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Is it acceptable practice to administer multiple blood products simultaneously to a patient?

A Registered Nurse wonders if there is any **restriction** to the simultaneous infusion of multiple blood products to the same patient. For example, she wants to know if different donor RBC's, platelets, and FFP can all be given at the same time. She was under the impression that this should not be done, but she is looking for information on this subject in case her understanding is incorrect. Colleagues are invited to share their institutional protocols for simultaneous infusion of multiple blood products, including necessary precautions.

In reply to the above, the following responses were submitted.

1. **A transfusion service physician in California** said that from her point of view, she is **opposed** to administering more than one unit of blood product at a time simultaneously, and her regional blood center does not recommend such a practice. One reason for her opinion is that **if the patient started to have a reaction**, you would need to discontinue all of the products, and you might not find out which product caused the reaction. **[Web Masters note:** This physician did not comment on the need to infuse multiple products simultaneously for **critically bleeding** patients who are experiencing exsanguination, and for whom such transfusions might be lifesaving.
2. In contrast to the California colleague who replied in #1 above, **a transfusion medicine physician in Cleveland** reports that at her university hospital, it is **common practice to administer multiple blood products simultaneously to trauma patients, liver transplant patients and other patients who are rapidly exsanguinating and who are coagulopathic**. The Cleveland colleague added that her hospital does not have a specific blood bank developed guideline for administration of multiple blood products simultaneously, but that this practice occurs primarily when patients who have multiple lines in place require a potpourri of products simultaneously.

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3. **An anesthesiologist in Cleveland** reported that he is in agreement with the perspective of the transfusion medicine physician (also in Cleveland) that administration of multiple units is **routinely done in big surgical procedures**. As an anesthesiologist, he often administers platelets via one IV line, RBC via a second line, and FFP via a third, followed by three more units in under two minutes.
4. **An anesthesiologist in San Francisco** reported that it is **common practice and standard of care** to administer multiple blood products simultaneously when clinical conditions (e.g. massive blood loss) dictate the need, whether related to trauma, intra-operative bleeding, or other causes. To wait for one product to be finished before administering the next under these circumstances would be below the standard of care.
5. **A transfusion medicine physician in Chicago** reported that he also **agrees** with the Cleveland Transfusion Medicine physician. In the Chicago physician's opinion, there are **numerous compelling reasons to transfuse numerous and varied kinds of components essentially simultaneously**. In his medical center, such situations include massive hemorrhage, peripartum DIC states (such as an amniotic fluid embolism we recently experienced), liver transplantation and trauma. He adds that the inquiring nurse may have asked the question from the perspective of the **medical setting**, where time and circumstances may allow for transfusion of one unit at a time. However, in critical care situations, the rules of trauma/massive hemorrhage apply. These rules include doing what is clinically indicated for the patient's individualized circumstances. Regarding the dilemma of "which unit might have caused a **transfusion reaction** when multiple units are given at the same time, in heavily or rapidly transfused recipients, this may be a moot point. In the OR-Trauma-Critical Care settings, blood components are frequently infused rapidly, under pressure (with commercial devices such as a Level One infuser), which can administer a unit of RBC via a large-bore central line in less than a minute. So administration rates and frequencies (unfortunately) may blur the issue of "what unit caused what reaction". According to the Chicago

physician, additional issues related to rapidly infusing multiple components simultaneously include

- Nationally, about 50% of all blood is transfused in OR's by anesthesiologists
- in his opinion, transfusion reactions are very seldom to rarely reported in massive transfusion situations by anesthesiologists.

He adds that in his Medical Center setting, where about 50% of their transfusion activity is ordered by anesthesiologists, he has not seen a single "transfusion reaction" reported from the OR in 12 years. During this same period, in contrast, he has seen three bona fide cases of anaphylaxis reported from the OR in patients with latex allergies. Of course, this does not mean that transfusion reactions are not occurring in massive transfusion situations; they are just probably under-recognized and under-reported. The Chicago physician offers the following 'Bottom line' **"We don't have any guideline against transfusing multiple components simultaneously (in any clinical setting). It would be unenforceable and imprudent in situations where it was really necessary."**

6. **A Los Angeles transfusion service physician** reports that in his opinion there is no restriction to giving a patient multiple transfusions simultaneously, so long as **one observes some basic rules**. First, one must **never mix ABO-incompatible products in the same bag or line**. If one were to do so, and if the mixture contained red cells, agglutination might occur due to ABO antibodies. For example, group O platelets should never be mixed in the same line at the same time as group A red cells. Second, if multiple products are administered simultaneously, they **should be given through different lines**. As a practical concern, if multiple products are given simultaneously, it might be difficult to know which unit is responsible for a reaction, should a reaction occur.

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Posted: November 13, 2002

Addenda: Nov. 14, 2002