

**WHOLE BLOOD DERIVED
PLATELETS AS A VIABLE MEANS
TO MEET COMMUNITY PLATELET
REQUIREMENTS**

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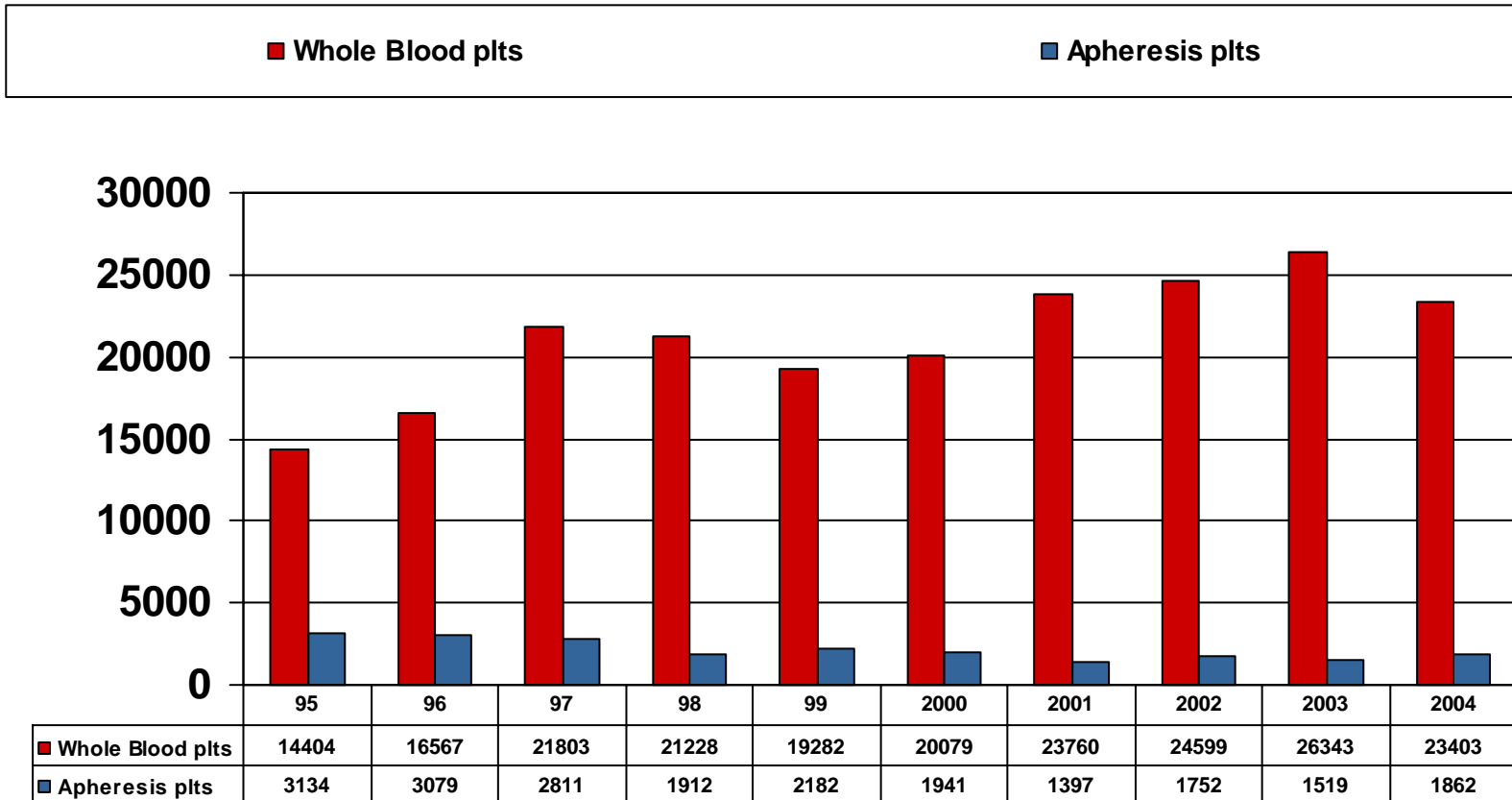
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COLLECTION AND TRANSFUSION IN THE US: 2001

