

Research - R161

Poster

Abstract Title:

Achieving Flow in the Trauma Process Using Human Factors Methodology

Authors:

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Background & Purpose:

Successfully caring for a trauma patient in a complex healthcare system requires multi-disciplinary collaboration under time pressure. We hypothesized that a holistic view of the systemic issues utilizing human factors methodology would uncover disruptions in the flow that reveal weaknesses in trauma care. Disruptions are defined as any deviation from the natural progression of care which could potentially compromise safety or efficiency. With an understanding of the entire system and the disruptions that impede it, we were able to reduce delays, speed up care delivery, and improve flow.

Study/Project Design:

Survey sample, interviews, and observational study

Setting:

Data was collected at a Level I Academic Trauma Center

Sample:

Reviewed 32 trauma-related practice management guidelines, spoke to 73 trauma providers, and observed 86 trauma cases

Procedures:

First, the hospital's trauma guidelines were reviewed to develop an outline of the system. Second, focus groups were conducted with trauma providers to identify situations that hindered performance. Third, trauma team activations were studied by trained observers to identify flow disruptions. All of the data allowed analysis from multiple perspectives to uncover opportunities for improvement. Based on this thorough analysis and a multi-disciplinary improvement analysis team, multiple interventions were tested: an imaging checklist, lean equipment and supply standardization, a whiteboard, pre-briefings, teamwork and leadership training, trauma headsets, and a trauma iphone application.

Findings/Results:

Focus group interviews from 73 providers identified coordination (31%) as the primary source of flow disruption. Observers noted 1,757 flow disruptions in 86 trauma cases and established coordination between care teams (29%) and equipment issues (10%) to be common disruptions. To address the disruptions, several interventions were implemented. A pre-briefing, which was generally popular but impeded time constraints, was observed to be used in 41% (17/41) of trauma cases. Lean spaghetti maps were made to assess the impact of standardization on time and distance taken to get equipment. In a gunshot scenario, distance travelled to gather supplies was reduced by 12% and time was reduced by 15%. Both before and after the training, surgeons' teamwork and leadership skills were observed, focusing specifically on cooperation, communication, and situation monitoring. Before the training, 184 instances of the skills were noted. After the training, 690 instances of the skills were noted.

Discussion/Conclusions/Implications:

In combination, these qualitative and quantitative assessments build a picture of the complexity of trauma care and a systemic predisposition to error that is richer and more representative than any single source of data. Communication, coordination, and equipment issues were the most common flow disruptions. Appropriate human-centered systemic interventions to reduce flow disruptions during the trauma process helped to identify delays, inefficiencies and risks in patient care and improve trauma outcomes.