Blood sample labelling in the acute setting at a large district general hospital:

the use of Quality Improvement Science

& laboratory data to make small changes with big impacts.

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Introduction

Blood testing is an important component of diagnostic work-ups in the acute setting.

Crosshouse Emergency Department (ED) sees approximately 1300 patients every week. Of these, the laboratory receives around 175 samples.

Of these, around 15 per week are rejected as unsuitable. That is, around 10% of samples are rejected. Over a year, that is around 1000 patients for whom there may be a delay in management or discharge.

Poor labelling on request forms & sample tubes is a major contributor to these rejections. We'd shown improvements with a previous intervention on the order of draw but wanted to further reduce the rejection rate.

Aim

To improve blood request labelling in the acute setting at Crosshouse Hospital in order to reduce unnecessary variation & waste in-keeping with Realistic Medicine.

Method

We used the Institute of BioMedical Sciences Laboratory mandatory data set as our audit criteria. This data set includes request form labelling, sample labelling, requester details and clinical information.

We carried out a pre/post intervention study.

We performed a manual review of 100 request forms & samples in each arm of the study.

Interventions.

1. Baseline data was presented at departmental teaching in ED.
2. Education on correct labelling via Departmental teaching & "one minute wonder" (short information on a given topic displayed in ED for 2 weeks).

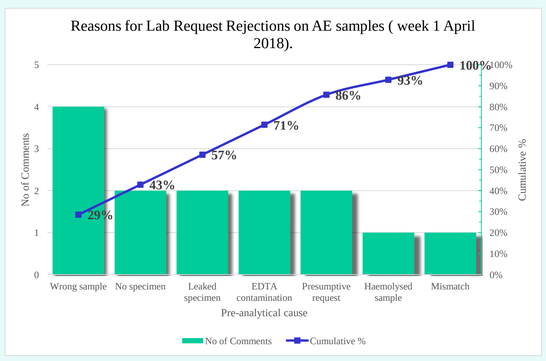
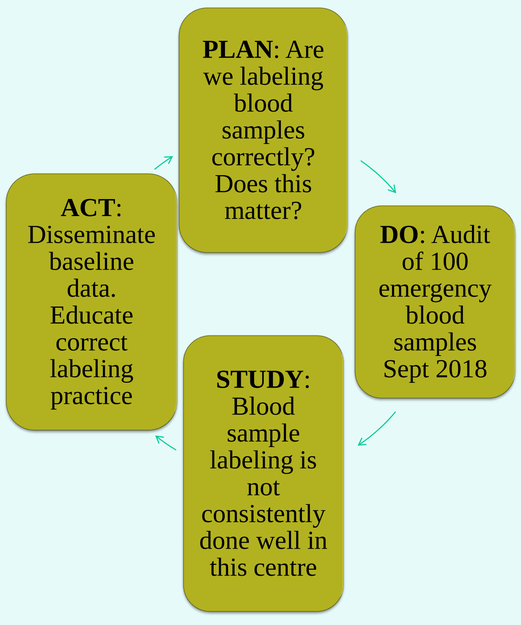


Fig 1 Pareto chart showing causes of sample rejections.



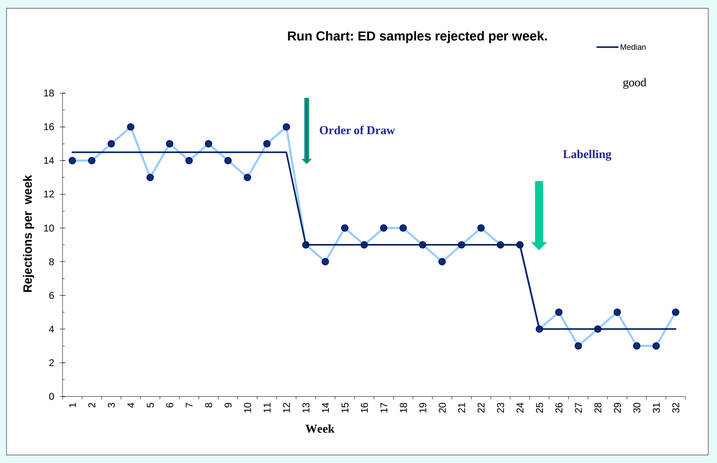
Results

Baseline data showed that 13% of forms were correctly labelled.

Following the interventions, 62% were correctly labelled.

Prior to intervention, 29 request forms out of 100 had all details required, 62 were partially complete and 9 had no details at all. Following the interventions, there was a significant improvement in scoring requester details (120 v 185, p=0.02) and in clinical information (134 v 180, p=0.01).

There was no change in request form labelling scores (183 v 198, p=0.65) or in sample labelling scores.



Other benefits.

•Effective liaison between ED & the lab.

•Sample reception staff commented that their work had become quicker & easier.

•We explored new ways of using lab data to address clinical problems

Discussion.

This work explored ways of reducing lab request rejections of ED samples using established Quality Improvement techniques and built on other QI work involving the lab & ED.

The interventions showed a clear improvement both in process (**73%**) and in human factors.

We used Pareto analysis in a novel setting to provide evidence of causes of rejection and targeted those causes. Alternative modelling e.g. Lean or Six Sigma exist but local expertise influenced our choice. A potential limitation to the work is that the ED staff driving the work within ED are still *in situ*.

Finally, our data may be useful in re-designing our request forms to omit unnecessary detail and in our requirements for a remote requesting dashboard.

Conclusion

The aim of this work was to improve blood sample labelling in the acute setting at Crosshouse Hospital. We used a Quality Improvement model to evaluate and address underlying causes and we improved the rejection rate from around **1000** per year to under **200**.

Additional benefits of the work include effective liaison between Depts and gaining an understanding of further applications and limitations of using laboratory data to address clinical problems.

Further work will address sustainability and transferability of the improvements reported as well as exploring those areas in which we saw no improvement.

Acknowledgements

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