Product	Collected	Transfused	% Transfused	% change: 1999-2001
Apheresis platelets	1,456,000	1,264,000	87%	26
Whole Blood platelets	4,164,000	2,614,000	63%	- 13.6
FFP	4,437,000	3,926,000	88%	18.3

Rhode Island Usage – All Hospitals Platelet usage 1995 - present



PLATELET FILTRATION



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TRANSFUSION INCIDENT RATES: 2001: (#units/1000/year)

Product	US	RI
Platelets	34	39

Dose: $0.5 \times 10^{11} / 10\text{kG}$

ADVANTAGES FOR APHERESIS PLATELETS

1. Less Bacterial Sepsis
2. Less Outdating
3. Fewer Reactions
4. Fewer donors to screen for CMV
5. Better platelet subpopulations
6. Pool of HLA typed donors
7. Better Adherence to cGMP
8. Elimination of pooling
9. Fewer donor exposures

DO WBD-PLATELETS DIFFER IN QUALITY TO APHERESIS DERIVED PLATELETS?

In vitro and in vivo effects of prestorage filtration of apheresis platelets.

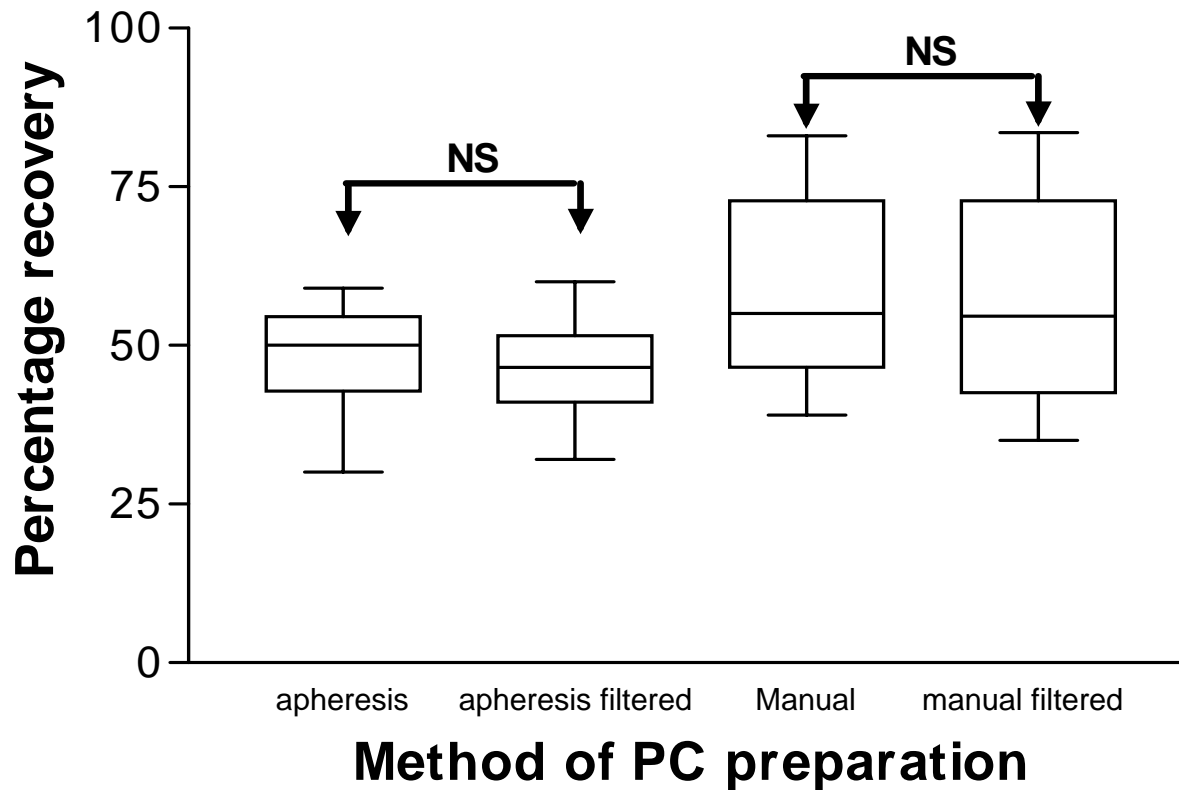
**Sweeney JD, Holme S, Stromberg RR et al.
Transfusion 1995;35:125-130**

