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Original Article

REDUCTION IN WASTAGE OF BLOOD PRODUCT: AN INTERVENTIONAL STUDY IN A TEACHING HOSPITAL OF WEST BENGAL

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ABSTRACT

Background: Poor planning and non-judicial uses of blood and blood products lead to wastage which in turn compromises the ability of a hospital to fight against any acute surgical or medical emergencies. At our Hospital the crisis in blood bank was very common and discomforting to treat emergency obstetrics cases.

Methods: To prevent that, in our hospital, we had started an interventional prospective analytical study based on a project POCQI. Wastage of blood and blood products between 01.10.17 – 31.12.17 was calculated and it was 190 bags of blood unused. Probable reasons of that wastage were tried to find out. After that, doctors, nursing staffs, other hospital staffs, and blood bank technicians were sensitized via several interactive sessions and specific blood and component requisition and transfusion protocols had been set (Intervention period 01.01.18 to 30.04.18). Proper implementation of the protocols at different levels had been followed up in regular intervals and occasional modification of protocols was done according to the situation.

Result: At the end of the study period the reduction of wastage of blood and blood components analyzed and plotted on an analytical graph. Fifty-two (52) bags of blood were in freeze on 1st February. At the end of second month wastage was 28 bags. At the end of the third month it was 09 bags of blood wasted.

Conclusion: Result of reduction of blood & blood components wastage was surprisingly successful. A little initiative and small steps can bring a lot of change to get a fruitful result.

Keywords: Blood reserve, POCQI, Point of Care, Quality Improvement

Background

Blood and its components are very significant for human life and therefore blood transfusion can be a life-saving intervention. There are multiple factors that contribute to shortfall in provision of blood including deficient donor recruitment, poor stock management and transportation. The demand for blood surpasses the blood supply in many countries. World Health Organization (WHO) data indicated that 87.5 % of developing countries collect less than half of the blood needed to meet the transfusion requirements of their populations[1]. Studies on developing countries reported that most of the limited blood supplies are used

for complications of pregnancy and childbirth, trauma and severe anaemia. [2, 3, 4]

Many factors lead to wastage of blood products in obstetrics like broken bag, broken seal, expired units, returned after 30 min, clotted blood or miscellaneous reasons which is most importantly due to lack of proper knowledge and awareness. According to the "30-minute rule" and guidelines for blood transfusion in the UK recommend that if RBC units are out of controlled temperature storage for more than 30 min, they should not be put back into storage for reissue[5]. The justification for this rule is that once RBC units are out of controlled temperature storage, the component warms up, and the risk of bacterial proliferation increases with time [6, 7].

Reducing blood wastage through optimal blood management and good blood utilization practice may therefore reduce the impact of low blood donation rates. Physicians, nurses and laboratory personnel are responsible for the wastage, with physicians being responsible for most of the wastages

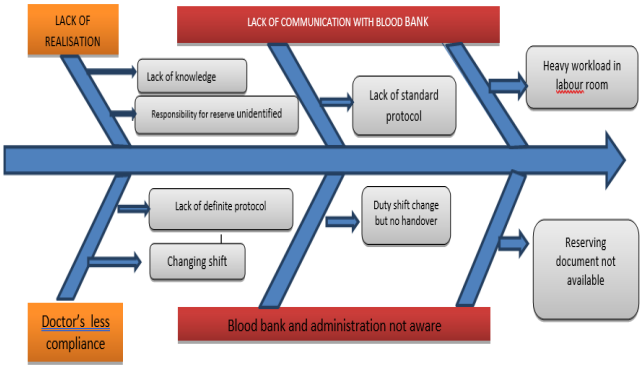
Methods

Blood and blood components availability in hospital blood bank, determines the capacity of the hospital to combat any Obstetrics as well as surgical emergency situation of acute haemorrhage.

In our hospital in the department of O&G, it was found that from October to December 2017, 190 bags of blood (65+58+67), were discarded on 1st January, 2018 due to no transfusion even after issuing from blood bank for emergency conditions. The problem was realised when in emergency situation our blood bank failed to provide blood and blood components due to lack of their storage lots off same group of blood bags were found to be of no use in our refrigerator.

Solution of this problem was needed and our aim was to increase the blood availability by decreasing number of wasted bloods. We had started an interventional prospective analytical study based on a project Point of Care Quality Improvement (POCQI) by Swasthya bhavan, West-Bengal. Following steps were taken.

Root Cause Analysis (Fishbone)



The problem was identified as follows:

I. Procedure: No definite protocol for reservation of Blood present at our hospital.

II. Place: In labour room and in Gynae emergency, most of the blood requisition was advised by treating doctors.

III. People: The on-duty doctors even when transfusion was actually not needed, used to bring blood from blood bank being worried of the fact that in emergency blood may not be available.

