

## **Project Title**

Workflow Improvement with the Use of Sysmex TS500 Sorting and Reflex Rerun Rules

## **Project Lead and Members**

Project lead: Ivar Feng Kuo-Lun

Project members: Mary Gan Shi Ying, Margaret Frans Go, Tung Moon Ley

## **Organisation(s) Involved**

Ng Teng Fong General Hospital

## **Healthcare Family Group Involved in this Project**

Allied Health

## **Applicable Specialty or Discipline**

Medical & Laboratory Technology

## **Project Period**

Start date: Apr-2019

Completed date: Jun-2019

## **Aims**

To utilise existing equipment to further streamline the process for full blood count testing and to cut down the time needed for manual sample checking. The section also hopes to prevent future miss out of erythrocyte sedimentation rate samples by implementing the optimized sorting method.

## **Background**

See poster attached/ below

## **Methods**

See poster attached/ below

## **Results**

See poster attached/ below

## **Lessons Learnt**

Human errors can be eliminated by automation and workflow optimisation

## **Conclusion**

See poster attached/ below

## **Project Category**

Technology, Medtech, Care & Process Redesign, Value Based Care, Productivity,  
Quality Improvement, Workflow Redesign

## **Keywords**

Full Blood Count testing, Sysmex TS500 Sorting

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# WORKFLOW IMPROVEMENT WITH THE USE OF SYSMEX TS500 SORTING AND REFLEX RERUN RULES

