**Institutional Review Board approved Research project summary (2016/370)**

# An evaluation of Nurse triage at the Emergency Medical Dispatch centers in two Swedish counties.

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## Overview of field:

In current practice in the counties of Uppland and Västmanland, nurses working in the Emergency Medical Dispatch (EMD) center routinely refer patients requesting Emergency Medical Services (EMS) to sub-acute forms of healthcare or provide medical advice as the final intervention. Outcomes for these patients are poorly understood, and an incident reporting system serves as the primary form of quality assurance for patients of this class. While it is desirable to direct patients to the most appropriate form of care, prior research performed primarily in Anglo-American EMS systems has demonstrated that pre-hospital care workers may have difficulty identifying patients with conditions necessitating Emergency Department care with a sufficiently high degree of sensitivity. Evidence regarding the safety of this practice in continental European systems utilizing staff with a generally larger scope of practice is sparse. (1–3)

No consensus exists in the literature as to a systematic method for assessing the accuracy and safety of decisions made by pre-hospital care workers to refer patients to non-emergency department care. A range of outcome measures have been used to assess this, ranging from mortality and adverse event rates, to agreement with a 'gold standard' based on subsequent case review. Upon literature review and discussion with key stakeholders, a measure based on the rate of subsequent triage at an Emergency Department within 72 hours was selected. This measure was chosen due to its objective nature, generalizability across pre-hospital care systems, relative ease of implementation, and prior use in the context of Swedish pre-hospital care. (4,5)

## Scientific question(s):

This project aims to assess the safety and appropriateness of decisions made by nurses working in the EMD center among the cohort of patients determined to not require transport to an Emergency Department.

The primary outcome measure is the portion of patients subsequently triaged at an Emergency Department within 72 hours. Secondary measures include the type of treatment administered following triage at the ED, hospital ward admittance as a result of the ED visit and mortality within 72 hours, which will be determined based on available hospital data. The results of the study are aimed at describing the demographics and clinical indications found within the study population. While no specific hypothesis is being tested, a quantitative understanding of the properties of this patient population is necessary to formulate future randomized control trials and to develop interventions to improve the decision-making process.

**Project description:**

Selection of research participants will occur prospectively from an existing analytical database (Qlikview) consisting of EMD records. Inclusion criteria are:

- Capture of a valid Personal Identification Number
- Dispatcher selection of a disposition of:
    - Referral to nursing advice line (1177)
    - Referral to non-ambulance transport to non-ED destination
    - Referral to poison control center
    - Referral to mobile eldercare team
    - Referral to mobile psychiatric team
    - Medical advice only pending patient re-contact
    - Other Referral

The following data will be collected in regards to each included patient:

- Personal identification Number
- Age
- Gender
- Date/Time of contact with dispatch
- GPS coordinates of ambulance response
- Complaint category
- Patient Disposition

The regional hospital database (COSMIC) will be queried for each patient meeting the inclusion criteria above for entries occurring within 72 hours of contacting emergency services. Each patient with a record indicating triage at an Emergency Department will be reviewed and classified into the following categories based on the treatment received during the identified episode of care:

- Assessed and released without intervention
- Intervention at primary care level performed
- Intervention at secondary/tertiary level performed
- Admitted to inpatient care

Data on mortalities among the included patients will be retrieved from the Swedish death registry. A pilot phase lasting for one week will be executed to determine approximate patient volumes which will determine the length of the main data collection phase, which is estimated to last circa 3 months. Pilot phase data will be reviewed to ensure the accuracy and completeness of dispatcher categorizations and determine the final set of analyses to perform on the prospectively gathered data. Data manipulation will be performed on an ongoing basis during the data collection period using Microsoft Excel and RStudio(6) and patient data will be stored with no identifying information attached. Personal Identification Numbers and GPS Coordinates will be stored separately from the main research database and associated via a sequential key. Results will be reported as descriptive statistics and a logistic regression model will be used to identify significant intra-group differences with regards to patient

demographics and information captured in the dispatch process. All data manipulation will be performed on hardware physically secured at the respective ambulance departments, and executed in accordance with existing data security guidelines.

**Significance:**

The significance of the proposed study is twofold:

1) A systematic description of patients referred to alternate forms of care is of value to the county ambulance services involved in the study. This study serves to demonstrate the feasibility of this outcome measure in serving as an indicator of the effect of changes in the decision-making process. A descriptive study of this type is seen as a necessary precursor to a rigorous, randomized interventional study.
2) It is difficult to formulate a standard of acceptable accuracy based on this measure without a large number of data points across a diverse set of ambulance services. Magnusson et al. (2015) for instance found a subsequent ED visitation rate of 20%, but without a broad base for comparison it is difficult to judge whether this proportion is high or low. It is hoped that additional descriptive studies utilizing this objective and well defined outcome measure will enable meaningful meta-analysis across ambulance systems in the future.

**Preliminary results:**

Preliminary results pending pilot phase data.

**Ethical considerations:**

The primary ethical concern involved in this study is the security and privacy of patient data. No sensitive personal information as defined by 1998:204 §13 is to be recorded, and given the non-interventional nature of this study, informed consent of the study participants is judged not to be necessary. Given that the data analysis will occur in accordance with existing guidelines, no significant excess risk in the form of exposure of patient information is judged to arise in the course of executing this study.

**References:**

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