White cell-reduced platelet concentrates prepared by in-line filtration of platelet rich-plasma.

**Sweeney JD, Holme S, Heaton WAL et al.
Transfusion 1995;35:131-136**

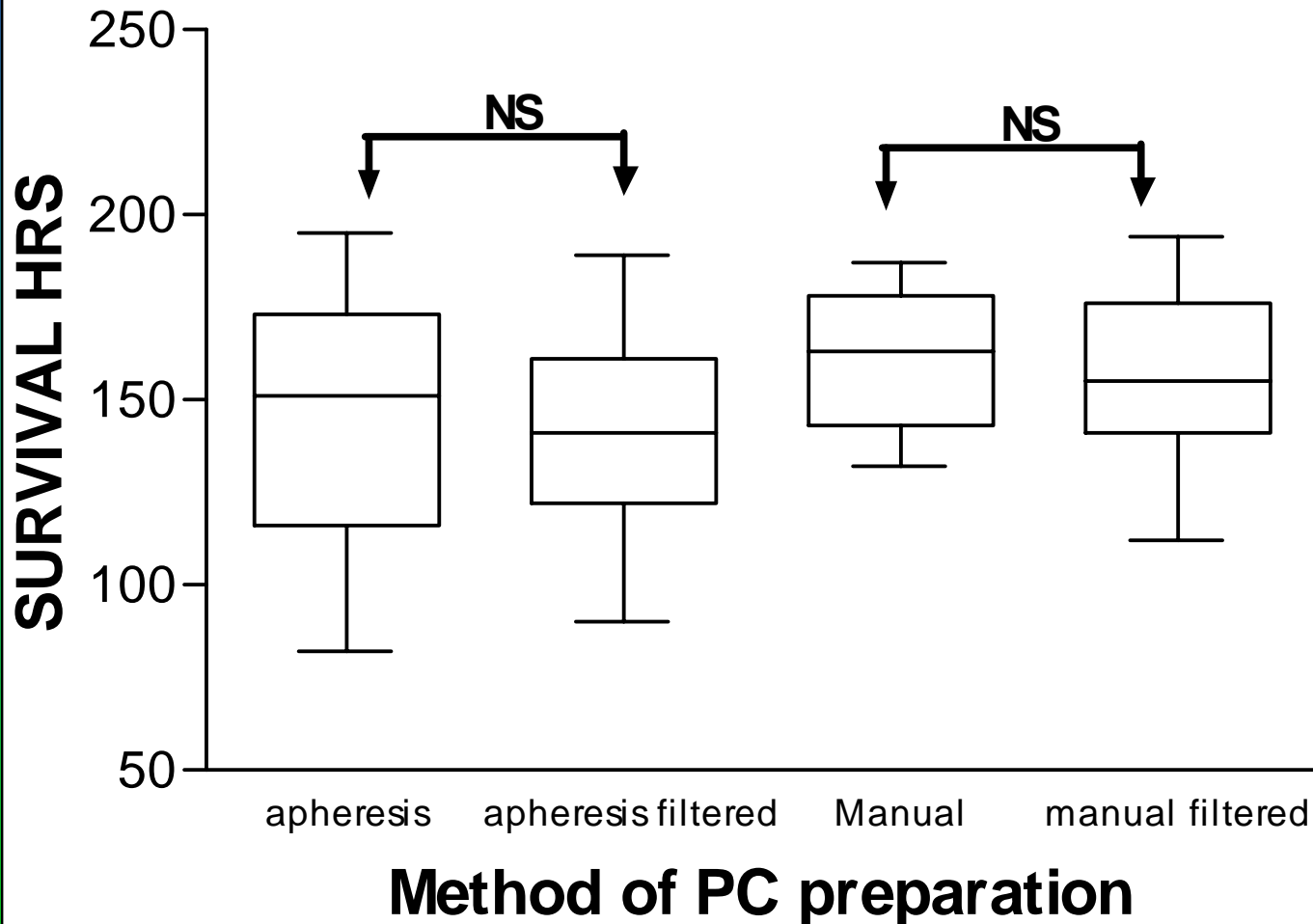
PERCENT RECOVERY OF WBD-PLATELETS AND APHERESIS DERIVED PLATELETS

