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Is Rh Immunoglobulin (RhIG) necessary when platelets from Rh-incompatible donors are given to females of child-bearing potential?

A community practice pathologist in Central California wrote that a 'discussion' has arisen at his hospital over the need for RhIG for women of child-bearing age who receive Rh incompatible platelets. The discussion was prompted by the case a young Rh negative woman who required platelet transfusion with Rh positive platelets, but for whom a hematologist was reluctant to give IM injections for fear of a significant hematoma. The pathologist comments that the vast majority of the platelet transfusions at his hospital are given as plateletpheresis units, and that the transfusion recipients are almost exclusively adults. The argument has been put forward that the red blood cell content in a plateletpheresis unit is negligible and, in the absence of visible red blood cell contamination, Rh prophylaxis is not necessary. The following recent articles are offered as further support for this position:

- [Cid J et al. Transfusion 2002;42:173 \(February\)](#)
- [Molnar R et al. Transfusion 2002;42:177 \(February\)](#)

A counter argument acknowledges the low risk of Rh immunization in this setting, particularly if the patient has an immunosuppressed condition, but **the risk is not zero and the consequences D alloimmunization in a young woman are significant**. The inquiring pathologist subscribes to the second position, but he wishes to learn the opinions of others whose transfusion services handle such situations. (**Editor's NOTE:** Prescribing information, such as that found at the IV WinRho USA might be of interest to those concerned about avoiding hematoma formation when Rh immunoprophylaxis is medically indicated, but a patient's platelet count is too low to give an IM injection safely.)

Readers may be interested in reviewing the following related discussions on this forum:

- [Rh immune globulin \(RHIG\) administration after transfusion of Rh-pos platelets/plateletpheresis units to Rh-neg recipients](#)
- [How important is it to avoid Rh mismatched platelets for Rh-negative female neonates?](#)

The following responses have been received.

1. **A transfusion medicine colleague from Vienna** reports that in his practice, it is recommended to use D-neg donors for D-neg individuals. He adds that in some cases it may be necessary to use a D-pos donor for a D-neg woman in her reproductive age. In such cases, a plateletpheresis unit or a dose of platelet concentrates is unlikely to induce alloimmunization, but they may. Anti-D immune globulin, if regarded necessary, can be given **intravenously**, if hematomas are expected due to intramuscular injections. IV anti-D immune globulin is also given in ITP patients.
2. **One of the authors of the paper by Cid et al cited above** wrote that a **review** will soon be published in Transfusion Medicine Reviews (January, 2003 issue). In summary, the responding blood banker believes that one must **consider the following factors** when deciding upon Rh immunoprophylaxis following Rh positive platelet transfusions to an Rh negative individual
 - level of immunosuppression of the Rh(D)-negative patient
 - volume of Rh(D)-positive RBC's contaminating the platelet preparation
 - the risk-benefit of administration of RhIG

In the responding blood banker's hospital, **they decided NOT to administer Rh immunoprophylaxis to adult patients** that received Rh-incompatible platelet transfusions for the following reasons:

- the low level of RBC contamination in platelets obtained by modern apheresis devices
- the high level of immunosuppression received by their patients
- the need to administer RhIG with an **IM** injection in their country
- their own published data, as above (Transfusion 2002;42:173)
- review of the literature.

In order to establish a guideline, the responding blood banker **encourages colleagues to do randomized, well-defined and well-conducted studies** that will provide the necessary data to clearly define guidelines for this still unresolved aspect of platelet transfusion.

3. **A blood banker in Michigan** reports that in the situation described above, **they use IV RhIG**. It is costs more, but avoids an IM injection. The responding blood banker is aware that not all facilities will have access to the IV preparation.
4. **A transfusion medicine physician in New York** reports that it is their hospital practice to **always give Rh immune globulin** to Rh negative girls and women of childbearing age (<50 y.o.) when they receive platelets or FFP derived from an Rh-positive donor. While the risk of alloimmunization is perhaps 5-10% or less in patients with hematologic malignancies receiving ablative chemotherapy, there is still a finite risk. Since many of these girls and young women will go on to have successful pregnancies, and HDN can be fatal to the fetus, this seems a reasonable cost/benefit and low risk approach to the New Yorker. He agrees that giving intramuscular injections to severely thrombocytopenic/neutropenic patients is not a great idea, so **they use an IV formulation**. They sometimes give Rh immune globulin (the IM formulation) by **subcutaneous** injection, where the risk of hematoma and infection should be less (this route of administration is obviously an off-label use). Subcutaneous injection does yield measureable blood levels of anti-D in their experience. These days they pretty much only use the IV form for thrombocytopenic and/or neutropenic patients.

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5. **A transfusion medicine physician in Texas** reports that he deals with this issue by using an IV preparation of ant-D immune globulin. He uses WinRho in young females (with and without immunosuppression) routinely to prevent formation of anti-D. Although there are very few RBCs in a plateletspheresis unit, the Texan claims that (per the literature) an exposure as small as 0.1-0.3 milliliters of Rh positive cells may induce primary alloimmunization to the D antigen in an Rh negative recipient (Web Master note: the Texan did not provide a reference to the minimum volume of Rh positive red cells that can cause primary alloimmunization to the D antigen).
6. In response to the Web Master's query above, **a blood banker in Palo Alto** offers a reference to the classic studies of Zipursky et al in Winnipeg (Lancet 2:489,1963). From their studies, they postulated that (in pregnancy) sensitization requires a primary stimulus of at least **0.5 ml** of fetal blood, but antibodies do not occur until after booster stimuli of 0.1-0.2 ml of fetal blood.

Please submit comments to the [e-Network Forum](#).



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Ira A. Shulman, MD
CBBS e-Network Forum Editor & Moderator

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