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RATE OR RHYTHM CONTROL FOR RECURRENT ATRIAL FIBRILLATION

A summary of best available
evidence and information on
current clinical practice

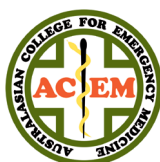
Emergency Care
Evidence in Practice Series 2008

National Institute of Clinical Studies
Emergency Care
Community of Practice

About this brochure

This brochure was developed for clinicians by the NHMRC's National Institute of Clinical Studies Emergency Care Community of Practice. It aims to highlight best available evidence to inform best practice and identify potential opportunities to improve the quality of care. The content of this brochure is based on published information available at March 2007. For information on how we developed the content of this brochure, see www.nhmrc.gov.au/nics and follow the links to Emergency Care Community of Practice.

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Why this is important

Atrial fibrillation (AF) is a common condition^(1,2) that accounts for 1 to 4 per cent of adult emergency department presentations. It is one of the top 50 reasons for presentation to emergency departments in Australia.⁽³⁾ Of those people with AF treated in emergency departments around 65 per cent have persistent or permanent AF, most of whom are in older age groups (>65 years).⁽⁴⁾ In general practice, up to 4 per cent of patients older than 30 years have past or present AF.⁽⁵⁾

Treatment of AF aims to reduce the risk of potentially severe complications including systemic thromboembolism, and possible stroke and death. Treatment is also important to relieve symptoms such as palpitations, shortness of breath, chest pain, poor exercise tolerance, fatigue and light-headedness, and to improve quality of life.

A rate control strategy is acceptable as initial therapy for older people with atrial fibrillation at risk of recurrence, rather than routine use of electrical or pharmacological rhythm control. (Level I evidence)

In addition to anticoagulant therapy, there are two main treatment strategies for AF: rhythm control and rate control. **Rhythm control** aims to revert AF to normal sinus rhythm using electrical direct-current defibrillation, anti-arrhythmic drugs, or a combination of both. **Rate control** focuses on controlling the ventricular rate while leaving the heart in AF rhythm by using rate-slowing medication.

Both strategies have limitations. Rate control medications carry some risk of excessive slowing of heart rate. Not all attempts at attaining rhythm control are successful, and drugs to control rhythm may precipitate new or more frequent arrhythmias.⁽⁶⁾

Between 2000 and 2003, a number of trials were published comparing outcomes of these treatment strategies.⁽⁷⁻¹¹⁾ The results challenged theoretical assumptions about the advantages of rhythm control,⁽¹²⁾ and led to updates of AF clinical practice guidelines.^(6,13,14)

Best available evidence

A Cochrane systematic review of these trials comparing pharmacological rhythm control and rate control⁽¹⁵⁾ found no difference in mortality or quality of life. However, it identified that people treated with rhythm control were more likely to require hospitalisation and to suffer adverse events.

A second Cochrane review comparing electrical rhythm control and rate control⁽¹⁶⁾ also found no difference in mortality, but a trend towards higher stroke rate in the rhythm control treatment group. Strokes that occurred in the trials were mostly in people who had stopped or were receiving sub-therapeutic, anticoagulant therapy. Some measures of quality of life were, however, better for those in this rhythm control group. The review's conclusion recommends against routine use of electrical cardioversion for all people with AF.

Another systematic review that combined the results of electrical and pharmacological trials found no significant difference between rate and rhythm control in all-cause mortality.⁽¹⁷⁾

Studies in these reviews included people with persistent AF or at high risk of recurrent AF who were within an average age range of 61 to 70 years.