Apheresis vs Manual PC preparation and percent recovery¹



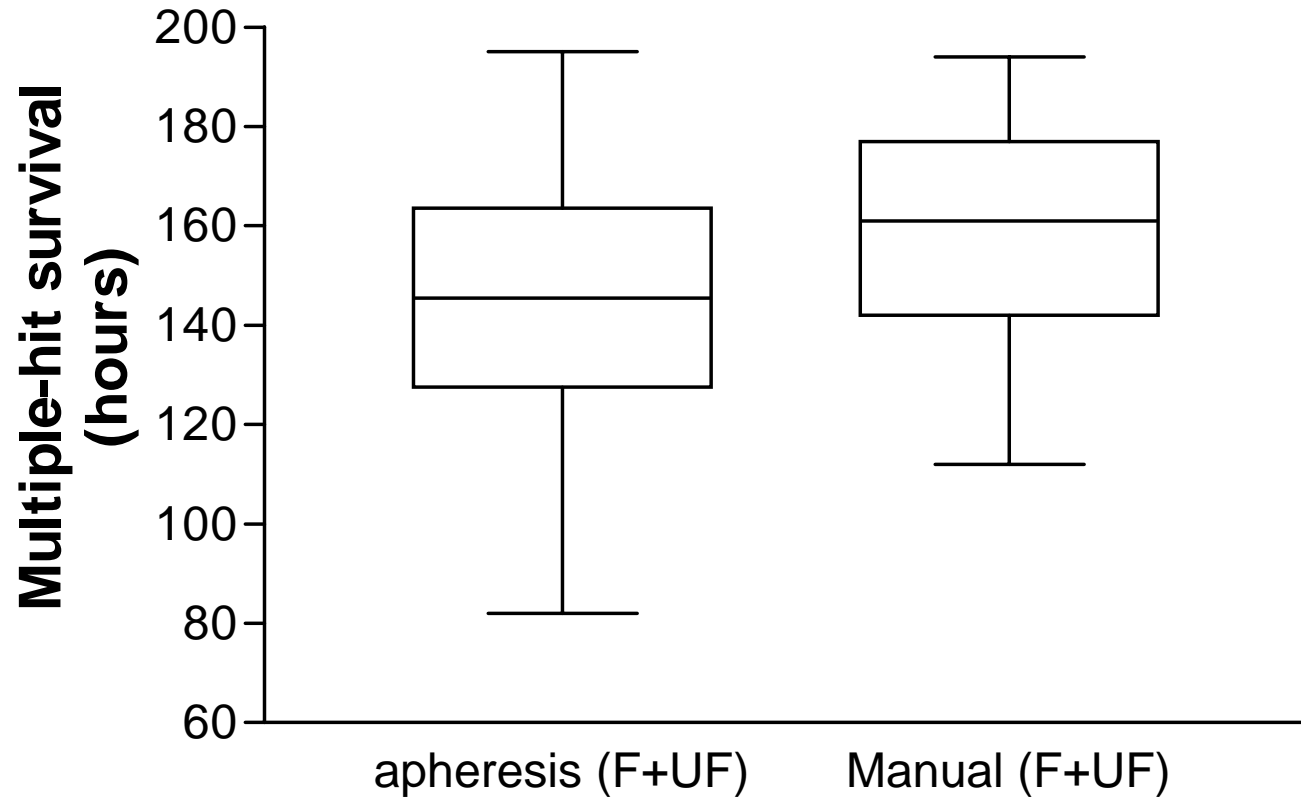
MULTIPLE HIT SURVIVALS OF WBD-PLATELETS AND APHERESIS DERIVED PLATELETS

Apheresis vs Manual PC preparation and Survival



