

RESEARCH ARTICLE

# Changes in the temporal distribution of in-hospital mortality in severely injured patients—An analysis of the TraumaRegister DGU

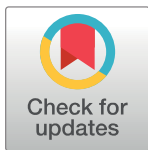
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**Data Availability Statement:** The authors state that the sensitive data presented in this study is available from a third party, which is the AUC - Academy for Trauma Surgery („Akademie der Unfallchirurgie GmbH“), which is the owner of the data of the TR-DGU. The data underlying the results presented in the study are available from: AUC - Akademie der Unfallchirurgie GmbH, Wilhelm-Hale-Strasse 46b, 80639 München, Deutschland, Tel.: +49 221 888 239 - 10, Email:

## Abstract

### Background

The temporal distribution of trauma mortality has been classically described as a trimodal pattern with an immediate, early and late peak. In modern health care systems this time distribution has changed.

### Methods

Data from the TraumaRegister DGU was analysed retrospectively. Between 2002 and 2015, all registered in-hospital deaths with an Injury Severity Score (ISS)  $\geq 16$  were evaluated considering time of death, trauma mechanism, injured body area, age distribution, rates of sepsis and multiple organ failure. Pre-hospital and post-discharge trauma deaths were not considered.

### Results

78 310 severely injured patients were registered, non-survivors constituted 14 816, representing an in-hospital mortality rate of 18.9%. Mean ISS of non-survivors was  $36.0 \pm 16.0$ , 66.7% were male, mean age was  $59.5 \pm 23.5$ . Within the first hour after admission to hospital, 10.8% of deaths occurred, after 6 hours the percentage increased to 25.5%, after 12 hours 40.0%, after 24 hours 53.2% and within the first 48 hours 61.9%. Mortality showed a constant temporal decrease. Severe head injury (defined by Abbreviated Injury Scale, AIS-Head  $\geq 3$ ) was found in 76.4% of non-survivors. Patients with an isolated head injury showed a more distinct decrease in survival rate, which was accentuated in the first days after admission. The correlation of age and time of death showed a proportional increase with age (55-74a). The rate of sepsis and multiple organ failure among non-survivors was 11.5% and 70.1%, respectively.