

# Paramedic – Evidence Based Medicine (P-EBP) Program

## Paramedic CAT (Critically Appraised Topic) Worksheet

**Title:** Freeze-Dried Plasma in Prehospital Trauma Patients

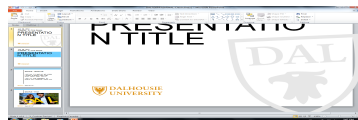
**Report By:** Chris Price, Gerald Thompson, Kenny McGraw, Steve MacDonald, Ben Murphy

**2<sup>nd</sup> Party Appraiser:** Jen Greene

**Clinical Scenario:** Paramedics arrive on scene of a two vehicle MVC (Transport truck VS Minivan) . This MVC is 45+ min from the nearest trauma center. The driver of the transport truck is unharmed, just “shaken up” . Minivan has 3 occupants. Occupant 1 (Driver) is DOA. Occupant 2 (Passenger) is a female patient, mid 30's who presents with a severe large laceration to her left thigh with excessive bleeding that has not been controlled. Occupant 3 (Passenger) was in the back of the minivan and is presenting with mild injuries upon first contact, and is being assessed by a second ambulance crew on scene. Occupant 2 (your patient) will undergo standard treatment with full assessment, as well as treatment with bandages, tourniquet, and IV therapy with a fluid challenge if necessary.

### **PICO (Population – Intervention – Comparison – Outcome) Question:**

In Prehospital trauma patients with signs of hemorrhagic shock, would the prehospital administration of Freeze-Dried Plasma (FDP) compared to Crystalloid Therapy impact patient survivability.



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**EHS**  
Emergency Health Services

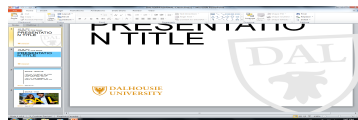
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**Search Strategy:** ((Emergency Medical Services OR Emergency Medical Technicians OR paramedic\* OR emergency medical technician\* OR prehospital OR pre-hospital OR "out of hospital" OR responder\* OR ambulance) AND ("major trauma" OR "hemorrhagic shock" OR hypovolemic)) AND (freeze dried AND (FDP OR "blood products" OR plasma OR platelets))

**Search Outcome:** Results: 17 on 09/28/2023

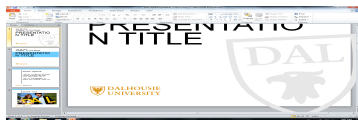
## Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
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<p><b>Shlaifer, 2017</b></p> <p>Level of Evidence: III          Direction of Evidence:          Yellow</p>	<p>109 Adult trauma patients from both Israeli Defense Forces and Israeli Trauma Registries.</p>	<p>Retrospective Cohert Study. ( No comparison group)</p>	<p>Feasibility          Safety          Adverse Reactions          Adherence to CPG's</p>	<p>1 adverse reaction recorded, suspected to be provoked by external factor (Shakiness post FDP administration in Septic patient)          57% adherence to CPG in place (no specific indicators to where CPG was breached)          92 of 109 enrolled patients survived to hospital, 88% of those survived to discharge in some capacity.</p>	<p><b>Strengths:</b> Patient population (many different types of trauma presented in study)          Low adverse reaction rate recorded in study          Patients taken from two registries to participate in study. (IDF &amp; ITR registries)  <b>Weakness:</b> No Comparison group.          Less than optimal CPG adherence (57%)          Unsure of outcome if performed in urban environment. (Study performed in a battlefield environment.</p>
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<p><b>Pusateri, 2019</b></p> <p>Level of Evidence: I Direction of Evidence: Green</p>	<p>626 Trauma patients (467 Male, 159 Female, aged 27-57 mean age: 42)</p> <p>Plasma Group: 297 pts SC Group: 329 pts</p>	<p>Prospective randomized study.</p>	<p>24 hour and 28 day mortality post major trauma w/ prehospital admin of 2U FDP.</p>	<p>Plasma recipients were 47% less likely to return to ED post discharge with coagulopathy. Patients with transport times to ED longer than 20 minutes were <b>NOT</b> less likely to require packed RBC's in ED compared to patients who received standard treatment w/ Crystalloids. No significant difference in 24 hour and 28 day mortality between FDP recipients and control group. (p value= 0.02)</p>	<p><b>Strengths:</b> Randomized Trial Large Control group FDP found to be beneficial in patients with transport time to ED longer than 20 mins.</p> <p><b>Weakness:</b> No significant change found in 24 hour and 28 day mortality. No documented times between patient POI and administration of FDP</p>
<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>

**Comments:** Administration of FDP to trauma patients with signs of hemorrhagic shock in the prehospital setting has only been found to be marginally beneficial in patients with extended transport times to ED. This could make it difficult to implement to ground ambulances due to minimal recorded change in patient outcomes both short and long term. (24 hour and 28 day mortality)

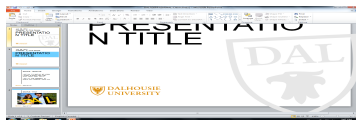


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**Consider:** Feasibility and cost are the leading factors as to why practice should not be changed. FDP is expensive and with low supporting evidence of significant change in patient outcome, ground ambulance services will likely be hesitant or against adding this to standard practice. Especially those that are mainly servicing an urban environment with lower transport times to trauma facilities.

**Clinical Bottom Line:** Prehospital administration of FDP has been found to be feasible, and safe with a low recorded adverse reaction rate. However it has only been found to be marginally beneficial in patients with extended transport time to ED, and no significant change in short or long term mortality has been recorded.

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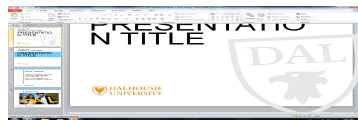


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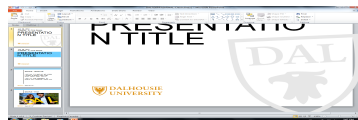
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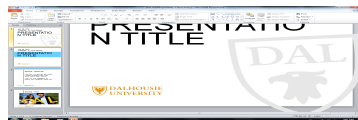
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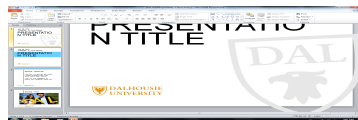
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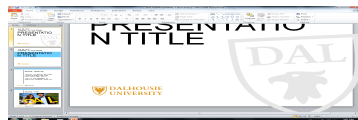
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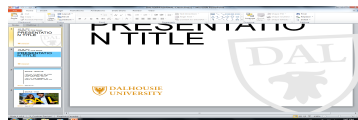
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