

## Emergency Medical Dispatch Codes Association with Emergency Department Outcomes

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### 1. Why is this topic important?

Dispatch systems play a crucial role in the patient care continuum. They usually are the first contact, and are therefore critical in the delivery of appropriate care and in patient outcome. The goal of this research is to determine if there is an association between dispatch codes for 911 calls and ED patient outcomes. If such an association can be established, patients may benefit from more sensitive EMS response modalities, and hospitals can be better prepared for EMS patient arrival.

### 2. What does this study attempt to show?

26,846 patient calls dispatched from 911 were examined in a northeastern US county from January 2009 through January 2010. This study matched 107 of the most frequently used Medical Priority Dispatch System (MPDS) codes used to dispatch ambulances, to patient outcome measured either by admission to the hospital from the ED or patient death. These codes captured 93% of EMS patient volume in which examination of age and gender was also included. In this population, the baseline ED admission rate was known to be 29.7%; any code which was associated positively with an admission rate  $\geq 10\%$  more than baseline was considered to be predictive of admission from the ED.

### 3. What are key findings?

Nine MPDS dispatch codes were found to be predictive of ED admission or death. Among the most significant were *Stroke-Speech*, *Cardiac/Respiratory Arrest/Death-Not Breathing at All/Agonal*, and *Stroke-Not Alert*. When combined with age  $>65$ , the effect was most prominent in *Back Pain-Non-Recent Traumatic Back Pain*, and *Sick Person-Unknown Status-Other Codes Not Applicable*. Conversely, several codes were significantly associated with discharge from the ED; *Assault Sexual Assault-Not Dangerous Body Area/Non Recent Injury*, and *Unconscious Fainting-Fainting Episode, Alert Age  $<35$  (With Cardiac History)*; and *Traffic Accidents-Injuries*.) There was no relationship with gender and ED outcome.

### 4. How is patient care impacted?

This is the largest study of its kind using MPDS codes to examine associations with patient outcomes. Because of its large sample size and conservative methodology, the study is particularly robust. This study authors acknowledge limitations mainly relating to database weaknesses and retrospective bias. Nevertheless, the study may encourage further research in getting the right resources to the right patient at the right time. If this study can be replicated successfully, the goal of aligning patient needs with appropriate alternative destinations such as clinics etc becomes more attainable. The ability to link prehospital data sets, including dispatch information, to ED or hospital outcome is critical in furthering research in prehospital medicine.

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