Narrative review: trauma care and massive transfusion protocols in the emergency department

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ABSTRACT

Background: Despite advances in trauma care, haemorrhagic shock continues to be one of the leading causes of preventable deaths after injury. Often, the difference between life and death comes down to how quickly the bleeding is recognized and treated, especially in the emergency department. To address this, hospitals have developed Massive Transfusion Protocols (MTPs), which provide a structured, team-based approach to rapidly deliver the right balance of blood products. These protocols are designed to give critically bleeding patients the best possible chance of survival when every second counts.

Objective: This narrative review synthesizes contemporary literature and international guidelines on the implementation and impact of MTPs in trauma care, highlighting evolving strategies, current challenges, and future directions.

Methods: A narrative review was conducted using a systematic search of PubMed, Scopus, and Google Scholar databases. Boolean operators and relevant keywords were used to identify peer-reviewed articles, clinical guidelines, and consensus statements published in the last decade. Studies addressing massive transfusion protocol activation, transfusion strategies, adjunctive therapies, implementation challenges, and innovations in trauma care were included.

Key Findings: Balanced transfusion strategies (1:1:1 ratio of red blood cells, plasma, and platelets) and adjuncts like tranexamic acid have improved outcomes in severe trauma. Early MTP activation, protocolized multidisciplinary teamwork, and the integration of point-of-care coagulation testing are pivotal for effective management. However, challenges persist in protocol adherence, logistics, and complication management. Recent innovations, including whole blood transfusion and individualized resuscitation guided by viscoelastic testing, show promise but require further validation.

Conclusion: MTPs have revolutionized trauma resuscitation in the emergency department, but ongoing education, research, and system-level improvements are needed to optimize their use and ensure best practices globally. This review provides an up-to-date synthesis for clinicians and healthcare leaders seeking to advance trauma care.

Keywords: Trauma, Massive Transfusion Protocol, Emergency Department, Haemorrhagic shock.