

# To Reduce The Rate Of Haemolysis In Clinic B1B TTSH PEARL

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## Introduction

Clinic B1B TTSH PEARL is a non-subsidised outpatient clinic which consists of Orthopaedic Surgery and Rheumatology, Allergy and Immunology (RAI) disciplines. RAI patients with auto-immune disorders require frequent detailed blood tests prior to their appointments in order for doctors to prescribe the dosage of medication accurately. RAI doctors are concerned about the rising number of haemolysed blood (see Fig. 1).

Haemolysis Rate from June 2013 to Dec 2013

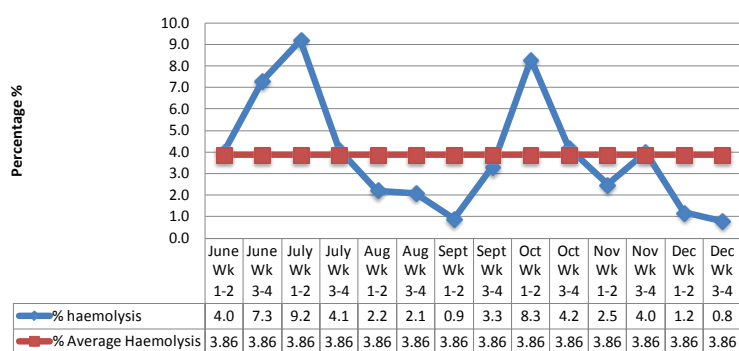


Fig. 1 Graph showing the average percentage rate of haemolysis before the start of the project from June 2013 to Dec 2013.

This **project aims** to:

- Reduce the average rate of haemolysis from 3.86% to less than 2% in RAI Clinic within 6 months
- To provide patients with accurate blood results for better treatment.
- To prevent unnecessary repeat of blood tests for patients due to incorrect blood test results.

## Methodology

We use the PDSA methodology to solve our problem. A nursing team was formed to brainstorm for possible root causes. Experiments were conducted to disprove and prove the predicted causes. After which solutions were designed (see Fig. 2).

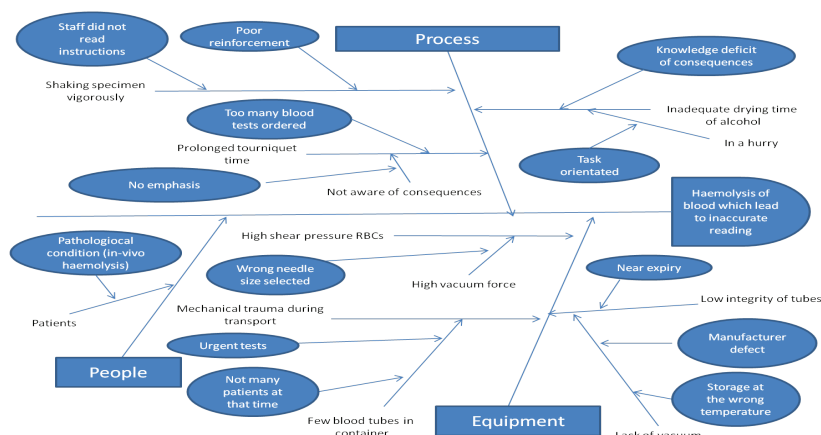


Fig. 2 Root analysis was performed and presented in an Ishikawa diagram, illustrating the potential reasons for blood haemolysis.

## Results from the experiment

In our experiments, causes such as type of needles used, vacutainers' storage temperature, and staff's knowledge had been found not to have any casual relationship with haemolysis rate. (see Fig. 3).

