Management of acute atrial fibrillation in the emergency department: a systematic review of recent studies
Coll-Vinent B, Fuenzalida C, García A, Martin A, Miro O

CRD summary
This review examined recent-onset atrial fibrillation in the emergency department and concluded that atrial fibrillation cardioversion was feasible and direct current cardioversion was probably the best option. Potential for missed data, uncertain quality of heterogeneous evidence and a general paucity of evidence mean the authors’ conclusions should be interpreted with caution as their reliability is unclear.

Authors' objectives
To examine treatments for recent-onset atrial fibrillation in the emergency department.

Searching
MEDLINE and Web of Science were searched between 2000 and December 2011 for articles published in English or Spanish. Search terms were reported. Reference lists of eligible studies were handsearched.

Study selection
Eligible studies assessed the effectiveness and safety of sinus rhythm control treatments in patients with atrial fibrillation episodes of short duration (<48 hours) who presented at the emergency department. Outcomes of interest were time to conversion, length of stay in the emergency department, safety and relapses or readmissions. Studies were excluded if they were of patients with postsurgical or post-myocardial infarction atrial fibrillation, secondary and unstable atrial fibrillation and studies that did not report rates of sinus rhythm conversion. Unpublished studies and abstracts were excluded.

Included studies were conducted in Europe, USA, Australia and Israel. Comparisons were direct current cardioversion assessment, various pharmacological treatments, pharmacological cardioversion, spontaneous cardioversion, routine admission care, conservative treatment, rate control strategies, home observation (wait and see) and placebo.

Two reviewers independently screened studies for inclusion.

Assessment of study quality
The authors did not state that they assessed study quality. They assessed study levels of evidence and included only studies considered to be of good or regular strength of evidence (controlled studies).

Data extraction
Two reviewers independently extracted outcome data.

Methods of synthesis
Data were presented in tables and as a narrative synthesis based on treatment and outcome type.

Results of the review
Fourteen trials (2,765 patients, range 46 to 376) were included in the review: eight were prospective randomised controlled trials (RCTs), four were prospective non-RCTs and two were retrospective non-RCTs. Follow-up ranged from 24 hours to six months.

Conversion to sinus rhythm and time to conversion: Four out of five trials showed that direct current cardioversion was statistically significantly more effective in restoring sinus rhythm when compared to pharmacological drugs or conservative management.

Flecainide and propafenone showed statistically significant higher conversion rates and shorter time to conversion compared to amiodarone (three trials). A fourth trial showed that amiodarone was superior to magnesium in terms of
Conversion rates.

**Length of stay (four trials) and discharge rate (five trials):** Discharge rates in studies that assessed direct current cardioversion were inconsistent but showed short length of stay (three trials).

**Readmissions and recurrences (five trials):** Readmission rates related to atrial fibrillation varied from 0% at two hours to 26% to 28% at two months. There were no statistically significant differences in recurrence related to atrial fibrillation among the different treatments.

Adverse events were generally rare and not serious for all treatments.

Findings from single trials were also reported in the review.

**Authors’ conclusions**
Atrial fibrillation cardioversion is feasible in the emergency department, with direct current cardioversion probably being the best option.

**CRD commentary**
The review question and supporting inclusion criteria were broadly defined. The literature search was restricted by language and publication status so potentially relevant data may have been missed. The authors did not assess trial quality but some trials were retrospective and some non-randomised, which suggested potential limitations.

Patient and study details were somewhat limited, as was the evidence synthesis. The authors acknowledged differences between the included trials and that potentially relevant data may have been missed due to poor reporting in identified studies. They also acknowledged that patients included in the trials were not wholly representative of real emergency department patients with atrial fibrillation due to the selective inclusion criteria. Trial sample sizes were generally small and findings for some treatments were based on small numbers of studies.

Potential for missed data, uncertain quality of the heterogeneous evidence and the general paucity of evidence, the authors’ conclusions should be interpreted with caution as their reliability remains unclear.

**Implications of the review for practice and research**
**Practice:** The authors stated that the findings should encourage emergency health professionals to carry out cardioversion as soon as possible, with direct current cardioversion as the first choice option. They stated that amiodarone alone should almost always be relegated as a second treatment option.

**Research:** The authors stated that large prospective randomised trials were needed to confirm the findings of this review and assess use of newer therapeutic options in emergency departments.

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