Predictors of delay in seeking medical help in patients with suspected heart attack, and interventions to reduce delay: a systematic review

Centre for Reviews and Dissemination

CRD summary
This well-conducted review evaluated interventions to reduce the time from onset of signs and symptoms of a myocardial infarction to seeking medical assistance. The authors concluded that interventions may increase the number of emergency calls, emergency department visits and lysis. However, the evidence is limited and methodological flaws of the included studies make the reliability of the evidence uncertain.

Authors' objectives
To evaluate interventions aimed at reducing the time from onset of signs and symptoms of a myocardial infarction (MI) to seeking medical assistance or arrival at hospital.

Searching
MEDLINE, EMBASE, PsycINFO, the Science Citation Index, ASSIA, the Cochrane Library, CINAHL, DARE, ERIC, Mental Health Abstracts, the National Research Register, NHS EED, SIGLE, the Social Sciences Citation Index and Sociological Abstracts were searched from inception to January 2001; the search strategy was reported. No language restrictions were applied. The Internet and the bibliographies of included studies were also searched.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), controlled trials with a baseline assessment, and before-and-after studies were eligible for inclusion.

Specific interventions included in the review
Studies of any intervention aimed to reduce the delay between the onset of signs and symptoms of an acute MI and seeking medical assistance or arriving at hospital were eligible for inclusion. The interventions could be aimed at individuals or communities.

Participants included in the review
Studies of people of any age at increased risk of an acute MI, or a whole community, were eligible for inclusion.

Outcomes assessed in the review
The primary outcomes were patient delay (delay between the onset and seeking medical assistance) or pre-hospital delay (delay between the onset and arriving at hospital). Secondary outcomes included the use of medical services, receipt of thrombolysis or fibrinolysis, and mortality. Studies using intention-to-act as an outcome, or that evaluated outcomes associated with a change in the delivery of care, were excluded.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed studies for inclusion. Any disagreements were resolved by consensus or by referral to a third reviewer.

Assessment of study quality
The criteria used to assess study quality (where applicable for the study design) included randomisation, allocation concealment, comparability at baseline, comparable care other than intervention, blinding, outcome measure used, missing data, statistical analysis, power calculation and adjustment for confounding factors.

One reviewer assessed study quality and a second reviewer checked the assessment. Any disagreements were resolved...
by consensus or by referral to a third reviewer.

Data extraction
One reviewer extracted the data and a second reviewer checked the extraction. Any disagreements were resolved by consensus or by referral to a third reviewer.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative, grouped by study design then outcome.

How were differences between studies investigated?
Study details were tabulated and differences between the studies were discussed in the text.

Results of the review
Eleven studies were included in the review: two RCTs (n=66,487), one controlled trial (number of participants unclear) and eight before-and-after studies (n=10,015).

Quality.
Both RCTs used acceptable randomisation methods; had groups that were comparable at baseline and which received identical treatment other than the intervention; reported the method for measuring delay and used an appropriate statistical analysis; and were missing between 27 and 31% of the data. Neither reported blinding of the outcome assessors.

The controlled trial reported that the groups were comparable at baseline and received identical treatment other than the intervention. It did not report blinding of the outcome assessors, the method for measuring delay, the statistical analysis used, or the percentage of missing data.

All eight before-and-after studies either met, or partially met, the criteria for reporting the method for measuring delay, and all five met the criteria for statistical analysis where this was applicable. None of the studies reported the use of a power calculation, and none of the three studies where adjustment for confounding factors was necessary reported doing this.

Delay time.
Neither RCT reported a statistically significant difference in the reduction in delay time between intervention (mass media campaign and community/patient education; informational, social and emotional intervention) and control groups.

The controlled trial reported that those in the intervention group (mailing campaign) called their general practitioner (GP) earlier than those in the control group. Twenty-two per cent of the intervention group called their GP within 30 minutes before the intervention and 44% during the intervention, compared with 24% and 23% of the control group, respectively.

Three of the five before-and-after studies measuring pre-hospital delay reported a statistically significant decrease in delay after the intervention (multimedia campaigns); a fourth reported a short-term decrease in delay after the intervention (mass media educational programme), and the fifth reported no difference before and after the intervention (public education campaign).

Of the two before-and-after studies measuring patient delay, one reported a statistically significant decrease in delay after the intervention (multimedia campaign), whereas the other reported no difference before and after the intervention (public and professional education campaign).
Four before-and-after studies measured the proportion of participants that delayed within certain time periods. One reported an increase in the number of people seeking help within 2 hours, from 15.8% before to 31.3% after the intervention (mass media campaign). Another study reported a statistically significant increase in the number of people admitted within 1 hour (from 15.5% to 23.2%) and 6 hours (from 58.5% to 66.0%) with the intervention (media campaign). Two further studies reported no statistically significant difference before and after the intervention (multimedia campaign; public and professional education campaign).

Results for the secondary outcomes (use of medical services, receipt of thrombolysis or fibrinolysis, and mortality) were also reported.

**Cost information**

The two RCTs reported costs of between US$156,000 and US$294,000 for mass media campaigns. Four before-and-after studies reported costs of US$139,272 and US$10,000 for a public education campaigns, US$412,000 for a media campaign and 300,000 Swiss francs for a multimedia public campaign.

**Authors' conclusions**

Community interventions to reduce delay time may result in an increase in emergency calls, emergency department visits and lysis. However, the evidence is limited and methodological flaws of the studies make the reliability of the evidence uncertain.

**CRD commentary**

The review question was clear in terms of the intervention, population, outcome and study design. An extensive literature search was conducted without language restrictions, thus reducing the potential for publication and language bias. Each stage of the review was conducted in duplicate, thereby reducing the risk of reviewer error and bias. Appropriate criteria were used to assess study quality, and the score for each criterion was reported for each study. The decision to combine the studies in a narrative was appropriate given the variability between studies in relation to design, intervention and outcome measure. This was a well-conducted review, with the conclusions being weakened only by the limited amount of relatively poor-quality evidence available.

**Implications of the review for practice and research**

Practice: The authors suggested targeting interventions at specific at-risk groups. Targeting interventions at family members of those at risk may also be beneficial.

Research: The authors put forward a number of issues for consideration, including the use of RCTs where baseline measures are recorded; a clear definition of the component of delay time being measured; and a sufficient period of follow-up to measure long-term outcomes. Outcomes may include survival process outcomes and economic assessments, as well as time factors.

**Bibliographic details**


**Original Paper URL**

http://www.york.ac.uk/inst/crd/CRD_Reports/crdreport26.pdf

**Other publications of related interest**

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.