

USING TRAUMA VIDEO REVIEW TO FIND THE GOLDILOCKS PRE-ACTIVATION TIME

We sought to determine the optimal time prior to patient arrival for trauma team activation which resulted in the greatest team efficiency. The time to complete critical events (TCCE) during resuscitation was used as a surrogate for trauma team efficiency. We hypothesized that there exists a time window for trauma team pre-activation which minimizes TCCE.

This is a retrospective analysis of all video recorded traumas at our level 1 trauma center from 1/1/2018 through 2/28/2022 who received the highest level of trauma team activation and had a prearrival notification. The trauma video review is an integrated quality improvement process that allows experienced personnel to identify the TCCEs for all patients. A total of 11 critical events were selected and TCCEs were determined using video timestamps. To be able to compare TCCEs a normalized TCCE (nTCCE) was calculated by dividing each TCCE by its mean time for that event among all patients. Pre-activation times were categorized into 1-minute intervals and nTCCEs for each category were compared individually using one-sided Mann-Whitney U test.

A total of 460 trauma pre-activations were included, which bore 1734 TCCEs. The majority (91%) of pre-activations occurred within 8 minutes of patient arrival. Pre-activation times in the 4 to 6 minute range yielded the most consistently efficient trauma teams, with no TCCE taking more than 15 minutes. Additionally, Mann-Whitney U tests revealed that nTCCEs corresponding to pre-activation times between 4 and 7 minutes were significantly shorter than those of <4 ($p < 0.05$), and those in the >7 category were larger than those in the minute 7 group ($p < 0.01$).

A pre-activation time of 4 to 7 minutes is associated with the best team efficiency, as evidenced by the shortest nTCCEs. This timeframe may be an optimal window for trauma team activations.