- SAFETY
- PRODUCTIVITY
- PATIENT EXPERIENCE
- QUALITY
- VALUE

MEMBERS: KL FENG, SY GAN, MF GO, ML TUNG

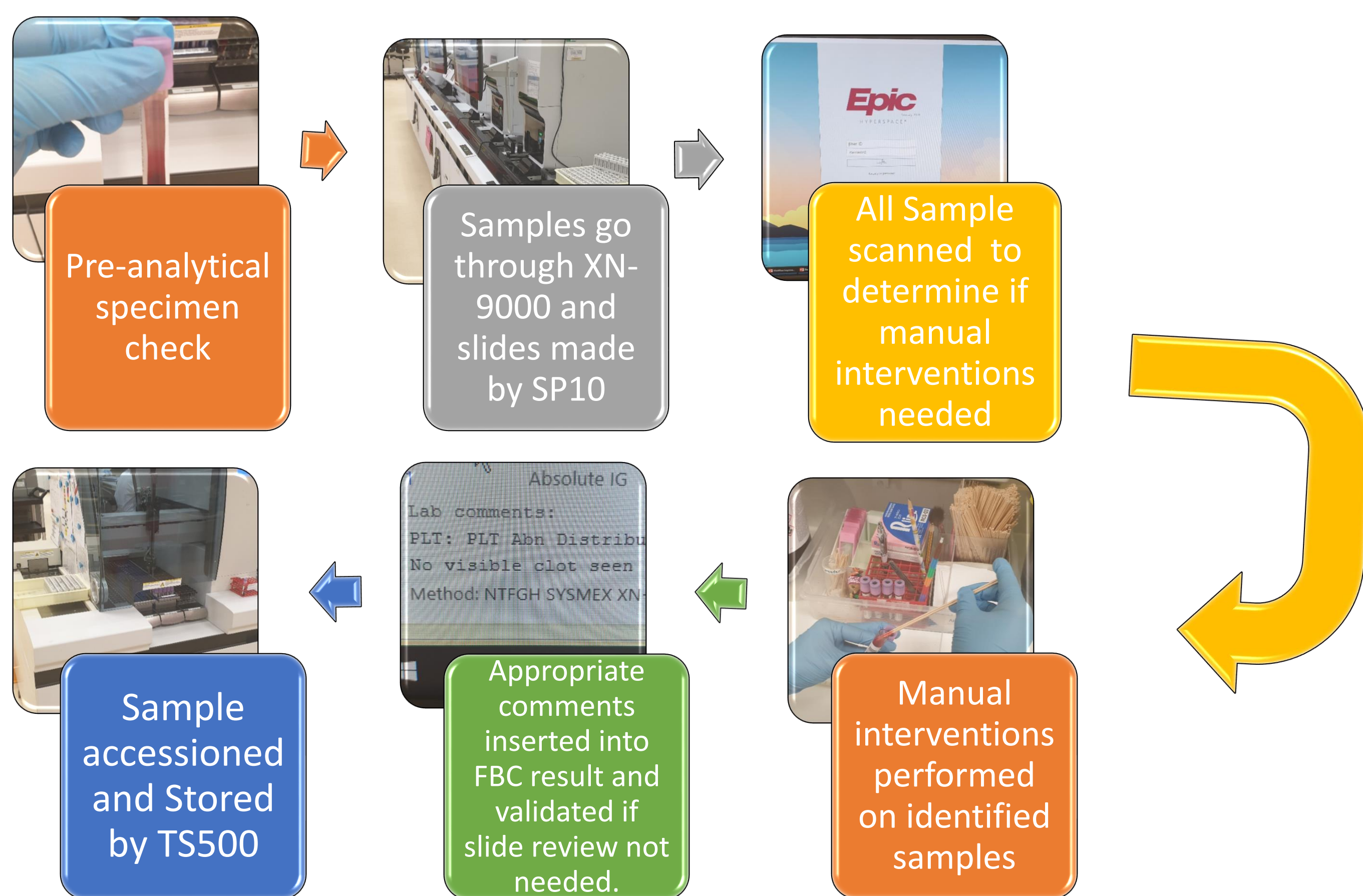
## Define Problem, Set Aim

Ng Teng Fong General Hospital (NTFGH), laboratory medicine(haematology section) is looking into the possibility of utilizing existing equipment to further streamline the process for full blood count (FBC) testing and to cut down the time needed for manual sample checking (eg. Clot checking and rerunning sample of critical results). The section also hopes to prevent future miss out of erythrocyte sedimentation rate(ESR) samples by implementing the optimized sorting method.

By further defining the auto-sorting and reflex rerun rules, the Sysmex TS500 auto tube sorter can be utilized to its optimum to sort out mainly specimens that need manual interventions. Moreover, reflex rerun will be done for specimens that meets the auto-rerun criteria. By implementing these improvements, time required for manual sample checking and re-running can be decreased up to 70% or more. Thus, results will be available to clinicians promptly to avoid delay of providing treatment to patients.

## Establish Measures & Analyse Problem

### FBC Work flow

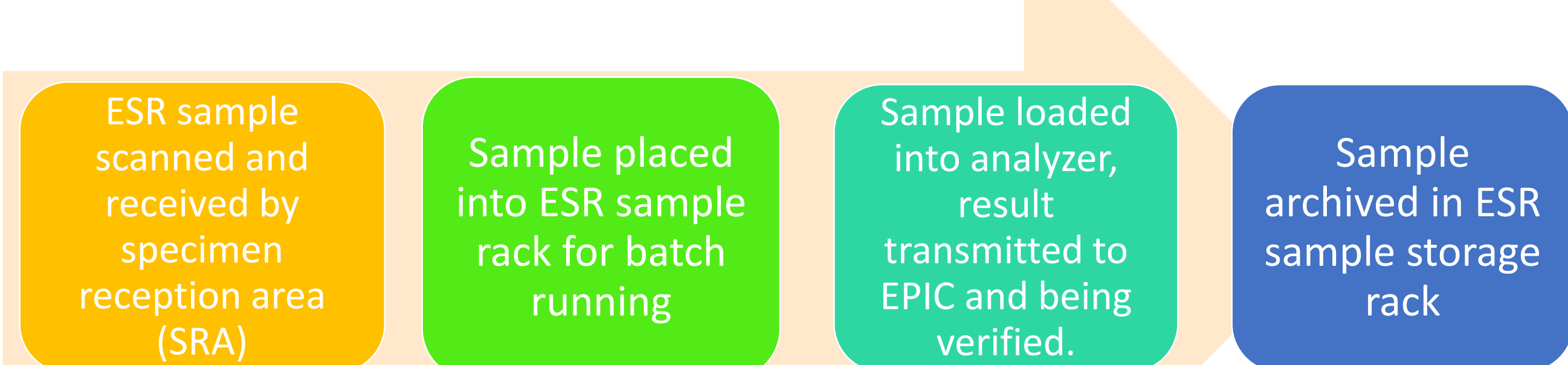


- All samples need to be scanned, resulting in time wasted on samples that don't need manual interventions.
- Identified samples need to be manually retested, which takes time and disrupts running of patient samples.
- Time wasted in this process leads to staff to having less time for other more important tasks (eg. slide review).

