**Clinical question. FA-1204B**

In patients with chest pain (P), does helping administer aspirin (I), compared with not administering aspirin (C), improve outcomes (O)?

Is this question addressing an intervention/therapy, prognosis or diagnosis? **Intervention**

State if this is a proposed new topic or revision of existing worksheet: **New Topic**

Conflict of interest specific to this question: **Yes**

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? **I have conducted a study on the effects of burn blister debridement on wound healing in swine.**

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**Search strategy (including electronic databases searched).**

EMBASE search using text words (all fields) Aspirin AND (Chest pain OR first aid)
AHA EndNote Master library, Cochrane database for systematic reviews, Central Register of Controlled Trials search using “aspirin” and “myocardial infarction” or “chest pain” and “first aid” or “layperson”

Review of references from articles.

- **State inclusion and exclusion criteria**
  
  Only human studies were included, regardless of study in which aspirin was administered for chest pain or suspected myocardial infarction in the PREHOSPITAL or Home settings, prior to arrival in the ED or hospital.

- **Number of articles/sources meeting criteria for further review:**
  
  The search strategy identified 282 references whose titles and abstracts were reviewed. 10 references were included in the final analysis including 2 LOE 1, 1 LOE 3, 2 LOE 4, and 4 LOE 5 studies.
### Summary of evidence

#### Evidence Supporting Clinical Question

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<td>Barbash, 2002 (C)</td>
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<td>Zijlstra, 2002 (C)</td>
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<td>McVaney, 2005 (E)</td>
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**Level of evidence**

- **A** = return of spontaneous circulation
- **B** = survival of event
- **C** = survival to hospital discharge
- **D** = intact neurological survival
- **E** = use of intervention
### Evidence Neutral to Clinical question

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### Evidence Opposing Clinical Question

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A = return of spontaneous circulation  
B = survival of event  
C = survival to hospital discharge  
D = intact neurological survival
Discussion: There is a large body of LOE 1 studies demonstrating that administration of aspirin to patients with myocardial infarction reduces mortality. The largest study to date was the Second International Study of Infarct Survival (ISIS-2) (ISIS-2 Collaborative Group, 1988) that enrolled 17,187 patients presenting within 24 hours of the onset of a suspected acute MI. Patients were randomized to intravenous streptokinase, 162.5 mg aspirin daily for 30 days, both or neither. At 5 weeks, patients receiving aspirin had a significant 23% reduction in vascular mortality and a nearly 50% reduction in non-fatal reinfarction and non-fatal stroke. These results translate into the avoidance of 25 deaths and 10-15 nonfatal reinfarctions or strokes by treating 1000 patients with aspirin for 1 month.

The evidence regarding the time-dependent benefit of aspirin in AMI is limited. A retrospective (LOE 3) study of 922 patients with ST-elevation MI divided patients into two groups based on whether aspirin was administered before (early users) or after (late users) hospital admission (Barbash, 2002). Early aspirin users were younger, less likely to be women, and more likely to smoke than late users. Early users were also more likely to be treated with thrombolytics or primary PCI. Compared with late users, early users had significantly lower in hospital mortality (2.4 vs. 7.3; P=0.002) and 30 day mortality (4.9 vs. 11.1%; P=0.001). After multi-variate adjustment, prehospital aspirin use was an independent determinant of survival at 7 days (odds ratio, 0.43; 95% CI 0.18-0.92) and at 30 days (odds ratio, 0.60, 95% CI 0.32-1.08). Survival benefit in early aspirin users persisted for subgroups treated or not treated with reperfusion therapy. Another study (LOE 1) demonstrated that prehospital administration of aspirin and heparin resulted in a higher initial patency of the infarct-related artery in patients with AMI and lower 30 day mortality (Zijlstra, 2002).

The risks associated with a single dose of aspirin are few. While prolonged use of high doses of aspirin are associated with gastrointestinal discomfort and bleeding, the risk of developing gastritis or erosions after a single small dose of aspirin is probably outweighed by the potential benefits. A major concern has been the risk of inappropriate administration of aspirin to patients with aortic dissection. In the Anglo-Scandinavian Study of Early Thrombolysis there were 13 aortic dissections documented among 5011 study patients (LOE 5). Eight dissections occurred in those receiving thrombolytics among which 5 patients died, and 5 dissections occurred in those receiving placebo among which 2 patients died (Wilcox, 1988). In addition the number of case reports of inappropriate use of thrombolytic therapy in the setting of aortic dissection is low. A retrospective multi-center study (LOE 4) of 2,399 patients with potential cardiac chest pain found that prior to EMS arrival 585 patients had received aspirin and that 893 were administered aspirin by EMS personnel (Quan, 2004). No patients had an adverse event during EMS transport or during their hospital course. As a result the theoretical risk posed by a single dose of aspirin in these patients is outweighed by the benefits (Eisenberg, 1996; LOE 5).

While prehospital use of aspirin appears safe and effective, aspirin remains underutilized. A retrospective review (LOE 4) of paramedic encounters found that of 169 patients with suspected cardiac ischemia and no contraindications to aspirin, only 54% received prehospital aspirin (McVaney, 2005). A survey (LOE 4) of prehospital providers providing care to 52 patients with chest pain found that only 25% received prehospital aspirin. The most common reason that paramedics did not administer aspirin was the paramedics’s belief that the chest pain was not of cardiac origin (Hooker, 2006). Another common reason for not giving aspirin was the inability of EMT-Basic providers to administer aspirin.

Several studies (LOE 5) suggest that prehospital aspirin utilization among patients with chest pain can be increased by simple interventions. A study in Portland Oregon (Snider, 2004) found that addition of aspirin to prehospital protocols and a brief educational intervention aimed at increasing aspirin use by paramedics resulted in 22% increase in prehospital aspirin use (OR 3.30; 95% CI 2.91-3.76). A study in King County Washington tested the effectiveness of an intervention designed to increase utilization of 911 and self-administration of aspirin for seniors with chest pain (Meischke, 2006). More than 20,000 homes in the intervention area were contacted by local firefighters and received a heart attack survival kit that included aspirin. Over the next 2 years there were significantly more calls (16%) and a slightly higher percentage of aspirin use (4.2% difference) among the seniors on the mailing list.
Citation List


LOE 1, Good, Supports


LOE 3, Fair, Supports


LOE 5, Poor, Supports


LOE 4, Fair, Supports


LOE 4, Fair, Supports


LOE 5, Fair, Supports


LOE 4, Fair, Supports


LOE 5, Fair, Supports


LOE 5, Good, Supports

LOE 1, Good, Supports