



Rationale for Universal Leukoreduction (ULR)

It is safer to provide leukoreduced blood to all patients, removing any risk that a patient in need will be mistreated. ULR avoids potential transfusion delays and the complexities of maintaining two inventories.

Targeted leukoreduction: Many patients require leukoreduced units, including pre-transplant patients, neonates (< 2 yrs) and others for whom CMV infection would be life-threatening, those with hematologic malignancy for whom alloimmunization could be life-threatening, and patients who will have febrile non-hemolytic transfusion reactions. It is complicated to predict and keep track of such patients. A significant percentage of ALL patients who receive transfusions either require leukoreduced blood today or will experience future complications if they do not receive leukoreduced blood today.

Benefits of leukoreduced units:

1. **Mitigate** pre-sensitization that may lead to platelet refractoriness and/or graft rejection for cancer patients who receive multiple transfusions.^{1,2,3}
2. **Avoid** the inadvertent transfusion of CMV-untested or -positive blood, due to clerical errors or when the requirement for CMV-safe blood is not communicated to the blood bank. Some institutions have eliminated the need for carrying CMV seronegative inventory with ULR.^{4,5,6,7,8}
3. **Eliminate** delays in transfusions caused by the temporary unavailability of CMV seronegative blood.
4. **Prevent** febrile non-hemolytic transfusion reactions.^{9,10,11,12,13,14}
5. **Improve patient outcomes** after cardiac surgery when compared to non-leukoreduced blood.^{15,16,17,18,19,20}

Logistical reasons for Universal Leukoreduction:

1. **Reduce transfusion reactions and chronic adverse effects** by assuring that those who require leukoreduced units receive them.
2. **Simplify** by managing only one inventory.
3. **End uncertainty** of trying to predict who should receive leukoreduced transfusions today to avoid complications in the future.

It is impossible to know in advance which patients awaiting transfusion will need leukoreduced components during a subsequent illness. If they receive non-leukoreduced blood today, future transfusions may bring complications because these patients will have been sensitized to WBC antigens.

Major US institutions, including Yale-New Haven, Johns Hopkins, University of California/San Francisco and many other renowned institutions with high transfusion volume have found the significant patient benefits of ULR justify the cost. The FDA's Blood Products Advisory Committee has endorsed ULR²¹, and ULR is more than 80 percent implemented in the United States.²²



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