Trauma Care in Germany

Major Differences in Case Fatality Rates Between Centers

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SUMMARY

**Background:** Recent years have seen a further decline in the nationwide case fatality rate after major trauma in Germany, but it has not been clear until now whether all centers providing trauma care achieve comparable results. We have attempted to answer this question using data from the trauma registry of the German Society for Trauma Surgery (Deutsche Gesellschaft für Unfallchirurgie, DGU).

**Methods:** The standardized mortality rate of each participating center was calculated on the basis of the RISC prognostic score (Revised Injury Severity Classification) and the observed case fatality rate of the center. Results were compared across centers for the years 2004 to 2007; only the centers that provided the primary treatment of at least 100 patients during this period were included in the analysis. Data from the ten highest-scoring centers, the ten lowest-scoring centers, and the ten centers in the middle of the group were compared, and differences between them were analyzed.

**Results:** The case fatality rate in the top ten centers was 8.7%. The corresponding rate in the bottom ten centers was approximately twice as high, even though the injuries treated there were of comparable severity.

**Conclusion:** It is evident that the fate of a trauma patient in Germany depends partly on the center in which he or she is treated. These data were drawn from a retrospective evaluation of a case registry and should be assessed in awareness of this fact.

ACCORDING to the data of Germany’s Federal Statistical Office, there were 335 845 accidents resulting in personal injury in Germany in 2007. 4949 people were killed and 75 433 seriously injured in these 335 845 accidents. Following their accidents, these people require appropriate medical care. Germany has efficient hospitals that provide the various levels of care needed, but those with serious injuries should be treated in appropriate level one or level two trauma centers. Since then it has been shown that the trauma mortality rate in Germany is still falling (1). Despite this decline and the efficiency of the centers that provide care, it has not been clear until now how homogeneous care is, as measured by the mortality rate.

The trauma registry of the German Society for Trauma Surgery (Deutsche Gesellschaft für Unfallchirurgie, DGU) makes it possible to compare the outcomes of trauma centers involved in the trauma registry and use them as the basis for quality control (2). The authors were therefore interested in whether the results of individual centers were similar to each other or whether there were still differences between individual trauma centers, as was shown in an earlier study by Ruchholtz (2). In order to explore these potential differences, we compared the data from the ten highest-scoring centers, the ten lowest-scoring centers, and the ten centers in the middle of the group.

**Methods**

On the basis of trauma registry data, the expected case fatality rate for all patients in the registry and for individual centers can be determined using the Revised Injury Severity Classification (RISC) (1, 3). The RISC score is based on the following parameters (see Box) (5):

- Age
- Overall injury severity
- Degree of head injury
- Pelvic trauma with significant blood loss
- Preclinical resuscitation
- Coagulation
- Number of indirect signs of bleeding

The RISC score has been used for quality comparison between centers within the trauma registry since 2004.

To address this question, the trauma centers which had registered patients with the trauma registry in the four years from 2004 to 2007 were selected. In order to