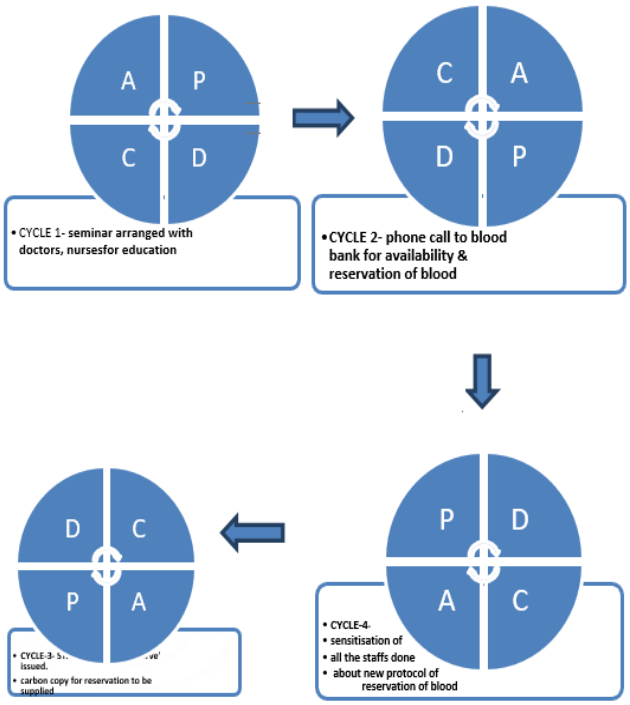
Intervention (PDCA –Plan Do Cause Action Cycle)

A. **First change**: - Seminar arranged involving our doctors and the nurses of O &G department to properly asses the necessity of blood for the index patient and then do the requisition if only it is very necessary (last week of October). It was ensured to them in acute emergency the blood will be available if wastage decreases.

B. **Second change**: - The doctors, nurses were asked to contact the blood bank by phone and ask them if the particular group of blood is available at that particular time or not. If available not to issue immediately but to keep it in reserve for 3 days.

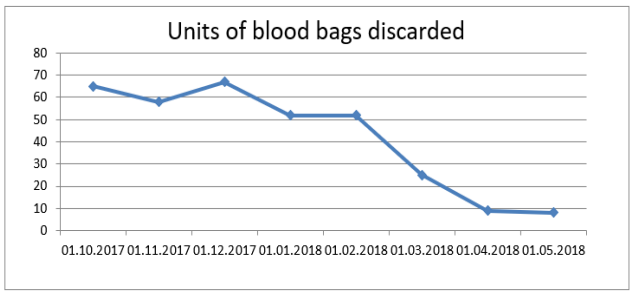
C. **Third change**: - As there was no written document of already reserved blood for a particular patient, the next shift doctors continued to requisition for blood and reserve it again. So, team leader arranged a meeting with the Blood Bank MO and decision taken to make a stamp mentioning **'KEPT IN RESERVE'** on the **carbon copy of the blood requisition form.** It was decided to send the carbon copy of the requisition form if the blood was intended for reserving.

D. **Fourth change:** The procedure was conveyed to all the treating doctors personally by our teams' programme implementer.



ANALYSIS AND RESULTS

The collected data within the study period was analysed once the period was over. It was found that there was a dramatically change of blood wastage at the end of the first month. 52 bags of blood were in freeze on 1st February. The reduction was noticeable. But still reduction at the end of second month was 28 bags. At the end of the third month it was 09 bags of blood wasted. The number of blood bag wastage was followed up in the consecutive months. It was a baseline but didn't reach zero for the consecutive months. Thereby we conclude that the blood and blood component wastage was avoidable and it can be reduced significantly by a protocol.



DISCUSSION

After the study period it was found that the wastage of blood and blood products had reduced dramatically though in some cases the wastage was inevitable. For that reason, in spite of every measure to decrease wastage to zero, a minimum number of bloods were wasted and that is acceptable. The project increased the ability of our hospital to react against emergency medical and surgical situations by increasing the number of blood of different groups available in blood bank. Reduction of wastage increased the supply and more patients were benefited. Awareness among doctors, nursing staff and others were increased. Blood Bank became more prepared to any unprecedented situations. Many patients are being benefited by adequate supply of blood in need. So, it is evident that, a fixed and planned protocol can be developed by this project to decrease judicial usage of blood and blood products and are to be followed to facilitate a smooth run of a Tertiary hospital. Ideally in a proper setting, outdating and wastage of blood and blood products would never occur. Due to the inherent need to have blood stocks at all times and also often unpredictable demands on the inventory, a very limited and inevitable outdating of components in blood bank is accepted[8]. Studies claim that through target interventions and adherence to strict guidelines, a significant reduction in the wastage of blood components could be achieved and maintained[9, 10, 11]. Globally only 106 countries have national guidelines on the appropriate clinical use of blood and blood products[12].

Conclusion

From the study done on the basis of a project we get a good result to decrease blood wastage in our hospital which had a good effect on patient care. Trivial changes in the hospital protocol may have an extraordinary effect for management of critical patients. The reserved blood which were not transfused to the index patient, was helpful for another patient to save life.

Recommendation

So, we conclude that every Hospital should have a protocol to reduce blood wastage according to their existing system.

Limitations of the study

The study did not include other Departments of the Medical College and Hospital, who also have been using significant amount of blood and blood components from our blood bank. Inclusion of other Departments in the study would have been more appropriate and comprehensive. Other Hospitals who have been already using a blood utilisation protocol and having wastage of blood may consider the study result and apply the same. But different Hospital may come up with their own studies as our study result may not be applicable to all health care set up.

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