2013	LMH 2014	LMH 2015	National ⁽¹⁾
	98%	98%	100%	94%

Beginning rehabilitation as soon as it can be done safely can help improve recovery for stroke patients. Rehabilitation may include physical therapy, occupational therapy and/or speech therapy.

Patients evaluated for rehabilitation services	LMH 2013 100%	LMH 2014 96%	LMH 2015 99%	National ⁽¹⁾ 98%	
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Ideal management of a patient who has suffered a stroke includes starting the patient on a blood-thinning medication (such as aspirin) while in the hospital. These medications also should be continued after the patient is sent home from the hospital. These medications can help prevent another stroke; however, in some cases, they may pose a higher risk for patients and should not be used. Stroke patients also are at higher risk for developing blood clots, also known as venous thromboembolism (VTE). To help prevent this from happening, stroke patients also should receive protective medications, known as prophylaxis, to reduce the potential of blood clot formation.

Eligible patients receiving	LMH 2013	LMH 2014	LMH 2015	National ⁽¹⁾
blood-thinning medication by day 2	97%	100%	98%	98%
Patients with blood-thinning medication at discharge	100%	98%	100%	99%



Patients with atrial fibrillation are at elevated risk for suffering strokes. Due to an inefficient heartbeat, blood clots can form in the heart and then travel to the brain, leading to stroke. These patients should receive long-term blood-thinning medication to help prevent clots from forming. LMH tracks the percentage of patients with atrial fibrillation who were discharged on a blood-thinner, as appropriate.

Another significant risk factor for stroke is high cholesterol. Stroke patients with high cholesterol should receive cholesterollowering medications (called statins) to take after discharge to help lower the risk for more strokes. LMH tracks the percentage of stroke patients with high cholesterol who were receiving statins at discharge.

Atrial fibrillation patients on	LMH 2013	LMH 2014	LMH 2015	National ⁽¹⁾
	100%	100%	100%	96%
anticoagulation therapy Patients with statin medication at discharge	97%	100%	99%	96%

Stroke Care - How do we compare? (continued on back)



Thrombolytic drugs, sometimes called "clot-busters" often are effective in treating strokes in progress, and may even reverse some of the neurological damage. However, thrombolytic drugs can have dangerous side effects. To lower the risk of complications, thrombolytic drugs can be given only to patients who have arrrived at the Emergency Department quickly enough to have the drugs initiated within three hours of their first symptoms of having a stroke.

	LMH 2013	LMH 2014	LMH 2015	National ⁽¹⁾
Eligible stroke patients who received timely thrombolytic drugs in the ED	77%	100%	86%	79%

Quick access to brain scan results is critical to physicians when treating a patient with a suspected stroke. Clot-buster medications can be administered, but only for a short period of time after the patient's stroke symptoms began, and the medications may not be given until a brain scan is completed. Quick completion of a brain scan upon the patient's arrival can reduce the amount of time elapsed before these important medicines can be given, which then increases the patient's chance for improved recovery from a stroke.

	LMH 2013	LMH 2014	LMH 2015	National ⁽¹⁾
Stroke patients in the Emergency Dept. with brain scan results within 45 minutes	65%	76%	46%	64%

Licking Memorial Health Professionals (LMHP) office-based physicians use evidence-based measures in order to provide excellent, quality care to patients. The American Stroke Association and American Heart Association recommend the use of blood-thinning medication in order to prevent clots from forming and to improve blood flow. It is also recommended to have an annual LDL cholesterol test.

LMHP coronary artery disease patients seen, and are receiving	LMHP 2013	LMHP 2014	LMHP 2015	National ⁽²⁾	Goal
	93%	92%	92%	greater than 80%	greater than 90%
blood-thinning medication LMHP coronary artery disease patients seen who have had an annual LDL test	92%	92%	90%	greater than 80%	greater than 90%

Data Footnotes: (1) Comparative data from www.hospitalcompare.hhs.gov. (2) American Heart Association/American Stroke Association/National Committee for Quality Assurance Heart/Stroke Recognition Program.



Visit us at www.LMHealth.org.

Please take a few minutes to read this month's report on **Stroke Care.** You'll soon discover why Licking Memorial Hospital is measurably different ... for your health!

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