



# IRREGULAR HEARTBEAT AND STROKE PREVENTION

This information sheet is provided to help you understand how to manage stroke risk due to nonvalvular atrial fibrillation (NVAF).

The American Academy of Neurology (AAN) is the world's largest association of neurologists and neuroscience professionals. Neurologists are doctors who identify and treat diseases of the brain and nervous system. The AAN is dedicated to promoting the highest quality patient-centered neurologic care. Experts from the AAN carefully reviewed the available scientific studies on identifying and managing stroke risk in NVAF. The following information is based on evidence from those studies.\* It summarizes the main findings of the 2014 AAN guideline on stroke prevention in NVAF and updates the 1998 guideline on this topic.

To read the full 2014 guideline, visit [AAN.com/guidelines](http://AAN.com/guidelines).

Many people who have atrial fibrillation (AF) or NVAF are at a high risk of stroke. Drugs called anticoagulants reduce the risk of stroke. These are a type of blood thinner. This guideline looked at oral blood thinners, which are taken by mouth. Since the 1998 guideline, several new oral blood thinners have been developed and studied. People with AF should discuss these drugs with their health care providers. Blood thinners are highly effective but also carry a risk of bleeding. They should be used only under close medical supervision.

## What is AF?

AF is a heart rhythm disorder affecting the upper chambers of the heart. In AF, the heart does not beat at a steady, normal pace. It may beat too fast or too slow, or it may skip beats. This guideline is focused on NVAF, a type of AF that is not caused by abnormal heart valves.

Causes of AF include:

- Advancing age
- Stress
- High blood pressure
- Heart disease
- Sleep apnea (moments when breathing stops during sleep)
- Acute infection such as pneumonia
- Excessive use of alcohol or stimulants like caffeine
- Excessive thyroid hormone
- Heart damage caused by birth defects, blocked arteries, or heart attack
- Congestive heart failure

## How can I know if I have AF or if I am at risk of stroke?

Approximately 1 in 200 people worldwide have AF. It is more common in the elderly. Often people have no symptoms and thus do not realize they have the disorder. However, even without symptoms, a person with AF may be at risk of stroke. Strokes can cause brain damage. This may affect the ability to talk, move, and think. Strokes also can be life-threatening.

AF symptoms may include:

- Shortness of breath
- Feeling tired or weak
- Chest pain
- Drop in blood pressure
- Lightheadedness or confusion
- Pounding or fluttering feeling in the chest (palpitations)
- Pulse consistently above 100 beats per minute or below 60 beats per minute

## Identifying AF

A stroke without a known cause is called a cryptogenic stroke. Having a stroke of this type may be a sign of AF or NVAF. Doctors use certain devices called heart rhythm monitors to check for irregular heartbeat. They monitor the heartbeat for 24 hours or longer. Often these devices can be worn at home. Moderate evidence\* shows that prolonged heart monitoring can help identify NVAF.

## AF—A Stroke Risk Factor

AF is a major risk factor for cardioembolic stroke, a type of ischemic stroke. For people with NVAf, the uneven heart rhythm allows blood to remain in the heart's upper chambers. Blood that sits long enough can form clots. These then may escape the heart and travel to the brain. This leads to cardioembolic stroke. About 1 in 20 people with untreated AF will likely have an ischemic stroke in the next year.

## Other Stroke Risk Factors

Certain risk factors can further increase risk of stroke. Factors include:

- Chronic kidney disease
- Diabetes
- Hypertension (high blood pressure)
- History of blood clots
- Heart disease or congestive heart failure
- Being age 75 years or older
- Sleep apnea

## History of Stroke—The Highest Risk Factor

Stroke risk is highest for people who previously have had a stroke or transient ischemic attack (TIA). TIAs are episodes of temporary symptoms similar to stroke. People who have a TIA often suffer a more serious stroke in the future. About 1 in 10 people with untreated AF and a history of stroke or TIA will likely have a stroke in the next year.

## My doctor says I have NVAf. Are there ways to prevent having another stroke?

Treatments are available to help prevent another stroke in people with NVAf. Oral blood thinners are used to prevent clots from forming. This helps protect against stroke. However, blood thinners also can cause dangerous bleeding. An example is bleeding in the brain (intracranial bleeding). By preventing clots from forming, these drugs make it harder for bleeding to stop.

There are two types of blood thinners:

- Anticoagulants lengthen the time it takes for blood to clot naturally and slow growth of existing clots
- Antiplatelets prevent certain blood cells (platelets) from clumping together to form clots

There is strong evidence\* that blood thinners can help prevent another stroke in people with NVAf and a history of stroke or TIA. These blood thinners include the anticoagulants:

- Warfarin
- Dabigatran
- Rivaroxaban
- Apixaban

People who take warfarin must have their international normalized ratio (INR) blood levels tested often. INR levels show how quickly the blood forms clots. Warfarin has a target INR level considered safe. The doctor may need to adjust the drug dosage to maintain the right INR level. Dabigatran, rivaroxaban, and apixaban do not require INR monitoring.

For the newer anticoagulants, moderate evidence\* shows that:

- Dabigatran, rivaroxaban, and apixaban are at least as effective as, if not more effective than, warfarin for preventing strokes from blood clots
- When compared with warfarin, dabigatran, rivaroxaban, and apixaban have a lower risk of bleeding

Other drugs and combination therapies may be effective. These include:

- Triflusal plus moderate-intensity anticoagulant therapy with acenocoumarol. These are used in people with moderate risk of stroke, where new oral anticoagulants are not available (mostly in developing countries). This combination requires INR blood testing
- Clopidogrel plus aspirin if oral anticoagulants are not available or not preferred. Note that this combination is not as effective as anticoagulant therapy

## What about the risk of bleeding? Should I be worried?

For people with NVAf and a history of stroke, blood thinners likely lower the risk of having another stroke. However, these drugs may increase the risk of bleeding in the brain. Some people have a tendency to bleed or have a history of bleeding problems. For these people, special consideration is needed before taking a blood thinner. This includes people who:

- Are 75 years or older
- Have dementia
- Need dialysis
- Have a high risk of falling
- Have problems with drugs or alcohol
- Have a history of recent bleeding complications or bleeding in the brain
- Are scheduled for a medical procedure that involves cutting or inserting things into the body

Previously, some experts thought blood thinners were unsafe for some people described above. However, there is weak evidence\* that these drugs may be safe for:

- People aged 75 years or older
- People with mild dementia
- People at low to moderate risk for falls

Regardless of your situation, be sure to talk to your doctor about the benefits and risks of blood thinners. Risk of bleeding varies from person to person.

There is very weak evidence\* to show that people with NVAF and end-stage kidney disease benefit from blood thinners.

## This guideline was endorsed by the World Stroke Organization.

This statement is provided as an educational service of the American Academy of Neurology. It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.

\*After the experts review all of the published research studies, they describe the strength of the evidence supporting each recommendation:

*Strong evidence* = future studies are very unlikely to change the conclusion

*Moderate evidence* = future studies unlikely to change the conclusion

*Weak evidence* = future studies likely to change the conclusion

*Very weak evidence* = future studies very likely to change the conclusion

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