Abstract:

Background: Our main objective was to review the literature to answer the following questions regarding pediatric massive transfusion (PMT) protocols: 1) How is PMT defined? 2) Which blood product ratios have been investigated and what is their effect on outcomes? 3) What evidence exists regarding PMT outcomes?

Methods: The PRISMA guidelines were used. We searched PubMed, Google Scholar, Cochrane Library, EMBASE, Wiley Online Library, and Ovid. Articles were screened for inclusion based on relevance to PMT. Articles were assessed for study design, presence of established/tested PMT, PMT definition, PMT activation criteria, and Transfusion Ratios, for final determination of article inclusion.

Results: Our search produced 3213 articles with 33 included for final review. Existing definitions of PMT are based on volume administered/kg but vary in timeframe criteria (over 4 hr vs 24 hr). Some studies have investigated “high” balanced transfusion ratios as seen in adults (1:1 FFP:pRBC) with a few showing statistically significant improvement in pediatric mortality vs lower ratios. PMT protocol implementation has not been shown to consistently reduce pediatric trauma mortality across multiple centers. However, other operational aspects such as reduced time to first transfusion are apparent benefits.

Conclusions: There is poor consensus over the definition of PMT. Definitions that involve early recognition have the most promise for practice and future studies. Evidence supporting an optimal blood product ratio in PMT is also lacking but trends towards supporting balanced approaches. Implementation of PMT protocols have been limited in showing significant improvement of overall pediatric trauma mortality but may reduce associated morbidity.

Reference: