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## Patient Strokes, Treatment and the Law: Issues to Consider

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Each year in the United States, there are more than 800,000 strokes, according to the National Institutes of Health. Every 40 seconds, someone in the United States has a stroke, and every four minutes someone dies of stroke, according to the Centers for Disease Control and Prevention. Yet, medical studies have found that about 9% of patients who presented to emergency departments with strokes were initially misdiagnosed or received a delayed diagnosis. In cases where patients presented with mild, nonspecific or transient neurological complaints, such as comorbid headaches and vertigo, a 2017 study found that misdiagnosis ranged from 24 to 60%.

Theories of liability in plaintiffs' stroke litigation include delayed diagnosis and treatment of acute strokes, failure to recognize and treat evolving aneurysms, and failure to educate anticoagulated patients about required monitoring. To be clear: Prompt diagnosis and treatment can mean the difference between recovery with little or no disability and

permanent brain damage, disability or death. As stroke cases are complex by nature and require in-depth medical and legal knowledge, including the ability to build a case with multiple highly specialized experts, we offer this overview of issues to consider when evaluating a potential stroke case.

### Types of Strokes and Treatment

Counsel should acquaint themselves with two types of strokes: thrombotic/ischemic strokes (from clotting) and (2) hemorrhagic strokes (from bleeding). Hemorrhagic strokes commonly are the result of aneurysms and/or improperly managed blood thinners.

For both types of strokes, the first hours following onset of symptoms are the most critical in terms of the treatments that are available and the likelihood of successful intervention before neurological deficits become irreversible.

### Thrombotic/Ischemic Strokes

Thrombotic/ischemic strokes occur when a blood clot develops in an artery that supplies blood to the



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brain, causing blood flow to the brain to become blocked.

The frontline treatment for thrombotic/ischemic strokes consists of thrombolytic agents (called tPA), which dissolve blood clots, and endovascular (catheter based) clot retrieval/removal. The retrieval/removal procedure involves inserting a catheter into a blood vessel in the groin and then navigating through the arteries to the brain, where the clot is removed with a variety of devices, including suction through a large catheter and/or with a stent retriever device that looks like a small wire cage.

## Hemorrhagic Strokes

Hemorrhagic strokes are characterized by bleeding into the brain. They are commonly caused by a ruptured cerebral aneurysm, which is an abnormal bulging or ballooning of an artery in the brain that can put pressure on surrounding nerves and brain tissue. Classic aneurysm symptoms begin with headaches, often referred to as sentinel events, followed by the “worst headache of my life” or “thunderclap headaches.” Tests to determine whether an aneurysm exists include: Computed Tomography (CT) scans, CT angiography, Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiography (MRA), Cerebral Angiography and Cerebrospinal Fluid (CSF) analysis. Surgical treatment options for an unruptured aneurysm, as set forth by the National Institute of Neurological Disorders and Stroke, include:

- **Microvascular clipping.** This involves open brain surgery where a doctor locates the blood vessels that feed the aneurysm and places a tiny, metal, clothespin-like clip on the aneurysm’s neck to stop its blood supply.

- **Platinum coil embolization.** A doctor inserts a catheter into an artery, usually in the groin, and threads it through the body to the brain aneurysm. Using a wire, the doctor passes detachable platinum wire coils through the catheter and releases them into the aneurysm. The coils block the aneurysm and reduce the flow of blood into it. The procedure may need to be performed

more than once during the patient’s lifetime because aneurysms treated with coiling can sometimes recur.

- **Flow diversion devices.** Other endovascular treatment options include placing a small stent, similar to those placed for heart blockages, in the artery to reduce blood flow into the aneurysm. A doctor inserts a catheter into an artery, usually in the groin, and threads it through the body to the artery on which the aneurysm is located. This procedure is used to treat very large aneurysms and those that cannot be treated with surgery or platinum coil embolization.

Improper management of anticoagulant medications can result in both hemorrhagic and thrombotic strokes if patients are over or under anti-coagulated. Often referred to as “blood thinners,” medications such as Coumadin, Xarelto, Eliquis or Plavix are commonly prescribed to patients with atrial fibrillation, prior strokes, artificial heart valves and other conditions. When doctors prescribe a blood thinner such as Coumadin, they must educate the patient about the need for frequent blood tests to monitor the clotting time with a test known as an INR (International Normalized Ratio) or PT (Prothrombin Time) to make sure the anti-coagulation is at a therapeutic level. Certain foods, supplements, herbs and other medications can affect clotting time, as can changes to the timing between doses of the anticoagulant.