### Possible Solutions

- Allowed TS500 to archived all samples first. During slide review, samples need manual interventions can then be located and retrieved through Sysmex software. The manual interventions the being performed on the retrieved samples.
- Program TS500 to sort out samples that required manual interventions. After required manual interventions performed, samples can be load into TS500 again and will then be archived.

### ESR Work flow



### Scenario when missing sample occurs

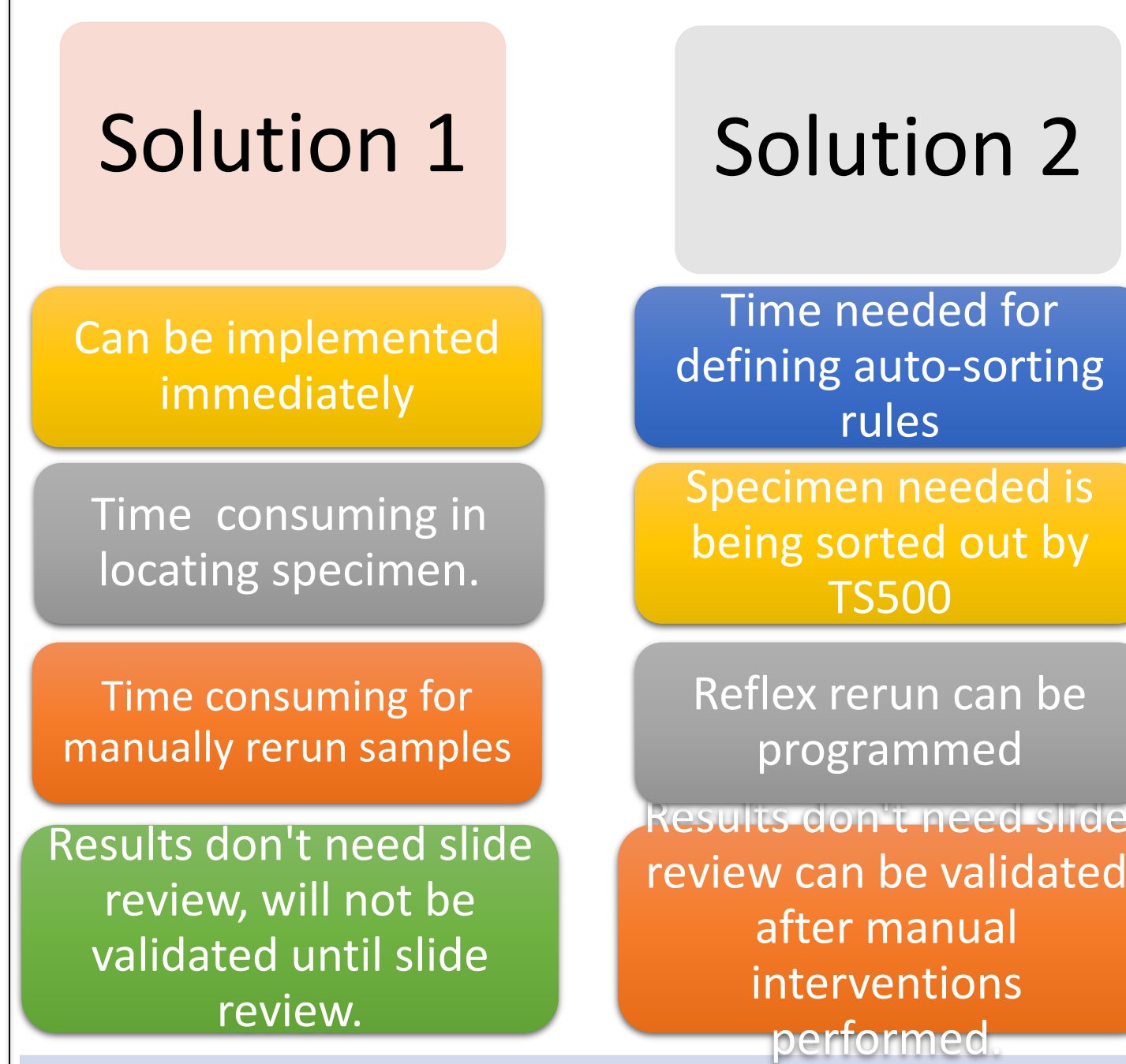
- When a ESR sample not being received into EPIC by specimen reception area(SRA) staff and placed into ESR sample rack. Haematology staff will assume the sample is being received and ESR will be performed, the sample will then be stored in ESR storage rack.
- Due to the sample not being received into EPIC, it will not appear in pending list and staff will not be able to find out the missing sample until the ward called to enquire ESR result for the sample at a much later time.