COMPARISON OF WBD-PLATELETS WITH APHERESIS DERIVED PLATELETS(FILTERED AND UNFILTERED TOGETHER)

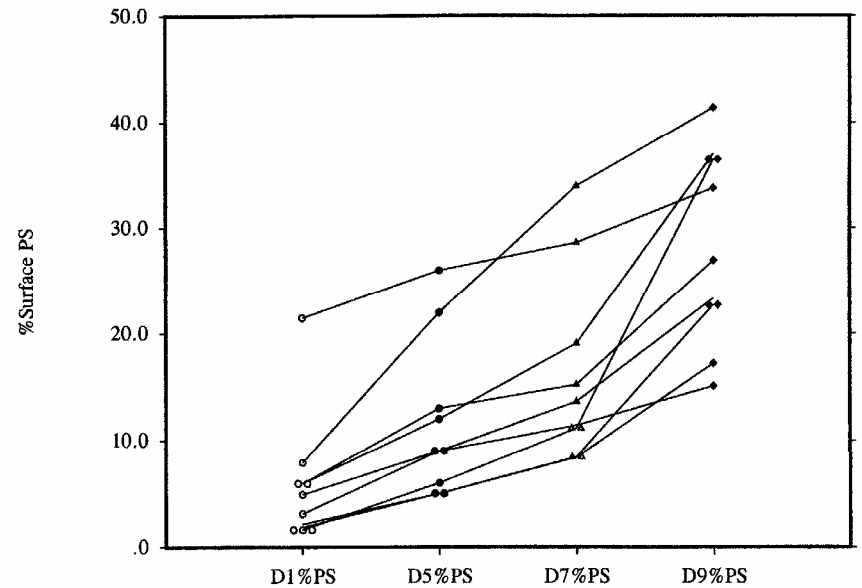
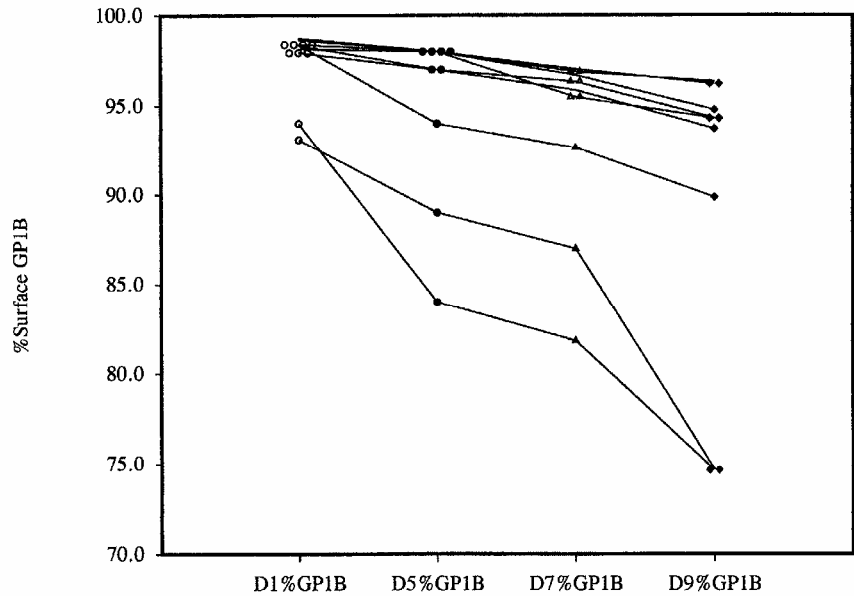
MHS grouped filtered and unfiltered
(unpaired t-test p=NS)



