Reassessment of the tri-modal mortality distribution in the presence of a regional trauma system.

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**Abstract**

**BACKGROUND:** The temporal distribution of trauma-related deaths has been described as tri-modal with immediate, early, and late peaks. With the development of trauma centers and systems, it has been suggested that this distribution might be altered.

**METHODS:** Information regarding all trauma-related deaths occurring from 1990 through 2003 in Jefferson County, AL, was obtained and the elapsed time from injury to death was calculated and categorized as <1 hour, 1 to 6 hours, 7 to 24 hours, 1 to 3 days, 4 to 7 days, and >1 week. The distribution of the time from injury to death was compared before and after the implementation (November 1, 1996) of a regional trauma system.

**RESULTS:** Of the 5,240 deaths included in the analysis, 2,830 occurred between January 1, 1990 and October 31, 1996, before trauma system implementation, and 2,410 occurred afterward (i.e. November 1, 1996 to December 31, 2003). The temporal distribution of trauma death was significantly different (p < 0.0001) after trauma system development with a higher percentage of immediate deaths (56.3% compared with 51.4%) and a lower percentage that occurred 1 week after injury (4.8% compared with 8.1%).

**CONCLUSION:** The development of a regional trauma system had a significant impact on the temporal distribution of trauma deaths. An increase in the proportion of immediate deaths and a decrease in the proportion of deaths that...
occurred >1 week after injury was observed, suggesting a shift toward a bimodal distribution.