### Possible solutions

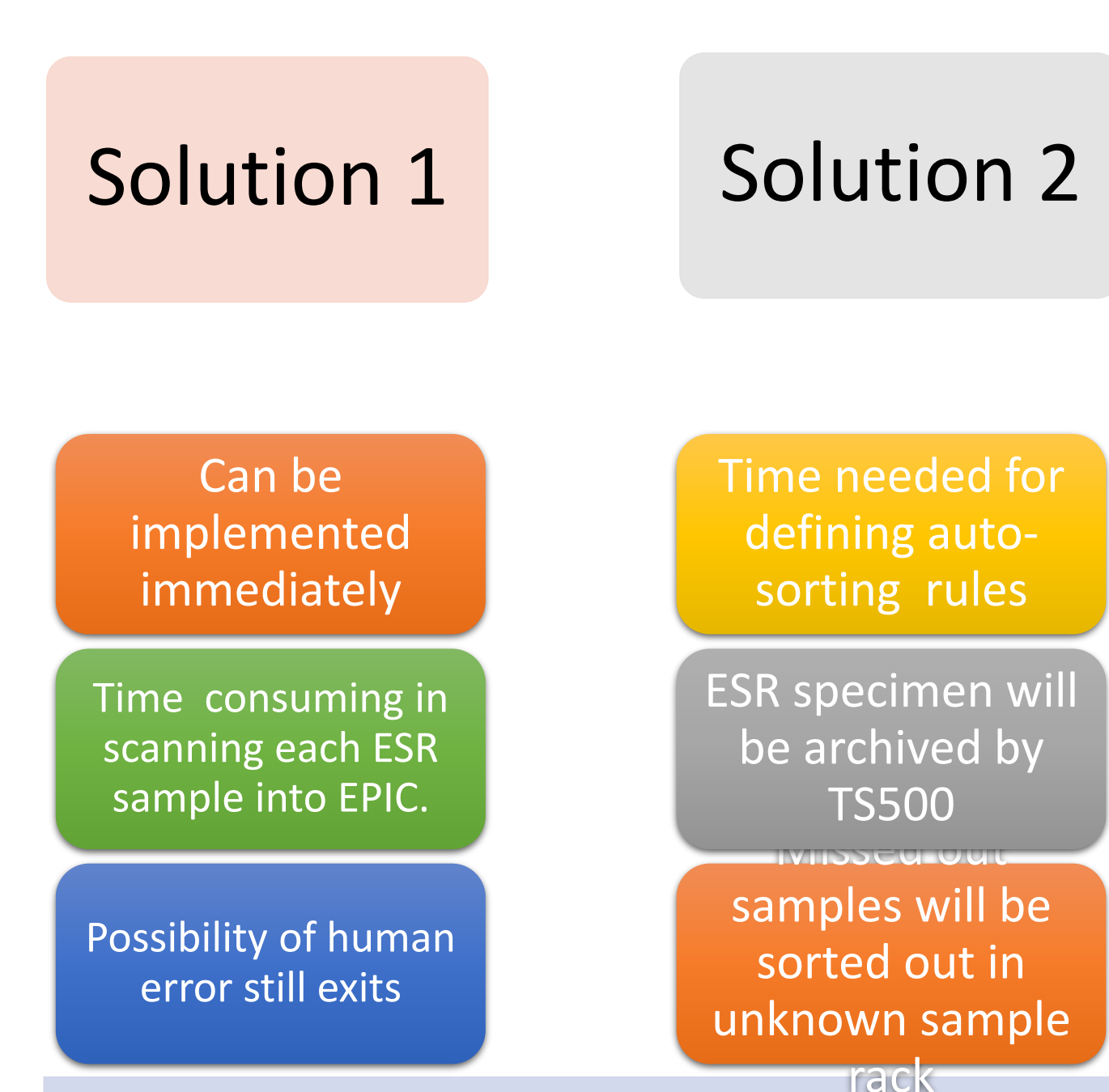
- Scanned all ESR sample into EPIC before ESR being performed, to ensure all samples being received by SRA.
- Program TS500 to archive all ESR samples received by SRA and those not received or scanned correctly will be sorted out as an unknown sample.