DISADVANTAGES FOR APHERESIS PLATELETS

1. Plasma mismatched Hemolysis
2. Poor in vitro storage of some donors
3. 20% may have defective platelet function as demonstrated by the PFA-100 assays
4. Larger volume of plasma from donors at risk for TRALI
5. Fixed potency: Yield cannot be altered
6. Problem with dosing of low blood volume recipients

INDIVIDUAL DONORS MAY STORE POORLY IN VITRO



ADVANTAGES FOR APHERESIS PLATELETS

1. Fewer donor exposures
2. Pool of HLA typed donors

The advantage of fewer donor exposures is directly related to the likelihood of infectious disease transmission by platelet transfusion

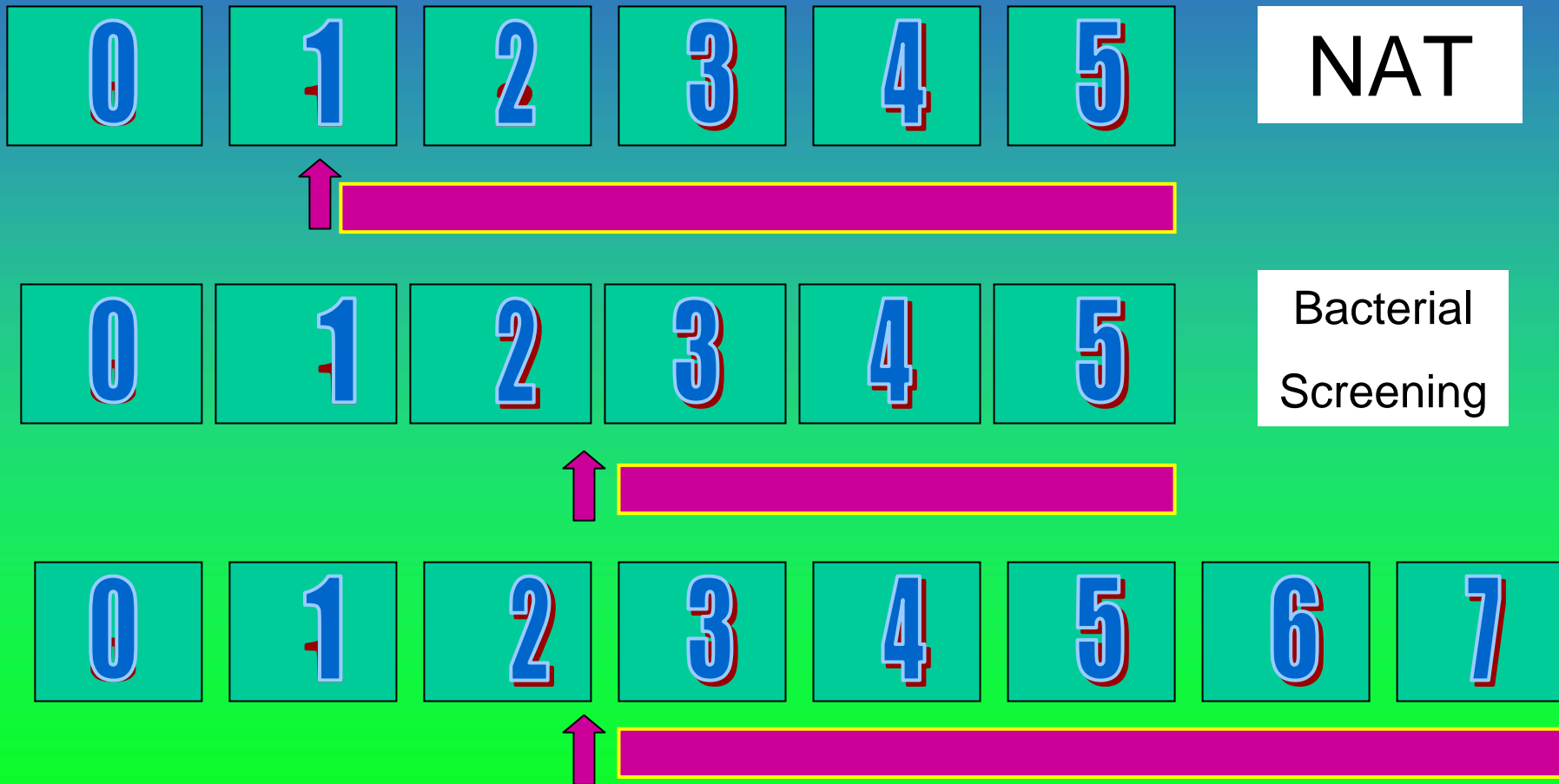
If this is 1:200,000 per unit, then use of apheresis platelets would prevent about 1 infection in 15-20 years.

