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Mountain View Fire Rescue Whole Blood Initiative

🔥 What is the Whole Blood Program?

The new Whole Blood Program allows specially trained and equipped paramedics to administer whole blood transfusions to patients who have sustained significant blood loss through injury and/or significant bleeding (traumatic, obstetric, gastrointestinal, etc.) and with signs of hemorrhagic shock.

🔥 What is Whole Blood Transfusion?

Whole Blood transfusion involves the administration of blood that has not been separated into components such as red blood cells, plasma, and platelets. This delivers a full spectrum of blood components that can better support critical trauma patients experiencing significant blood loss or internal bleeding.

🔥 Why are transfusions being administered in the pre-hospital setting?

Trauma is the 4th leading cause of mortality in the United States, with more than 30% of trauma-related deaths being due to massive hemorrhage [iv].

Pre-hospital Whole Blood transfusions are being adopted by EMS agencies to address severe blood loss at the scene, offering quicker and more comprehensive resuscitation. Studies indicate that Whole Blood is particularly effective in managing hemorrhagic shock because it can rapidly replace lost blood volume and improve clotting, thus stabilizing patients before they reach a hospital [ii], [iii].

🔥 What are the benefits of Whole Blood transfusions over traditional component therapy?

Whole Blood transfusions can improve survival rates by providing a balanced transfusion that more closely mimics the blood lost during trauma. This treatment is associated with lower mortality rates compared to component therapy, as it can deliver critical clotting factors and other essential blood components in a single unit, reducing the need for multiple transfusions [iii].

🔥 Are there specific patient outcomes linked to early Whole Blood transfusion?

Yes, administering Whole Blood as soon as possible after injury significantly enhances patient outcomes. Research has shown that delays as short as 14 minutes can decrease the survival benefit, emphasizing the importance of timely transfusions in the field [iv]. A growing body of data shows better outcomes for patients who receive blood in the field, prior to arriving at the hospital. Evidence suggests early whole blood administration (less than 35 minutes from injury) in severely injured trauma patients can increase patient survivability [x].

🔥 Is Whole Blood safe for all patients, including those with different blood types?

Whole Blood used in emergency settings typically employs Low-Titer Type O Whole Blood (LTOWB), which is compatible across blood types and minimizes the risk of transfusion reactions. Studies have demonstrated



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that this universal approach is safe for emergency transfusions, including in women of childbearing age and pediatric patients [x], [xiii].

🔥 How has Whole Blood been tested in pre-hospital settings, and what were the results?

Studies conducted in various trauma centers indicate that Whole Blood Resuscitation not only increases survival but also reduces the total volume of blood products required during patient treatment [iv], [x]. The latest report indicated that LTOWB is in use at over 300 trauma hospitals in the United States [ix].

Initially used widely in military settings, Whole Blood transfusions have proven to be successful in civilian trauma care as well. This practice is becoming more widely practiced as more EMS agencies recognize the lifesaving benefits of Whole Blood for trauma patients experiencing significant blood loss. This movement is gaining traction thanks in part to advocacy from organizations such as the Colorado Whole Blood Coalition and the International Association of EMS Chiefs (IAEMSC) which encourages broader implementation across the country [xi].

🔥 What is the long-term impact of implementing Whole Blood transfusions in EMS services?

EMS crews can administer blood to the patient much sooner than if providers had to wait for that patient to arrive at the hospital, improving outcomes [iii].

Integrating Whole Blood transfusions into EMS protocols is expected to reduce mortality rates for patients experiencing severe trauma and enhance overall emergency care outcomes. While the initial implementation may present logistical challenges, the practice is projected to improve patient stabilization and recovery in the long term and has already proven to be a critical medical intervention tool in states that have already adopted EMS Whole Blood programs.

🔥 Can patients refuse or opt out of the Whole Blood Program?

Conscious patients can refuse a blood transfusion at any time. For unconscious patients, providers will check for relevant medical identification, including alert tags and ID bracelets, for any patient directives before issuing whole blood.

🔥 Does Whole Blood interfere with the administration of other blood products or medication?

No. Receiving a blood transfusion does not interfere with your current medications. You should consult your healthcare provider with any questions.

🔥 Can patients who receive LTOWB get additional medication or blood products at the hospital?

Yes.

🔥 What blood type do you administer?

MVFR personnel will administer Low Titer Type O+ Whole Blood (LTO+WB). This is a very specific type of blood product, which is available from most blood suppliers in the United States as an FDA licensed product.



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The units are collected from one donor, and instead of being fractioned into different components such as red blood cells and plasma, the donation remains in its whole blood state.

Here's a breakdown of LTOWB:

- ◆ Low Titer: Contains low levels of antibodies, making it safe to transfuse to a patient with any blood type.
- ◆ Type O+: Type O blood is known as the universal donor, meaning it can be transfused to any patient. O+ blood is much more commonly available than O-. Only 7% of the U.S. population has O- blood type, compared to 37% who are O+ [xii].
- ◆ Whole Blood: Contains all blood components (red blood cells, plasma, and platelets) in one product.

◆ How is it made?

Blood is collected from volunteer donors, screened for disease, and verified to have non-significant levels (low titers) of antibodies against Type A or B blood. White blood cells are filtered out, but the blood is left whole, with plasma and platelets to promote clotting and red blood cells to carry oxygen.

◆ Is it safe to give Rh+ blood to patients who are Rh-?

Since the patients who are eligible for a whole blood transfusion are typically at risk of imminent death, the risk/benefit consideration falls in favor of RH- patients receiving RH+ blood [vi]. The risk of complications is very low.

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