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The full report is titled “Cost-Effectiveness of Rhythm versus Rate Control in Atrial Fibrillation.” It is in the 2 November 2004 issue of *Annals of Internal Medicine* (volume 141, pages 653-661). The authors are D.A. Marshall, A.R. Levy, H. Vidaill, E. Fenwick, A. Slee, G. Blackhouse, H.L. Greene, D.G. Wyse, G. Nichol, B.J. O’Brien, and the AFFIRM and CORE Investigators.

### Cost-Effectiveness of Rate Control vs. Rhythm Control for Patients with Atrial Fibrillation

**What is the problem and what is known about it so far?**
Atrial fibrillation is a common abnormal heart rhythm. In patients with atrial fibrillation, the upper heart chambers (atria) do not contract (fibrillation) because they are paralyzed by continuous electrical activity. However, the continuous electrical activity tries to pass to the lower heart chambers (ventricles). Fortunately, only some of this electrical activity is allowed to pass. However, the heartbeat becomes rapid and irregular, often leading to less efficient pumping of blood and symptoms. Sometimes atrial fibrillation is of unknown cause, but it is often associated with underlying heart conditions, high blood pressure, overactive thyroid, or too much alcohol. Some people with atrial fibrillation have no symptoms, while others have a fluttering sensation in the chest, lightheadedness, shortness of breath, or chest pain. A dangerous complication of atrial fibrillation is stroke. Stroke occurs because blood clots form in the paralyzed atria and can travel to the brain. Blood thinners (anticoagulation) can prevent stroke in patients with atrial fibrillation. Other treatments include medications to slow the heartbeat (rate control) or to convert it to normal rhythm (cardioversion). Doctors can use medications (medical cardioversion) or electricity (electrical cardioversion) to change atrial fibrillation to normal rhythm. Studies showed that medications to slow the heartbeat and thin the blood are the best treatment for most patients with atrial fibrillation. Because studies show that rhythm control and rate control are similarly effective, economic factors will play a role in the selection of treatment.

**Why did the researchers do this particular study?**
To determine whether rate control or rhythm control for atrial fibrillation made the most sense from an economic perspective.

**Who was studied?**
The researchers studied a large group (4060) of actual patients and then used computers to simulate what would happen to an even larger group of “virtual” patients age 65 years and older with atrial fibrillation.

**How was the study done?**
The researchers used published information to estimate what might happen (and how much it would cost) if doctors treated patients with medications to control rate or with medications to control rhythm. They put these estimates into the computer model and calculated how much each strategy would cost per year of life that it saved.

**What did the researchers find?**
The computer model estimated that cost savings associated with using rate control rather than rhythm control ranged from $2189 to $5481 per person.

**What were the limitations of the study?**
The authors used data from a study called AFFIRM (Atrial Fibrillation Follow-up Investigations of Rhythm Management) to estimate what would happen to patients who received each type of treatment. The results might be different for patients who are younger than or differ in other ways from the patients in the AFFIRM study.

**What are the implications of the study?**
Rate control seems to be both an effective and less costly treatment option for patients with atrial fibrillation.