

ECONOMICS

Rate control was more cost-effective than rhythm control in persistent atrial fibrillation

Hagens VE, Vermeulen KM, TenVergert EM, et al. Rate control is more cost-effective than rhythm control for patients with persistent atrial fibrillation—results from the RAte Control versus Electrical cardioversion (RACE) study. *Eur Heart J*. 2004;25:1542-9.

QUESTION

In patients with persistent atrial fibrillation, is rate control more cost-effective than rhythm control for reducing cardiovascular morbidity and mortality?

METHODS

Design: Cost-effectiveness analysis (from a societal perspective) of a randomized controlled trial (RAte Control versus Electrical cardioversion [RACE]).

Allocation: Concealed.*

Blinding: Blinded (outcome assessors and monitoring committee).*

Follow-up period: Mean 2.3 years.

Setting: 31 centers in the Netherlands.

Patients: 522 patients who had recurrent persistent atrial fibrillation or flutter, 1 to 2 electrical cardioversions during the previous 2 years, and no contraindications to oral anticoagulation. Exclusion criteria were arrhythmia lasting > 1 year, New York Heart Association class IV heart failure, current or previous treatment with amiodarone, or use of a pacemaker.

Intervention: Rate control (*n* = 256) or rhythm control (*n* = 266). Rate control included use of digitalis, a nondihydropyridine calcium-channel blocker, and a β -blocker, alone or in combination. Target resting heart rate was < 100 beats/min. Patients in the rhythm control group received serial elec-

trical cardioversion and serial antiarrhythmic drugs using sotalolol, 160 to 320 mg/d, as the first choice, followed by class IC antiarrhythmic drugs, with amiodarone used as the last choice.

Outcomes: Incremental cost savings per avoided composite endpoint of death from cardiovascular causes, heart failure, thromboembolic complications, bleeding, need for pacemaker implantation, or severe effects of antiarrhythmic drugs. Costs of care (including cardioversions, medications, outpatient visits, hospital admissions, general practitioner visits, thrombosis laboratory, professional help, informal care, and travel costs) (discounted at a rate of 4%) were estimated in euros at 2000 rates.

Patient follow-up: 82% of patients (mean age 69 y, 63% men) were included in the intention-to-treat cost-effectiveness analysis.

MAIN RESULTS

The groups did not differ for the composite endpoint; however, rate control was more cost-effective than rhythm control (Table).

CONCLUSION

In patients with persistent atrial fibrillation, rate control was more cost-effective than rhythm control for reducing cardiovascular morbidity and mortality.

Sources of funding: Center for Health Care Insurance; Interuniversity Cardiology Institute; 3M Pharma.

For correspondence: Dr. I.C. Van Gelder, University Hospital Groningen, Groningen, The Netherlands. E-mail i.c.van.gelder@thorax.azg.nl. ■

*See Glossary.

Rate control vs rhythm control in persistent atrial fibrillation at mean 2.3 years†

Outcomes	Rate control	Rhythm control	Difference (95% CI)
Composite endpoint	17.5%	21.2%	-3.7% (-11.2 to 3.9)‡
Cost-effectiveness ratio			
Mean cost per patient	€7386	€8284	€24 944

†Composite endpoint = death from cardiovascular causes, heart failure, thromboembolic complications, bleeding, need for pacemaker implantation, or severe effects of antiarrhythmic drugs. CI defined in Glossary.

‡Difference not significant.

COMMENTARY

The RACE trial by Hagens and colleagues did not identify a strategy-dependent difference in efficacy outcomes between patients randomized to receive efforts to maintain sinus rhythm or continue with rate control. This negative result was also seen in the 4000-patient Atrial Fibrillation Follow-Up Investigation of Rhythm Management (AFFIRM) Study (1). In RACE, 36% of patients in the rhythm-control group were in sinus rhythm by the time the study ended compared with 9% in the rate-control group. Given the neutral intention-to-treat differences for mortality and health-related quality of life (QOL) (2), the well-done study by Hagens and colleagues assessed costs in a “straight-up” comparison without the need to adjust costs per QOL improvement. As seen in a similar AFFIRM analysis (3), the rhythm-control strategy was more expensive. Furthermore, the costs did not differ when data were analyzed by efficacy (i.e., who is, or is not, in sinus rhythm) as opposed to a strict intention-to-treat analysis. In an efficacy analysis, however, a weighted QOL approach may be needed because both the RACE (2) and AFFIRM (1) trials have shown a QOL benefit associated with achieving sinus rhythm in their respective efficacy analyses.

For the older RACE and AFFIRM types of patients, no clear QOL, mortality, and now cost-based reason exists to support a strategy aimed at maintaining sinus rhythm.

*David Newman, MD
University of Toronto
Toronto, Ontario, Canada*

References

1. Corley SD, Epstein AE, DiMarco JP, et al. Relationships between sinus rhythm, treatment, and survival in the Atrial Fibrillation Follow-Up Investigation of Rhythm Management (AFFIRM) Study. *Circulation*. 2004;109:1509-13.
2. Hagens VE, Ranchor AV, Van Sonderen E, et al. Effect of rate or rhythm control on quality of life in persistent atrial fibrillation. Results from the Rate Control Versus Electrical Cardioversion (RACE) Study. *J Am Coll Cardiol*. 2004;43:241-7.
3. Marshall DA, Levy AR, Vidaillet H, et al. Cost-effectiveness of rhythm versus rate control in atrial fibrillation. *Ann Intern Med*. 2004;141:653-61.