

Paramedic - Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: *In pre-hospital stroke patients, early hospital notification improves door to computed tomography (CT) scan.*

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Clinical Scenario: *You're called to the home of an 80-year-old female complaining of stroke-like symptoms. On scene you've determined that the patient is having a stroke. If you advise the hospital while on route or as early as possible, you will decrease the patient's door-to-CT scan time.*

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

In pre-hospital stroke patients, does early hospital notification compared to no notification improve door-to-CT scan time?

Search Strategy:

Articles found on EHS PEP website

Search Outcome:

Articles found on EHS PEP website



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Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Abdul R. Abdullah et al. 2009	118 pre-hospital stroke patients	Retrospective Cohort study Level II	Advanced notice would shorten emergency department arrival to computed tomography time and increase the use of IV and intra-arterial thrombolysis.	In the advance notification group, door-to-CT time was significantly shorter ($p = 0.01$) and thrombolysis occurred almost twice as often ($p = 0.04$) as in the without-notification group. Median door-to-CT time was 40 minutes (interquartile range [IQR] 25–49 minutes) in the advance-notification group and 47 minutes (IQR 43–48 minutes) in the without-notification group ($p = 0.01$).	The cases in which early notification was used, the strokes were rated as more severe as per NIHSS score which could have affected the door-to-CT time. The decision of early notification was reliant on the paramedic and not on the NIHSS score. They had a good-sized population of patients who did not have many differences. This study was not in a randomized setting.
Annika Berglund et al. 2012	496 Stroke/TIA patients	Randomized controlled study Level I	Early initiated treatment of stroke increases the changes of a good recovery	Patients in the Emergency Medical Communication Center randomized intervention group reached the stroke unit 26	They used a large population. The study was randomized.



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				minutes earlier than the control group (P 0.001) after the emergency call. Thrombolysis was given to 24% of the patients in the intervention group compared with 10% of the control subjects (P 0.001). The higher priority level showed no negative effect on other critical ill patients requiring priority level 1 pre-hospital attention.	Only a small portion of the population in this study had to do with early notification from EMS pre-hospitally.
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Comments: *It seems that there are some discrepancies with the EMS side of early notification. Some stroke patients that don't score as high on the diagnostic tests may not get early notification. In all possible stroke patients, early notification should be considered to help the outcome of the patients.*

Consider: *In these studies, they initially start with a large population of possible strokes but after they do their diagnostics it is found that half of them are not diagnosed with a stroke and are discharged from hospital. Early notification for all possible stroke patients could be a strain on the emergency department if not all patients are stroke patients.*

Clinical Bottom Line: *Pre-hospital early notification for stroke patients helps decrease door-to-CT time and also door-to treatment time.*



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References: *(Higher Prehospital Priority Level of Stroke Improves Thrombolysis Frequency and Time to Stroke Unit The Hyper Acute STroke Alarm (HASTA) Study, Annika Berglund, RN; Leif Svensson, MD, PhD; Christina Sjöstrand, MD, PhD; Magnus von Arbin, MD, PhD; Mia von Euler, MD, PhD; Nils Wahlgren, MD, PhD; for the HASTA Collaborators: Lars Engerström, MD; Bo Hojeberg, MD, PhD; Tor-Björn Käll, MD; Susanna Mjö rnheim, MD; Ann Engqvist, MD , 2012)*
(Advance Hospital Notification by EMS in Acute Stroke Is Associated with Shorter Door-to- Computed Tomography Time and Increased Likelihood of Administration of Tissue- Plasminogen Activator, Abdul R. Abdullah, Eric E. Smith, Paul D. Biddinger, Deidre Kalenderian & Lee H. Schwamm, 2009)
EHS PEP Website

