Concessionary Release Limits for Leucocyte Depletion

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Background

- The UK Services were asked to provide the rationale as to why units with > 1 x 10^6 leucocytes were not being discarded & the UK Services were routinely employing a discard limit of > 5 x 10^6

Process

1. • Paper developed by the UK Blood Services
2. • Reviewed and updated by SACBC
3. • Recommendations agreed by JPAC

Current state in the UK

- Reflects the current capability of LD systems
- Only a fraction of components are tested for residual leucocytes
- Limit of sensitivity of current counting methods is approx 0.3×10^6 /U

  The Guidelines for the Blood Transfusion Services in the UK recommend use of SPM of the LD process ensuring that at least 90% of components tested by flow cytometry are $< 1 \times 10^6$ per unit & that more than 99% of components should contain $< 5 \times 10^6$ leucocytes, both with 95% confidence

Current specifications

BSQR 2005[1]	$< 1 \times 10^6$
Council of Europe 17th edn[2]	$< 1 \times 10^6$
Red Book 8th edn[3]	$>95\% < 5 \times 10^6$ and $>90\% < 1 \times 10^6$
AABB 27th edn	$>95\% < 5 \times 10^6$

1 *The required frequency of sampling for all measurements shall be determined using statistical process control:*

2 *These requirements are deemed to have been met if 90 per cent of the tested units fall within the values indicated*

3 *Process performance should be assessed against the 1×10^6 limit when using statistical process control (statistical process monitoring) measurements*

Risks of receiving non leucodepleted blood

- Transmission of CMV
  - "UK specification for leucodepletion.....is generally accepted as the level which renders components 'CMV safe' "
- Transmission of HTLV
  - Now very rare complication of transfusion with current leucodepleted components
- Transmission of TA GvHD
  - Number of leucocytes required unknown but current processes have reduced risk

Risks of receiving non leucodepleted blood

- Febrile reactions
  - Risk reduced significantly since LD. Increasing efficiency of LD unlikely to provide further benefit
- Prion infectivity
  - No documented transmission with current spec
- Alloimmunisation to leucocyte antigens
  - Level of $< 5 \text{ x } 10^6$ generally considered to prevent
- Other immunomodulatory effects
  - No convincing evidence

Potential number of tested units discarded in 2013 @ >1x10^6 and >5x10^6 UK wide

Component	Total Number of units >1x10^6	Percent of tested components discarded	Total Number of units >5 x10^6	Percent of tested components discarded
Apheresis Platelets	558	0.94	37	0.06
Buffy coat derived pooled platelets	932	6.82	112	0.82
SAG-M red cells	854	1.28	71	0.11

Conclusions

- The important considerations for setting a specification for leucodepletion are clinical
- There is no evidence that components with a leucocyte level of between 1 and 5 x 10^6 increase risk to the recipient
- Implementing a discard level of >1 x 10^6 leucocytes of units tested would result in the unnecessary disposal of blood components and may compromise availability

Recommendations

- Monitor components for LD at 1 x 10^6
- Discard limit for LD is set at >5x 10^6 leucocytes
- Clarify the above in the Red Book
- Components which do not meet the LD specified limit must follow a concessionary release procedure