

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Effective Use of Thrombolytic Drug in Pre-Hospital Environment

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Clinical Scenario: The administration of Thrombolytic Drugs in a Pre-Hospital environment to patients presenting STEMI symptoms.

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

In out of hospital STEMI patients, does the administration of a thrombolytic drug in a pre-hospital environment as opposed to an in-hospital environment, reduce patient's mortality rate?

Search Strategy:

Searched articles relating to studying the use of Thrombolytic Drugs in a pre-hospital environment.

Search Outcome:

Initial search resulted in 439 articles. After narrowing down the search criteria, there were 27 articles presented.

Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Bjorkund, Stenstrand, Lindback, Svensson, Wallentin and Lindahl Mar 2006	Thrombolytic-treated patients younger than 80 with a diagnosis of acute myocardial infarction.	LOE – I Randomized controlled trial	Mortality Rate at 1 Year	Reduced by 30%	Strengths: Large Randomized Sample Weaknesses: Removed a subset of the population: Only Patients with a final diagnosis of AMI were included. Large variation in population of treated patients at the different hospitals.
Dangas, Claessen, Mehran, Brener, Brodie, Dudek, Witzenbichler, Peruga, Guagliumi, Moses, Lansky, Xu and Stone	STEMI patients undergoing primary percutaneous coronary intervention (PCI)	LOE – I Randomized controlled trial	Mortality Rate at 1 Year	In-Hospital Mortality Rate: 27.8% Out-of-Hospital Mortality Rate: 10.8%	Strengths: P value < 0.5 for majority of statistical variables Weaknesses: Clinical outcomes were assess on only a portion of the patients (3602 patients in study, 1yr outcome assesses on only a subgroup – In-Hospital – 54 patients, Out-of-Hospital – 102 patients)

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Comments:

The research does show that administering thrombolytic drugs in a pre-hospital environment reduces the mortality rate of STEMI patients. To further this, there should be more research in the length of stay in a hospital for these patients as well as health at five or ten years after administration. Reduced time in hospital would also reduce costs to the medical system as a whole.

Clinical Bottom Line:

The reduction in mortality rates for administration of thrombolytic drugs in a pre-hospital environment is significant enough for EMS services to implement a program for their paramedics.

References:

Bjorklund, E., Stenestrand, U., Lindback, J., Svensson, L., Wallentin, L., and Lindahl, B., *“Pre-hospital thrombolysis delivered by paramedics is associated with reduced time delay and mortality in ambulance-transported real-life patients with ST-elevation myocardial infarction”*, European Heart Journal (2006) 27, 1146-1152

Dangas, D., Claessen, E., Mehran, R., Brener, S., Brodie, B., Dudek, D., Witzenbichler, B., Peruga, J., Guagliumi, G., Moses, J., Lansky, A., Xu, K., and Stone, G., *“Clinical Outcomes Following Stent Thrombosis Occuring In-Hospital Versus Out-of-Hospital – Results From the HORIZONS-AMI (Harmonizing Outcomes with Revascularization and Stents in Acute Myocardial Infarction) Trial”*, Journal of American College of Cardiology, Vol. 59, No. 20, 2012