Application of Leukocyte-Reduction Red Blood Cell to improve the safety of blood transfusion

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Background & Objective

Leukocytes are one of crucial factors to cause transfusion reactions and potentially transmit cytomegalovirus. The average of blood transfusion reaction rates in our hospital from 2015 to 2017 was 0.38%, 0.30%, and 0.42%.We aim that prevention of transfusion infections, decrease in the rates of transfusion reactions and improvement of blood quality and transfusion safety, so we start the policy of pre-storage leukocyte reduction from April 2018.

Methods

(1) We announced establishment and application of red blood cells leukocytes reduced (LR-RBC) system to physicians at hospital conference; (2) With big data of antibody identification, we established inventory of LR-RBC; (3) We hold transfusion reaction-related education training; (4) using a qualified warm blood device and regular testing and verification by a professional person; (5) recommending that patients be informed with any symptomatic situation.

Results

(1)The rate of using LR-RBC was 53.82% in 2018, and the averages of using LR-RBC was 87.77% in January to November 2019; (2) We establishment of weekly inventory of E+C+Mia(-) A/B/O LR-RBC; (3) We hold conferences in transfusion medicine to share applications of LR-RBC; (4) Biomedical engineers perform regular maintenance at each wards; (5) Before and after transfusion, patients should be observed. We compared 2018 (0.25%) and 2019 (0.11%, January to November) transfusion reaction rates, it greatly decreased 0.14%.

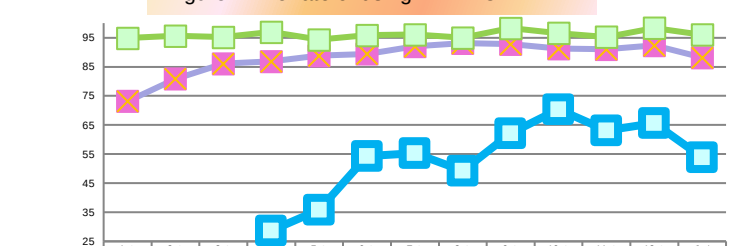
Conclusion

The promotion of the application of LR-RBC and the inventory of antibody identification strategies, the using rate increase 33.95%, and can reduce non-hemolytic transfusion reactions, shorten days of in hospital of patient, reduce the rate of transfusion reactions, and ensure the safety of patients' blood transfusions. In addition, reducing waste of medical costs and improving operational efficiency of blood transfusion for medical staff.

Relevance to HPH

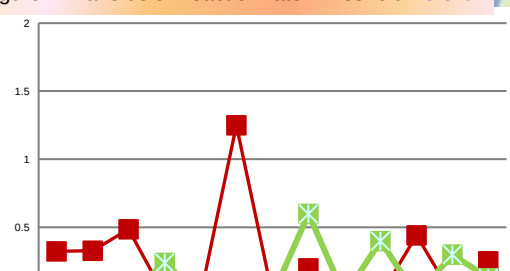
The establishment of inventory of LR-RBC and special blood products can offer long-term and urgent transfusions. In this way, it offers a more efficient and safe blood transfusion platform for patients and improve the efficiency of clinical operations.

Figure 1 The rate of using LR-RBC



	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月	平均
107年				28.64	35.77	54.33	55.34	49.2	62.15	70.35	63.05	65.58	53.82
108年	73.16	80.87	86.09	86.85	88.84	89.42	92.02	93.13	92.82	91.28	91.04	92.38	88.16
109年	94.91	95.64	95.25	96.98	94.35	95.88	96.12	95	98.3	96.6	95.3	98.35	96.06

Figure 2 Transfusion reaction rate-Threshold <0.3%



								Aug					Ave.
2018	0.324	0.33	0.487	0	0	1.25	0	0.199	0	0	0.443	0	0.25
2019	0	0	0	0.24	0	0	0	0.6	0	0.4	0	0.3	0.13