1. Stewart S, Hart CL, et al. Population prevalence, incidence, and predictors of atrial fibrillation in the Renfrew/Paisley study. *Heart*. 2001;86(5):516-21.
2. Kannel WB, Wolf PA, et al. Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: population-based estimates. *Am J Cardiol*. 1998;82(8A):2N-9N.
3. Emergency Demand Coordination Group. Hospital Admission Risk Program (HARP) Background Paper. Melbourne: Victorian Government Dept. of Human Services; 2002.
4. Laguna P, Martin A, et al. Risk factors for stroke and thromboprophylaxis in atrial fibrillation: what happens in daily clinical practice? The GEFAUR-1 study. *Ann Emerg Med*. 2004;44(1):3-11.
5. Sturm JW, Davis SM, et al. The Avoid Stroke as Soon as Possible (ASAP) general practice stroke audit. *Med J Aust*. 2002;176(7):312-6.
6. Fuster V, Ryden LE, et al. ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation. *Circulation*. 2006;114(7):e257-354.
7. Wyse DG, Waldo AL, et al. A comparison of rate control and rhythm control in patients with atrial fibrillation. *N Engl J Med*. 2002;347(23):1825-33.
8. Carlsson J, Miketic S, et al. Randomized trial of rate-control versus rhythm-control in persistent atrial fibrillation: the Strategies of Treatment of Atrial Fibrillation (STAF) study. *J Am Coll Cardiol*. 2003;41(10):1690-6.
9. Hohnloser SH, Kuck KH, et al. Rhythm or rate control in atrial fibrillation – Pharmacological Intervention in Atrial Fibrillation (PIAF): a randomised trial. *Lancet*. 2000;356(9244):1789-94.
10. Opolski G, Torbicki A, et al. Rate control vs rhythm control in patients with nonvalvular persistent atrial fibrillation: the results of the Polish How to Treat Chronic Atrial Fibrillation (HOT CAFE) Study. *Chest*. 2004;126(2):476-86.
11. Van Gelder IC, Hagens VE, et al. A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation. *N Engl J Med*. 2002;347(23):1834-40.
12. Kilborn MJ. Managing atrial fibrillation – redrawing a line in the sand. *Med J Aust*. 2003;178(10):480-1.
13. National Collaborating Centre for Chronic Conditions. Atrial Fibrillation: National clinical guideline for management in primary and secondary care. London: Royal College of Physicians; 2006. Available from: www.nice.org.uk/CG036 (full guideline).
14. New Zealand Guideline Group. Evidence-based best practice guideline: The management of people with atrial fibrillation and flutter. Wellington: New Zealand Guidelines Group; 2005. Available from: www.nzgg.org.nz

These three reviews' conclusions suggest that rate control is an acceptable primary strategy for this patient group.^(15,16) The reviews also draw attention to the importance of appropriate anticoagulation therapy, regardless of the strategy used.

There is little evidence available comparing rate and rhythm control for patient groups not well represented in these trials. These include people with new onset AF, aged under 65 years, at low risk of AF recurrence, and with severe heart failure or myocardial infarction.

Table 1 summarises the recommendations from the guideline commissioned by the National Institute for Health and Clinical Excellence in the United Kingdom, based on the available evidence and consensus, for choosing between rate and rhythm control for people with persistent AF.

Table 1. Indications for rate or rhythm control in persistent AF

Adapted from *Atrial Fibrillation. National clinical guideline for management in primary and secondary care*⁽¹³⁾

Rate-control strategy Preferred initial option for:	Rhythm-control strategy Preferred initial option for:
• older people (>65)	• younger people (<65)
• people with coronary artery disease	• people with unacceptable arrhythmia-related symptoms
• people with contraindications to anti-arrhythmic drugs	• people presenting for the first time with lone AF
• those unsuitable for cardioversion	• AF secondary to a treated/corrected precipitant
• people without congestive heart failure	• people with congestive heart failure

Current practice

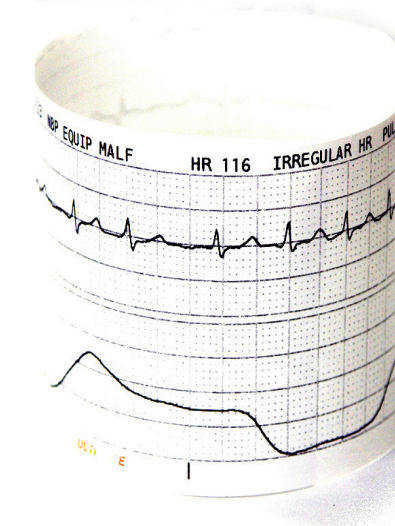
Patterns of practice in AF management have changed considerably over time as concerns over the side effects of treatments have emerged and new drugs have become available.^(18,19) While many studies have examined anticoagulant use for AF,^(4,20,21) there are relatively few studies examining the choice of rate or rhythm strategy in practice.

