

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Nitroglycerin treatment's effect on mortality in patients experiencing AMI.

Report By: Taylor Poirier

2nd Party Appraiser: Jennifer Greene

Clinical Scenario: Paramedics are called to a 60 year old male experiencing chest pain following moderate exertion at a local bowling alley. Chief complaint includes heavy substernal chest pain, with associated pain radiating into the left shoulder. The paramedics begin standard treatment with 160mg of aspirin, and use sublingual nitroglycerin to provide the patient symptom relief by reducing preload and vasodilating the coronary arteries, decreasing the work of the heart. In addition to relieving pain, this treatment is believed to decrease myocardial infarction and decrease mortality.

PICO (Population – Intervention – Comparison – Outcome) Question:

In patients experiencing AMI, does the administration of nitroglycerin reduce mortality?

Search Strategy:

(myocardial infarction OR MI OR acute coronary syndrome) AND (nitroglycerin OR nitrate) AND mortality

Search Outcome:

183 results.



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Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Gruppo Italiano per lo Studio della Soprawivenza nell'Infarto Miocardico. 1994	19 394 adult patients with STEMI	Prospective RCT. - LOE 1	1. Decreased 6 week mortality with nitroglycerin administration 2. Decreased 6 week mortality with lisinopril administration.	Insignificant benefit shown from NTG administration: 0.4% decreased in mortality (95%CI 0.84-1.05) Lisinopril reduced mortality at 6 weeks by 11% (95%CI 0.84-0.98)	Well controlled study that included a large patient population.
<i>Strandmark R. 2015</i>	1726 adult EMS patients with suspected ischemic heart disease	Prospective design with open control. - LOE 1	1. Decrease of mortality with aspirin administration 2. Decrease of mortality with nitroglycerin administration	10.1 % mortality in ASA group vs 18.6% in non-ASA group (p=0.009) No result listed for nitroglycerin administration	AMI patients that received treatment were purely dependant on the medical responder's judgement & did not list overly specific criteria. Offers very clear benefits of pharmacological intervention in the result.



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Comments: The majority of trials available show very minimal benefit in nitroglycerin use.

Consider: There has been very little evidence offered to show significant improvement in patients who receive nitroglycerin during AMI, though current practice supports its use. While there may be little improvement in these patients, nitroglycerin appears generally benign & easy to apply when administered in the appropriate setting, & thus its use should be recommended until proven otherwise as it still may show some beneficial result.

Clinical Bottom Line: In conclusion, nitroglycerin administration to patients experiencing AMI may be minutely beneficial in short-term mortality reduction, though there is no evidence of significant improvement from its use in mortality/morbidity of these patients.

References:

Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardico., (1994) GISSI-3: Effects of lisonopril and transdermal glyceryl trinitrate singly and together on 6-week mortality and ventricular function after acute myocardial infarction.

Rasmus Strandmark., Johan Herlitz., Christer Axelsson., Andreas Claesson., Anders Bremer., Thomas Karlsson., Maria Jimenez-Herrera., Annica Ravn-Fischer., (2015) Determinants of pre-hospital pharmacological intervention and its association with outcome in acute myocardial infarction.