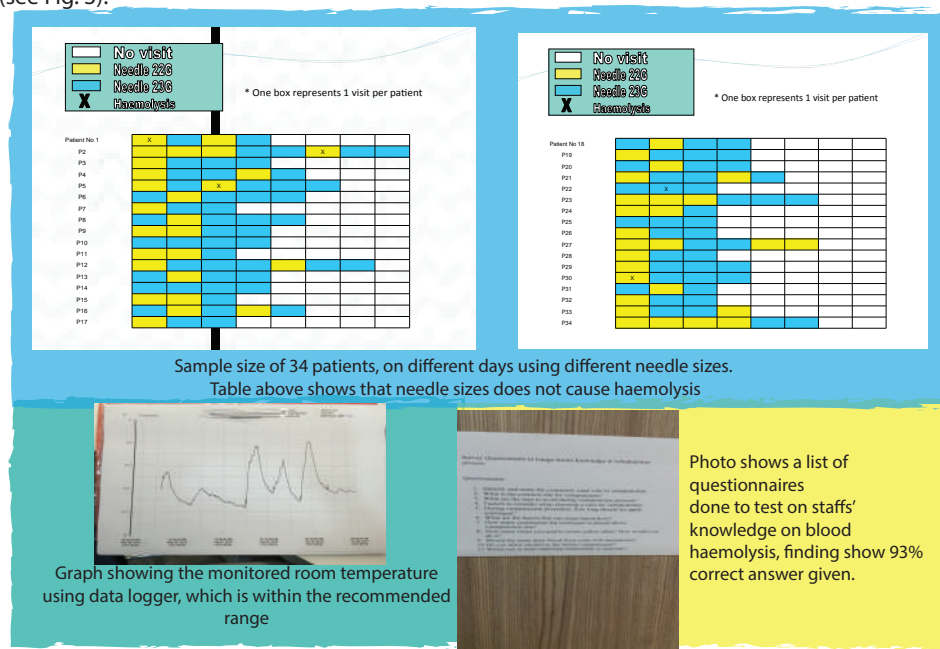


Fig.3 Summary of the experiments that was done in efforts of finding the root causes of haemolysis

## Action

Mechanical trauma during transportation had a direct correlation to haemolysis rate. To reduce risk of mechanical trauma during transportation, a specially designed sponge was created to act as a barrier to absorb any movement of the samples during pneumatic transportation (see Fig. 4).



Fig. 4 A summary of how the blood tubes are being transported in the pneumatic tube "sandwiched" in between the specially designed sponge.

Because of the inconclusive outcome on staff attitude, we ran a "love movement" activity for our patients since May 2014 (see Fig. 5).



Fig. 5 Photo was taken during our "love movement" activity. Sweets are prepared to be given to patients after their blood taking.

## Results

The haemolysis rate reduced from average of **3.86% to 1.7%** since the completion of the project in September 2014 (see Fig. 6).

Haemolysis Rate from mid Sept 2014 to Mar 2015

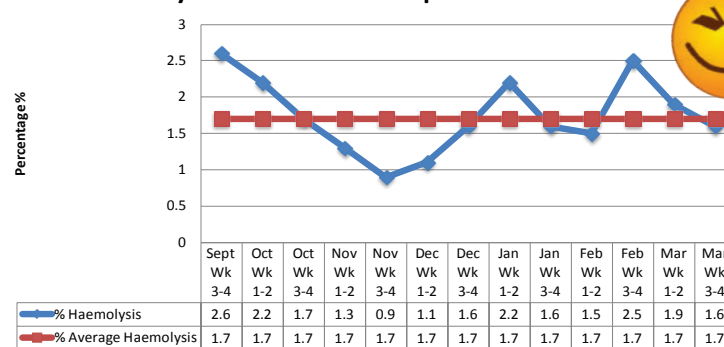


Fig.6 The average rate of haemolysis of **1.7%** after the completion of the project from mid Sept 2014 to Mar 2015

## Strategies & Sustainability

After the completion of the project, results were shared with other clinics and laboratory (see Fig. 7).



Fig. 7 Photo was taken during one of the day where we went around to clinics and lab to share our results.

Originally the sponge was covered with a pouch for easy access for lab staffs to remove specimen from the pneumatic tube. Due to infection control, the pouch was changed to plastic cover to allow staff to wipe down the sponge with alcohol wipes after each use. (see Fig. 8).



Fig. 8 Photo (left): Initial design using cloth pouch.  
Photo (right): New and improved design, with plastic cover.

## Conclusion

Tightly packed pneumatic tubes helped to reduce the haemolysis rate by more than 50%. Staff have been diligently tracking the rate since the project started. For those inconclusive outcome, it is better to blanket some of these actions rather than wait for more investigations to surface results.