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The full report is titled “The Net Clinical Benefit of Warfarin Anticoagulation in Atrial Fibrillation.” It is in the 1 September 2009 issue of *Annals of Internal Medicine* (volume 151, pages 297-305). The authors are D.E. Singer, Y. Chang, M.C. Fang, L.H. Borowsky, N.K. Pomernacki, N. Udaltsova, and A.S. Go.

Net Benefit of Warfarin in Atrial Fibrillation

What is the problem and what is known about it so far?

Atrial fibrillation is a common heart condition in older persons. Knowing how the heart pumps blood is helpful in understanding atrial fibrillation. The heart has 4 chambers: 2 on the right side and 2 on the left side. The right side squeezes the blood through the lungs, and the left side squeezes it into the rest of the body. Most of the squeezing is done by the ventricles. The job of the atria is to squeeze the blood into the ventricles. Normally, the atria of the heart contract like an open hand making a fist. In atrial fibrillation, the atria do not contract. Because they don't contract, blood moves slowly through the atria and into the ventricle. Blood that moves slowly is more likely to form a clot. When pieces of clot break off, the heart pumps them into the body. If a piece of clot goes through the blood vessels to the brain, it will stick in the blood vessel and prevent further blood flow. When a part of the brain doesn't get blood, it dies, and the part of the body controlled by that part of the brain cannot work. This condition is called a *stroke*. Strokes can cause serious disability, making it impossible to walk or to talk.

When a person has atrial fibrillation, many doctors treat them with anticoagulants (blood thinners) to prevent clots from forming. Blood thinners prevent strokes, but they can also cause bleeding. Bleeding into the brain causes very severe strokes and bleeding around the surface of the brain (called *subdural hemorrhages*) can cause severe and often fatal problems as well. Strokes caused by bleeding and subdural hemorrhages are together known as *intracranial hemorrhages*. Judging whether blood thinners will prevent more strokes than the intracranial hemorrhages they cause is difficult.

Why did the researchers do this particular study?

To help doctors decide when using blood thinners would do more good than harm.

Who was studied?

13,559 adults with atrial fibrillation.

How was the study done?

The researchers determined when the patients were taking blood thinners (almost half were not) and measured the rate of strokes due to blood clots and strokes due to bleeding into the brain.

What did the researchers find?

Taking blood thinners did more good than harm in older persons (those older than 74 years and especially those older than 84 years), persons with a history of a stroke, and persons with the highest risk for stroke. Overall, the benefits of receiving blood thinners increased with older age and larger risk for stroke, whereas the harms of treatment did not vary with age and risk for stroke.

What were the limitations of the study?

The effects of treatment were probably due to blood thinners, but it is possible (although unlikely) that something else was responsible for the changes in stroke rates.

What are the implications of the study?

Patients with atrial fibrillation should talk to their doctor about whether to take blood thinners. In general, older persons and persons at the highest risk for stroke gain the most from taking blood thinners. Blood thinners may not have an advantage in most patients with atrial fibrillation who are younger than 65 years.

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