ARTICLE:
- Country: meta-analysis of studies from several countries
- Funding Sources: none specified

PURPOSE:
- Research Question(s): To investigate the effect of intravenous magnesium on mortality in suspected acute myocardial infarction.

DESIGN:
- Study Design: Meta-analysis
- Dependent / outcome Variable(s): Death and serious ventricular arrhythmias
- Independent / research Variable: IV magnesium

SETTING / SUBJECTS:
- Research Setting: Various hospitals in the world
- Subjects:
  - Study population: all randomised patients in all completed, published or unpublished, unconfounded trials of intravenous magnesium in suspected acute myocardial infarction = 7 randomized studies, 1301 patients, studies from 1984 - 1991
  - Inclusion / Exclusion criteria: Differs between trials, but generally, a high creatinine, shock, or high AV block.
  - Number (control / intervention groups): 644 (control); 657 (received magnesium)
  - Demographics: not provided
  - Attrition: Varies; 8 patients from two trials with unconfirmed infarcts were lost. Five trials provided only hospital data follow-up, other two provided 24 hour and 30 day follow-up

METHODS:
- Interventions:
  - Magnesium sulfate (5) or magnesium chloride (2)
  - 30 mmol at 90 mmol; for magnesium sulfate, 6 mmol = 1.5 g, so Mg in grams received was approximately 7.5 g to 22 g overall. For magnesium chloride, 3.5 g magnesium cl = 16 mmol mg.
- “generally” started within 12 hours of chest pain
- protocols for infused over 24-48 hours

- **Study Groups:** Control vs magnesium
- **Instruments:** Varied
- **Data Collection:** Not specified

**DATA ANALYSIS:**
- **Level of Data:** Categorical - Death
- **Statistics Used:** Odds ratio calculated for all patients in the magnesium groups
- **What, if any, variables were controlled for?** Varied

**RESULTS:**
- **Brief answers to research questions:** Statistically significant decrease in mortality in two trials (Shechter, Rasmussen); Statistically significant decrease in ventricular arrhythmias in two trials (Rasmussen, unclear what other study). Statistically significant decrease in both via meta-analysis; 25 of 657 (Mg) vs 53 of 644 (control) with OR 0.45!
- **Additional findings:** None
- **Other possible explanation for findings:** Publication bias, small numbers of patients, under powered, unclear which patients received aspirin, PCI.
- **Limitations:** This is a meta-analysis

**IMPLICATIONS FOR PRACTICE:**
- **Applicable to this clinical practice:** No, not ED patients, not uniformly given immediately.
- **Feasible (cost, resources, etc):** Lost cost, very feasible.
- **Clinically Relevant:** No; see ISIS-2, MAGIC trials

**LEVEL OF EVIDENCE / DECISION FOR USE:**
- **Background** X Consider Replication Ready for use

- **Level of Evidence:**
  - X Ia Evidence obtained from meta-analysis of randomized controlled trials