

A Patient's Guide to Antithrombotic Therapy in Stroke

A. Treatment for Stroke

1. What is a stroke?

- ◆ Stroke is a very common disease that affects millions of people. It is the fourth leading cause of death in the United States and the leading reason why adults are unable to look after themselves.
- ◆ A stroke is an injury to the brain that occurs when blood flow to the brain is affected.
- ◆ In one kind of stroke, an artery is blocked and parts of the brain may become injured or die. This is called an "ischemic" stroke.
- ◆ A stroke can also be caused by bleeding into the brain. This is called a "hemorrhagic" stroke (see section C).
- ◆ Patients who have had strokes will develop certain neurologic symptoms related to what part of the brain is no longer functioning properly.
- ◆ Symptoms from a stroke include arm or leg weakness, difficulty speaking, and difficulty seeing.

2. How is an ischemic stroke treated?

- ◆ Strokes are caused by a blockage in an artery that supplies blood to a part of the brain, so a drug or a procedure can be used under some circumstances to reopen that artery and allow blood to flow to the brain again.
- ◆ Even if blood flow is restored, there still may be permanent injury to the brain, as well as ongoing neurologic-related symptoms.

3. What kind of early treatments can be used for stroke?

- ◆ Tissue plasminogen activator (tPA) is a drug that has been available for use in the United States for more than 15 years. It is sometimes referred to as a "clot busting" drug because it breaks down blood clots in arteries.
- ◆ tPA is delivered through the vein, intravenously, over the course of 1 hour. Typically, this drug is given in the emergency department of a hospital.
- ◆ The use of tPA is recommended for patients who have had a stroke for less than 4.5 hours. Beyond 4-1/2 hours, tPA is not beneficial and can be harmful.

4. What are the risks and benefits of tPA?

- ◆ Currently, tPA is the only approved drug for the treatment of a new ischemic stroke.
- ◆ There are strict rules that are used by doctors to decide who is or is not a good candidate for receiving this drug.
- ◆ Clinical trials have shown that between one-fourth and one-eighth of patients given tPA have an improved outcome.

- ◆ The sooner patients who have had strokes receive tPA, the more likely they are to benefit from the treatment.
- ◆ There is an increased risk of brain bleeding with tPA. As many as 6% of patients who have strokes could have significant bleeding into the brain after being treated with tPA.
- ◆ Despite the risk of bleeding, tPA has been shown to be helpful overall in improving outcomes in patients who have had ischemic strokes.

5. How important is aspirin for a new stroke?

- ◆ Aspirin is a drug that “thins” the blood by affecting platelets. Platelets are cells found in the blood that are important for allowing a blood clot to form.
- ◆ In most cases, it is recommended that patients start taking aspirin within 48 hours of an ischemic stroke. While the benefit is very small, studies have shown that aspirin does more good than harm when given to patients who have had an ischemic stroke.
- ◆ There are other blood thinners available called anticoagulants. Specific anticoagulants include warfarin (Coumadin) and heparin. Studies have not demonstrated a clear benefit of using these anticoagulant drugs in the early treatment of most patients who have had ischemic strokes.

6. What about other treatments for stroke?

- ◆ Some hospitals are able to treat patients who have had a stroke with procedures that involve passing small tubes (catheters) through the blood vessels up into the neck or head. This treatment, often called endovascular therapy, is performed by specialists only for carefully selected patients.
- ◆ These therapies may involve using drugs such as tPA, or even certain devices, to try to open up the blocked blood vessels.
- ◆ Endovascular therapy is a promising treatment for patients who have had a stroke, but this therapy is still being studied by researchers.
- ◆ Stroke treatment is an active area of research with many ongoing clinical trials to see if new and better approaches can be used for treatment.

B. Complications After a Patient Has a Stroke

1. What kinds of complications are likely in patients who have had a stroke?

- ◆ Patients who suffer from strokes may lose their ability to move around, talk, or even swallow safely. They are often hospitalized, which means the majority of the time they may be confined to a hospital bed.
- ◆ Patients who have had strokes may be at risk of developing pneumonia or other infections.
- ◆ They often are not moving around as much, so patients who have had strokes are at particular risk for developing blood clots in the veins of the legs and pelvis. Blood clots in the legs are often called deep vein thromboses (DVTs). Blood clots can travel to the lungs and cause a pulmonary embolus (PE). This can be life threatening.