Our firm has represented clients who suffered both types of strokes, thrombotic and hemorrhagic, as a

result of medical negligence and defective INR home monitoring equipment, resulting in substantial settlements. In one such case we filed a product liability lawsuit on behalf of a client who had been taking a blood thinner and relied upon a home test kit to monitor his anticoagulation status so that he could adjust his medication dosage accordingly. As a result of the erroneous readings provided by the defective home test kit, the client was unaware that his INR score was dangerously low, causing him to suffer an embolic cerebrovascular stroke resulting in neurologic injuries. In another case, a client was hospitalized for treatment of atrial fibrillation, for which his doctor prescribed Coumadin. He was discharged without instructions or information about required INR blood tests and suffered an intracranial hemorrhage, which his primary care physician failed to diagnose when the client presented with headache, light sensitivity, and nausea.

## Early Symptoms That Should Trigger Stroke Team Intervention

There is an acronym used by healthcare providers to identify early symptoms that should trigger stroke team intervention. The acronym—B.E.F.A.S.T.—also gives nod to the importance of early identification and treatment of stroke patients before neurological deficits become irreversible.

Patients who present with signs and symptoms consistent with acute stroke should be evaluated rapidly by a stroke team.

B – Balance: Dizzy/coordination/vertigo

E – Eyes: Visual changes/double vision/loss of vision

F – Face Drooping: Does one side of the face droop? Or is one side of the face numb?

A – Arm Weakness: Is one arm weak or numb?

S — Speech Difficulty: Is speech slurred? Is the person hard to understand?

T – Time: For early intervention by a skilled stroke team

## Standards of Care Unique to Stroke Centers

Pursuant to 35 P.S. Section 6944.3, the Pennsylvania Department of Health recognizes stroke care centers certified by the Joint Commission on Accreditation of Healthcare Organizations: Comprehensive Stroke Centers, Primary Stroke Centers and Acute-Stroke Ready Hospitals. The designation lasts as long as the hospital remains certified by the accreditation organization, unless the designation is suspended or revoked by the department. While the statute specifically identifies these three types of centers, the department also recognizes the Joint Commission's recognition of Thrombectomy-Capable Stroke Centers.

As set forth by the Joint Commission:

- Comprehensive Stroke Center (CSC) Certification is the most demanding certification and is designed for hospitals that have specific abilities to receive and treat the most complex stroke cases.

- Primary Stroke Center (PSC) Certification is designed for hospitals providing the critical elements to achieve long-term success in improving outcomes.

- Acute Stroke Ready Hospital (ASRH) Certification is for hospitals or emergency centers with a dedicated stroke-focused program.

- Thrombectomy-Capable Stroke Center (TSC) Certification is designed for hospitals providing endovascular procedures and post-procedural care.

While the standard of care will depend upon the facility's level of certification, and patients who require a higher level of treatment than a center can provide will need to be transferred, our firm handled one case where a patient was rendered a ventilator-dependent quadriplegic when diagnosis was missed and delayed for hours at a Primary Stroke Center, where key requirements for certification include: acute stroke team available 24/7 at bedside within 15 minutes, comprehensive diagnostic services including CT, MRI, labs 24/7, CTA and MRA, and neurosurgical services available within two hours.

### Required Experts

When building a medical malpractice stroke case, plaintiffs counsel must use multiple experts on a variety of matters, including standard of care, medical causation, future medical care, emotional distress and economic losses. While required experts will vary depending upon the specific circumstances of each case, experts generally include:

- Vascular neurologists, neurosurgeons and neurologists
- Neuroradiologists and radiologists
- Emergency medicine physicians
- Physicians specializing in physical medicine and rehabilitation
- Psychologists for forensic psychiatric evaluations
- Forensic economists

### Final Thoughts

Patients who survive delayed diagnosis and treatment of stroke often become prisoners in their own bodies, requiring around-the-clock care by health care workers and family members. They are unable to work and are dependent upon others for all of their daily needs. We emphasize that best practices in these complex cases demand a dedicated "stroke team" of attorneys with extensive medical and legal knowledge, and significant trial experience, who can work with nationally recognized stroke experts from leading stroke centers, to achieve the results that your client deserves.

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