RELATIVE RISK OR ABSOLUTE RISK

Consider a stem cell transplant unit which transplants 100 patients /year using either apheresis derived or WBD-platelets exclusively with the average patient receiving 10 units RBCs and 10 platelet transfusions

Using WBD-platelets only would result in an additional 4,000 exposures/year which would transmit 1 case of viral disease in about 40 years!

EFFECTIVE SHELF-LIFE OF PLATELETS



MANUFACTURE, TRANSFUSION AND OUTDATING OF WBD-PCs: 2003-2004

	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Blood Center					
Manufactured	10,566	10,180	9,686	9,364	10,494
Outdated	543	188	367	776	816
% Outdated	5.1	1.8	3.8	8.3	7.8
Hospital Blood Bank					
Received	2596	3300	3041	2666	2729
Outdated	379	348	372	397	503
% Outdated	14.6	10.5	12.2	14.9	18.4

PRESTORAGE POOLING: STERILE DOCKING



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PRESTORAGE POOLING: POOLING CONTAINER



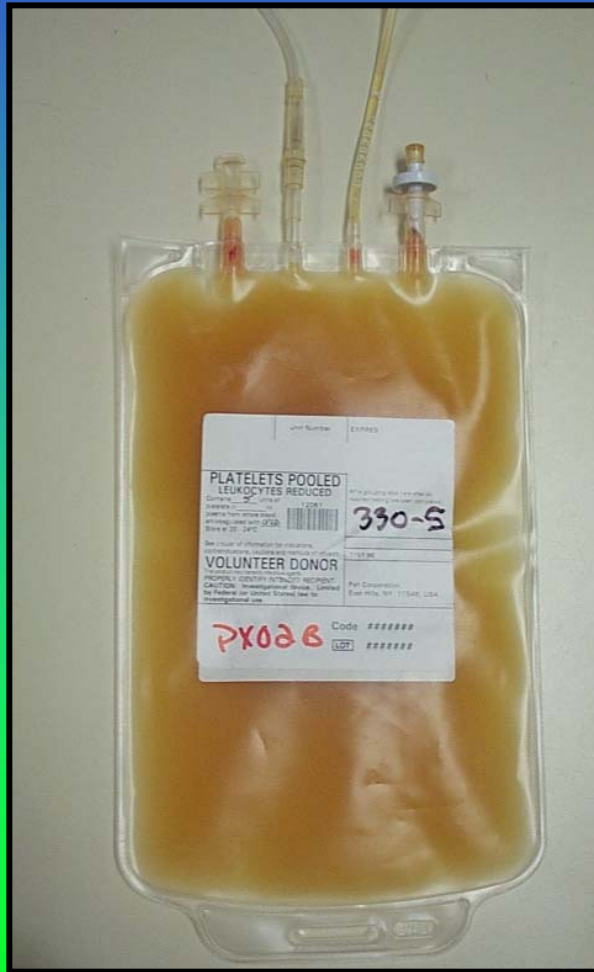
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PRESTORAGE POOLING: OFF-LINE FILTRATION



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PRESTORAGE POOLING: FINAL PRODUCT



TRAINING

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