## Select Changes

### FBC Work Flow Solutions comparison



### ESR Work Flow Solutions comparison



### Conclusion

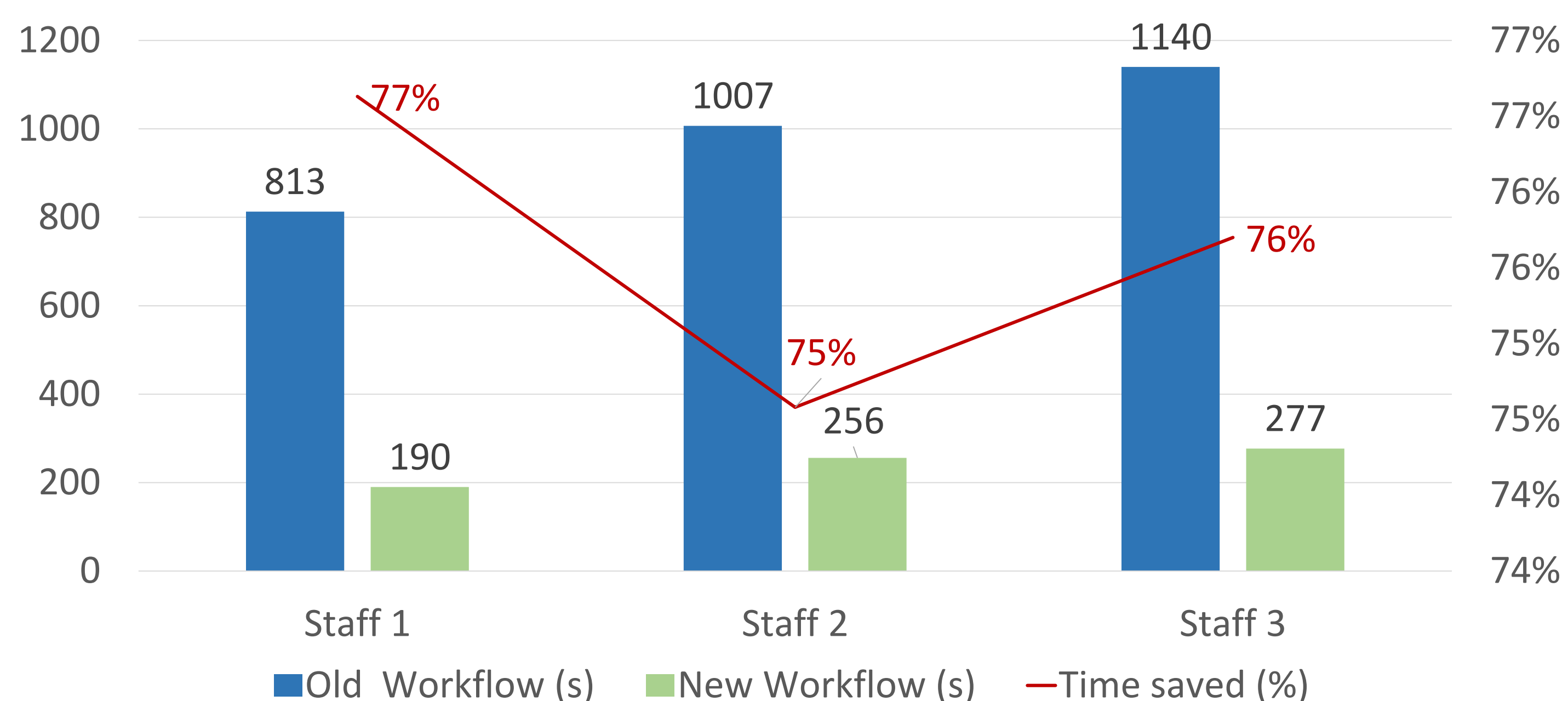
As the aim of the project is to dramatically cut down time needed to perform manual interventional, solution 2 is chosen

