



# Platelet PGD: Effect on Platelet Waste and Financial-efficiency in a Local Blood Bank

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## ABSTRACT

Maintaining a blood product supply is essential to optimal patient care; however, daily use is difficult to anticipate. Platelet products are the most variable in daily usage, have short shelf lives, and are expensive to produce, test, and store. As a result of need, unpredictable demand, and short half-life, platelets are frequently wasted due to expiration. The purpose of this study is to monitor the use of the Verax Biomedical Platelet PGD Test (PPT) on managing platelet (PLT) waste and cost utilization. Minimal research has been conducted on PPT's financial impact. PPT is used for bacterial monitoring and allows for the increase storage of PLTs of up to 7 days. Its implementation should reduce waste and attribute to efficient cost management of on-hand supplies. A secondary analysis was performed to compare data between a six-month period in 2016 and the same six-month period in 2017. The audit reviewed the utilization and waste of PLT apheresis products (aPPT) prior to (2016) and after the implementation of PPT (2017) at a local level 1 trauma center blood bank. A financial analysis was performed to determine the percent of cost attributed to both utilization and waste for each timeframe, with the addition of included cost of PPT implementation for 2017. With the implementation of the PPT there was an average decrease of 43.48% of waste from the 2016 to the 2017 six-month time periods, an estimated \$5,300/month in savings over 6-months. With PPT implementation, the blood bank was able to utilize 93.22% of their cost from the total cost aPLTs ordered including the cost of testing in the 2017 time period in comparison to 89.23% of cost utilization in the 2016 time period. The implementation of PPT was useful in monitoring inventory and extending the on-hand supply of platelets.

## INTRODUCTION

Management of blood products in healthcare systems are essential for optimizing patient care. The overstocking of blood products increases the number of expiration and wastage of platelet products. The half-life of platelets is five days from donation and a practical shelf life of only 3 days, due to 2 days sequestration in testing; health care systems estimated \$1 million waste in platelet expiration annually (Guan 2017).

One technique that can be utilized to monitor platelet inventory and reduce waste is the Verax Biomedical Platelet PGD Test (Verax Biomedical, Marlborough, MA) (Verax PGD). The Verax Platelet PGD Test (PPT) is a lateral flow assay that has been FDA approved as the safety measure test for 7-day extended platelets. This allows for the maintenance of a platelet unit's shelflife to increase from 5 days to 7.

### Objectives:

To determine the effect of the Platelet PGD Test on platelet waste and cost in a 332 bed +48 NICU bassinets level 1 trauma hospital in an urban setting. We aim to:

1. Determine if the Platelet PGD Test will reduce platelet waste by extending the expiration dates of supplied platelets that are currently on-hand.
2. Determine if the Platelet PGD Test will result in cost savings through the extension of the expiration date of the platelet product to result in an efficient utilization of the PLT cost of ordered supply.

## MATERIALS/METHODS

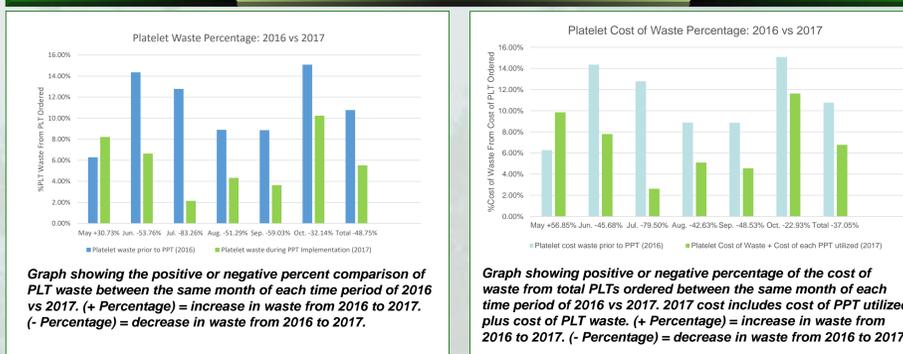
### Methods:

- A secondary analysis was performed comparing platelet utilization from May 2016 – Oct 2016 to the current six months of Platelet PGD Test implementation (May 2017 – Oct 2017). Data will be collected from a level one trauma center blood bank in Birmingham, Alabama.
- An analysis of the information was performed to determine
  - The amount of cost savings between each 6 month interval.
  - The amount of platelets wasted between each time period.
  - The amount of cost savings for platelet units extended 24 and 48 hours.
- Waste is defined as any PLT product that resulted in a reactive result when tested with the PPT, unused product that has reached its expiration date, product that was not used by the 7<sup>th</sup> day of being extended, and/or any damaged or unviable product, and any unused PLT product that was issued and returned in unfavorable conditions or spiked (opened).
- The PPT will be performed by trained and qualified laboratory personnel in the blood bank. Testing will be performed around midnight on the 5<sup>th</sup> and 6<sup>th</sup> day of PLT storage.

### Materials:

- The platelets (PLT) supplied to the local blood bank are phoreised PLT units supplied via three different suppliers through a standing order contract.
- The PPT is a lateral flow assay that was utilized by the Medical Technologists in the blood banks of the level 1 trauma center blood bank.

## RESULTS



- On average, the number of platelets ordered for each period were 208/month (2016) and 233/month (2017).
- The average monthly waste for each period was 23 PLTs/month (2016), 13/month (2017).
- There was an estimated 43.48% decrease in average waste per month between the two time periods, from 2016 to 2017. This is an average savings of roughly \$5,300/month over 6 months.

- Percent of cost attributed to waste from the total estimated cost of the number of PLTs ordered decreased from 10.77% pre-implementation to only 6.76% when using the PLT PGD Test. This is a 37.23% reduction in the cost of waste between the two periods, which includes the cost of PPT per unit (\$26.50).
- 349 total PPT used, 282 total PLT units extended in 6 months (2017).

## Discussion

- There was nearly a 45% reduction in waste between each time period, with the exception of the month of May.
- Implementation involves update to Laboratory Information System to account for updated product codes.
- Useful for level 1 trauma blood banks who's volume of supplies surpasses the daily need.
- The PPT requires minimal hands-on time for the techs, and allows for the ability to test multiple units at a time.
- Limitations:
  - PPT application limited to the volume/PLT unit.
  - PPT was only applied to units from LifeSouth, and American Red Cross (ARC) and not the third vendor.
  - Cost of labor not included.
  - Cost of PPT based on 2016 quoted estimate (\$26.50)
  - Cost of PLT based on ARC provided estimate (\$530/unit)

## CONCLUSION

- The PPT is useful in monitoring inventory and extending on-hand supplies. Its usefulness would be facility-dependent based on volume of supply vs need. To determine if a significant budget-related impact exists would also be dependent on the facility and a longer audit would also have to be conducted to examine an extended history of PPT implementation.

## REFERENCES

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