

VARIATION IN DECISION-MAKING IN TRAUMA TEAM ACTIVATION BY EMERGENCY NURSES AT A DUTCH LEVEL 1 TRAUMA CENTRE

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INTRODUCTION

Since 2009, a two-tiered trauma response was implemented at the ED of Medisch Spectrum Twente (MST). Guided by a flowchart, the ED nurse has to choose between a basic or a full trauma team, based on information from Emergency Medical Services (EMS). It is a difficult decision-making process, influenced by several factors. It is important to make the right decision and have the right team activated for the incoming patient, because of patient outcome, safety, efficiency and staff satisfaction issues.

Objective: Understand the trauma team activation decision-making process at the ED in MST and obtain insight in the importance of several factors of influence according to ED nurses.

METHODS

- Cross-sectional fractional factorial design
- 6 patient factors (attributes) and 22 levels identified
- SPSS® Orthoplan: 25 of 2304 possible scenarios
- Scenarios presented to 44 ED nurses in MST
- Questionnaire with a total of 26 clinical vignettes (Figure 1)
- ED nurses ranked levels according to their perceived importance

RESULTS

Table 1. Number of team activations per respondent

	Normal ED team	Basic trauma team	Full trauma team
Mean (SD)	2.2 (0.9)	3.5 (2.2)	17.0 (2.6)
Min-max	1 - 5	0 - 9	9 - 20
Total	59 (9.6%)	95 (15.5%)	460 (74.9%)

After normalizing the level mean rank scores, the level *Airway-Breathing unstable* was the most important level for trauma team activation based on the relative rank sum weight (0.115), followed by *Mechanism of injury Fall of height >5m* (0.171) and *Airway-Breathing Intubation* (0.172) (Figure 2).

This graph shows the relative rank sum weights for all levels. The 3 most important levels are highlighted. The longer the line, the more impact the attribute has on the decision-making. The distances between the levels indicate the distinctiveness of the levels. For instance in age: normalized distances between the levels are small, resulting in a short line, indicating little impact on the decision for trauma team activation

27 ED nurses (61%) completed the questionnaire. Mean age of the ED nurses was 43.4 years (range 25-61) and the mean years of experience was 16.3 years (range 3-36). The number of team activations per respondent varied for the possible teams (Table 1).

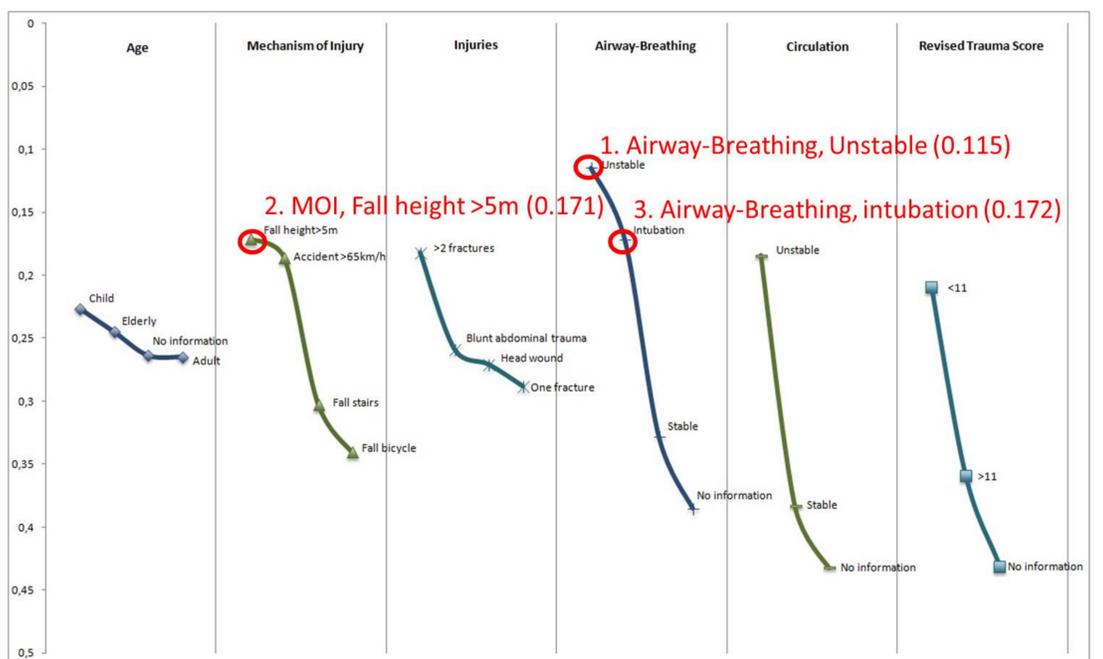


Figure 2. Relative rank sum weight

There was no difference in attribute mean rank scores between two groups of ED nurses, stratified for years of work experience. The Intraclass Correlation Coefficient (ICC) for the different levels occurring in three duplicate vignettes varied.

CONCLUSIONS

- Large variation in decisions for trauma team activation, uniformity can be improved
- *Unstable Airway-Breathing*, *Fall from Height >5 m*, and *Intubation* were ranked as most important factors in trauma team activation decisions
- Years of work experience of ED nurses had no influence
- Perceived importance of levels should be used when developing a decision support system
- Other possible influencing factors, such as individual and contextual factors, should be investigated
- To generalize results, this study needs to be repeated in multiple ED's with a tiered trauma response

Vignette 12

Pre-notification from ambulance:
"We will arrive at your ED with a female patient who fell down the stairs halfway. She sustained possible fractures to her right upper arm and right femur. Airway and Breathing are stable. RTS 12."

What kind of team would you activate for this patient?

- Normal ED team (ED physician and ED nurse)
 Basic trauma team
 Full trauma team

Why? Please rank the 3 most important factors in your decision. (1=most important)

1.
2.
3.

Figure 1. Example of clinical vignette