### Conclusion

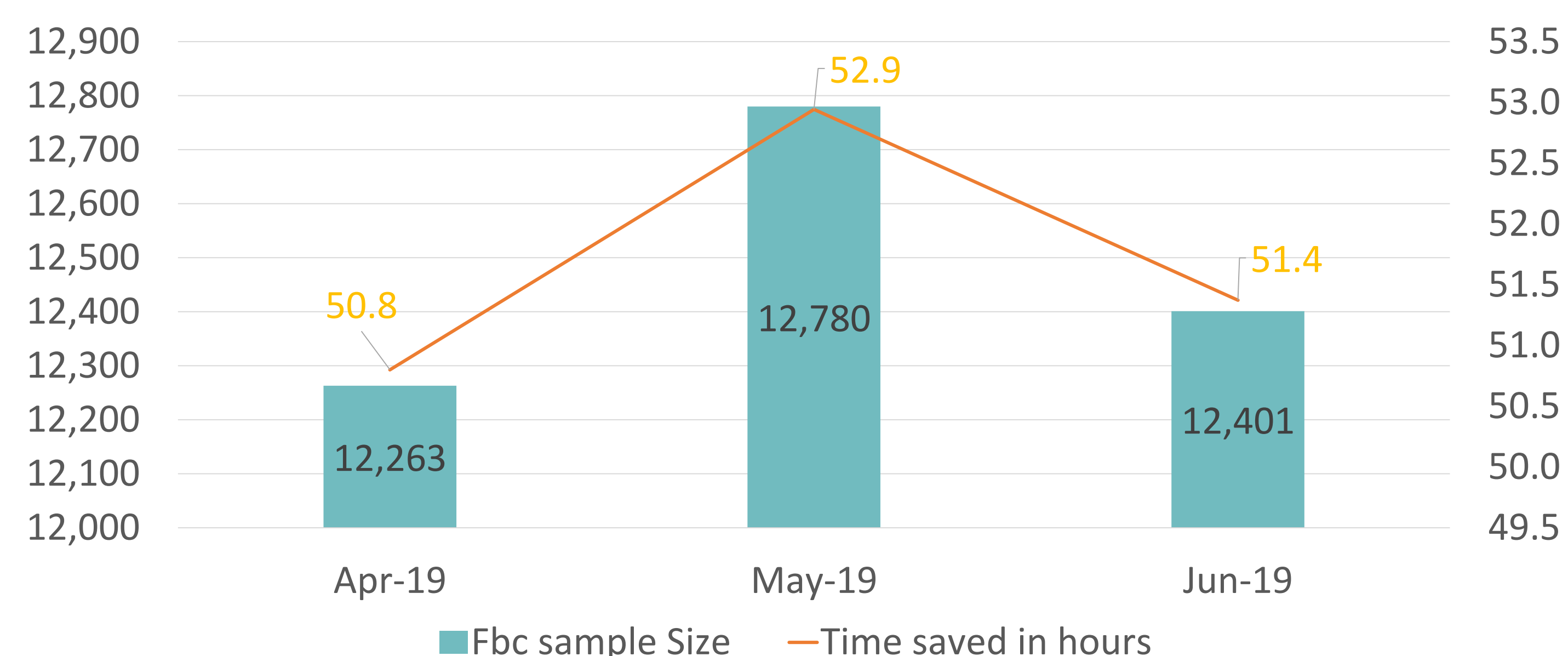
As the aim of the project is to prevent future ESR sample miss out, thus, solution 2 is chosen as it eliminates the possibilities of future human error.

## Test & Implement Changes

- Time used to performed manual interventions on 3 sets of 50 random samples by 3 different staff using the old method and the improved method were compared in the chart below.



### Time saved in terms of workload



## Spread Change/ Learning Points

- It is possible to eliminate human errors through automation and workflow optimization.
- Without incurring any additional cost to the section, we managed to save more than 50 hours in performing manual interventions on FBC samples each month.