In non-emergency settings, an American study of office-based practice in the 10 years before release of the rate versus rhythm control trials identified a trend of decreasing use of rate control medications.⁽²²⁾ A European study of cardiologist practice in 2003-04 found that a rhythm control strategy was applied in many cases where rate control was likely to have been sufficient.⁽²⁰⁾

European studies of emergency department AF care have identified variation in choice of agents and preferred treatment protocols, both within⁽²³⁾ and between different countries.^(24,25) However, these studies do not provide sufficient information to compare care delivered with current recommendations in rate and rhythm control. There is limited information available about Australian emergency care practice for choice of rate or rhythm control for recurrent or chronic AF.

Implications for practice

- Rate control is a suitable strategy for the majority of older people with atrial fibrillation who are at risk of recurrence.⁽¹⁴⁾ (Level I evidence)
- Appropriate ongoing anticoagulant therapy should be used, regardless of whether a rate control or rhythm control strategy is adopted.⁽¹³⁻¹⁵⁾



15. Cordina J, Mead G. Pharmacological cardioversion for atrial fibrillation and flutter. *Cochrane Database Syst Rev.* 2005;(2):CD003713.

16. Mead GE, Elder AT, et al. Electrical cardioversion for atrial fibrillation and flutter. *Cochrane Database Syst Rev.* 2002;(1):CD002903.

17. de Denus S, Sanoski CA, et al. Rate vs rhythm control in patients with atrial fibrillation: a meta-analysis. *Arch Intern Med.* 2005;165(3):258-62.

18. Wyse DG, Simpson CS. Rate control versus rhythm control – Decision making. *Can J Cardiol.* 2005;21 Suppl B:15B-8B.

19. Stafford RS, Robson DC, et al. Rate control and sinus rhythm maintenance in atrial fibrillation: national trends in medication use, 1980-1996. *Arch Intern Med.* 1998;158(19):2144-8.

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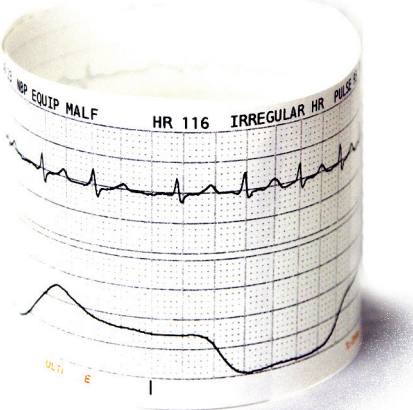
21. Kelly AM, Kerr D, et al. Prevention of stroke in chronic and recurrent atrial fibrillation: role of the emergency department in identification of "at-risk" patients. *Aust Health Rev.* 2001;24(3):61-5.

22. Fang MC, Stafford RS, et al. National trends in antiarrhythmic and antithrombotic medication use in atrial fibrillation. *Arch Intern Med.* 2004;164(1):55-60.

23. Williams E, Ansari M, et al. Managing atrial fibrillation in the Accident and Emergency department. *QJM.* 2001;94(11):609-14.

24. Kyhala-Valtonen H, Lehto M, et al. Quality of emergency room care for atrial fibrillation. *Scand Cardiovasc J.* 2006;40(5):267-73.

25. del Arco C, Martin A, et al. Analysis of current management of atrial fibrillation in the acute setting: GEFAUR-1 study. *Ann Emerg Med.* 2005;46(5):424-30.



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Levels of evidence

- I Evidence obtained from a systematic review of all relevant randomised controlled trials
- II Evidence obtained from at least one properly-designed randomised controlled trial
- III-1 Evidence obtained from well-designed pseudorandomised controlled trials
- III-2 Evidence obtained from comparative studies
- III-3 Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group
- IV Evidence obtained from case series, either post-test or pre-test/post-test
- CPP Recommended best practice based on clinical experience and expert opinion

The National Institute of Clinical Studies (NICS) works to improve health care by getting health and medical research into practice. NICS is an institute of the National Health and Medical Research Council (NHMRC), Australia's peak body for supporting health and medical research.

NICS supports the Emergency Care Community of Practice for all individuals and organisations involved in the delivery of emergency care to share their knowledge and expertise in implementation of best practice to improve patient care

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