2. What are effective approaches for preventing blood clots?

- ◆ Patients who have had strokes and have limited mobility are usually given a shot of a blood thinner at least one time per day to help keep blood clots from forming.
- ◆ Automatic devices that squeeze the legs from time to time may also be used to help prevent blood clots from forming in patients who are not able to move around well. These are called sequential or intermittent compression devices.

C. Bleeding in the Brain (Hemorrhagic Stroke)

1. What is a hemorrhagic stroke?

- ◆ A hemorrhagic stroke is caused by a break or split of a blood vessel within the brain. This causes bleeding into the brain tissue.
- ◆ This bleeding into the brain, sometimes referred to as a "hematoma," results in damage to that part of the brain and often to areas around it.
- ◆ Patients with this type of stroke will have neurologic symptoms depending on what part of the brain is injured.
- ◆ Patients who have high blood pressure have a higher risk for hemorrhagic stroke, but there are many possible causes of hemorrhagic stroke.

2. Are the same treatments used for hemorrhagic stroke as for ischemic stroke?

- ◆ Generally, patients with hemorrhagic stroke are treated differently than patients with ischemic stroke.
- ◆ Ischemic strokes are caused by a blood clot that has formed within an artery, while hemorrhagic strokes are caused by blood that has escaped from a blood vessel. A drug such as tPA would usually not be used in a patient with hemorrhagic stroke.

3. Are blood thinners used to prevent blood clots from forming in the legs of patients who have had a hemorrhagic stroke?

- ◆ As in ischemic stroke, patients with brain hemorrhages often have limited mobility and are mostly kept in bed during their initial hospitalization. For this reason, they are at risk for DVT and PE.
- ◆ After several days, it is generally safe to give patients with hemorrhagic stroke shots of blood thinners to help prevent blood clots from forming in their legs.
- ◆ Sequential or intermittent compression devices can also be used to prevent DVT and PE in patients with hemorrhagic stroke.

4. Are blood thinners used to prevent ischemic strokes in patients who survive brain hemorrhages?

- ◆ Patients who have had hemorrhagic strokes are at risk for additional brain hemorrhage, but they may also be at risk for a later ischemic stroke.
- ◆ In general, patients who have had a prior brain hemorrhage should avoid blood-thinning drugs.
- ◆ Certain patients, particularly those with a low risk of further brain hemorrhage but who have a high risk for ischemic stroke, may benefit from receiving a blood-thinning agent. A physician with expertise in this area can be helpful in the decision-making process.

D. Stroke Prevention

1. How can strokes be prevented?

- ◆ Not all strokes can be prevented.
- ◆ Decreasing stroke risk factors (eg, cigarette smoking, high blood pressure, high cholesterol levels, obesity, diabetes, a nonactive lifestyle) can be extremely effective in preventing stroke.
- ◆ Patients who have had an ischemic stroke not due to atrial fibrillation should usually be on a blood thinner to prevent future strokes.
- ◆ The specific types of blood thinners that are usually recommended are ones that affect platelets. Aspirin is the most common drug, but there are others such as clopidogrel and a combination of aspirin and extended-release dipyridamole.

2. What is atrial fibrillation?

- ◆ Atrial fibrillation is a relatively common heart condition that can happen as we age.
- ◆ The top chambers of the heart do not beat in the typical regular and smooth motion as they do in a patient without atrial fibrillation. Atrial fibrillation can lead to blood clots forming in the heart. These blood clots can leave the heart and travel through the arteries into other parts of the body or to the brain.
- ◆ When a blood clot travels from the heart to the brain, it is called an "embolism." This is an important cause of stroke.

3. How should stroke be prevented in patients with atrial fibrillation?

- ◆ Patients who have had an ischemic stroke due to atrial fibrillation should usually be on a blood thinner to prevent future strokes.
- ◆ The specific types of blood thinners that are usually recommended are called anticoagulants. Some of the anticoagulants used are warfarin and dabigatran. Additional newer drugs are being developed.
- ◆ Therapy with anticoagulants has been shown to be more effective than therapy with antiplatelet agents (mentioned above) for preventing strokes due to atrial fibrillation.



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