Reducing unnecessary blood tests in a cardiothoracic intensive care unit - Education is the key to improvement

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INTRODUCTION

The Faculty of Intensive Care Medicine recommended that 'Tests and investigations should only be done in response to answering a specific question' and go on to describe that potential harms of excessive tests include :

❖ Anaemia due to unnecessary phlebotomy
❖ Which may necessitate risky and costly transfusion
❖ Aggressive work-up of incidental and non-pathological results.' (1)

Additional harms include the increased cost, increased medical waste and non-efficient use of resources, both time and equipment. The latter of these is particularly relevant considering the recent widely publicised blood tube shortage.

In our intensive care unit, regular blood tests are daily full blood count, urea and electrolytes, C-reactive protein and thrice weekly liver function tests, until clinical review.
❖ Analysis demonstrated that this was rarely reviewed
❖ Additional tests were being ordered as a daily routine and blood tests which were not requested were being performed.

AIMS & OBJECTIVES

1) Increase the percentage of blood tests that have a clinical impact by more than 50%
2) To decrease the percentage of blood tests that are taken which are not requested by a clinician to less than 10%

METHODS

❖ Single centre study conducted in Royal Papworth Hospital ICU.
❖ Electronic records of the critical care inpatients were analysed on a random day of the week in that particular month. Data was gathered on number of blood tests taken per patient, number of those tests that had been ordered by a clinician and proportion of tests which had a clinical impact on the patient.
❖ Four cycles were conducted, each on November 2020, January 2021, May 2021 and July 2021
❖ Results obtained were then analysed using basic programming functions

Reducing Unnecessary Blood tests in CCA

REVIEW — The blood tests a patient requires each day are considered on ward round

REQUEST — Daily Review of Blood orders

TEST — Collect samples that are only requested on Metavision

RESULTS

	Oct 2020	Jan 2021	May 2021	July 2021
FBC	11.60%	40.50%	43.50%	2.00%
U&Es	1.30%	36.80%	45.00%	6.30%
CRP	10.90%	36.20%	48.80%	1.00%
LFTs	15.50%	44.80%	42.40%	1.00%
Bone profile	14.70%	23.10%	22.50%	1.00%
Magnesium	14.10%	22.90%	29.60%	1.90%

Fig 1. Percentage of blood tests that are taken without being requested

Legend: ■ Total samples taken ■ Result impacted clinical management
Charts: Nov 2020, Jan 2021, May 2021, July 2021 (categories: FBC, U&Es, CRP, LFTs, APR, Coagulation, Mg, Bone profile)

INTERVENTIONS IMPLEMENTED

We developed a **multi-disciplinary education** strategy involving.

✓ Posters for doctors and nurses around the unit
✓ Educational emails
✓ Raising awareness about reducing blood tests and daily review
✓ Presentation at training week
✓ Presentation at morbidity and mortality meeting
✓ Daily reminders during ward rounds and during the nursing safety briefing

As the cycles progressed, we refreshed and reiterated educational material to coincide with staff rotation onto the unit, and added new material to capture a wider audience.

Results showed:
❖ Discrepancies in sampled and requested blood tests improved post-COVID to less than 5% in most measured tests
❖ Improvement of >50% in proportion of U&Es and FBCs taken which were clinically relevant; smaller increase in bone profile, magnesium and liver function
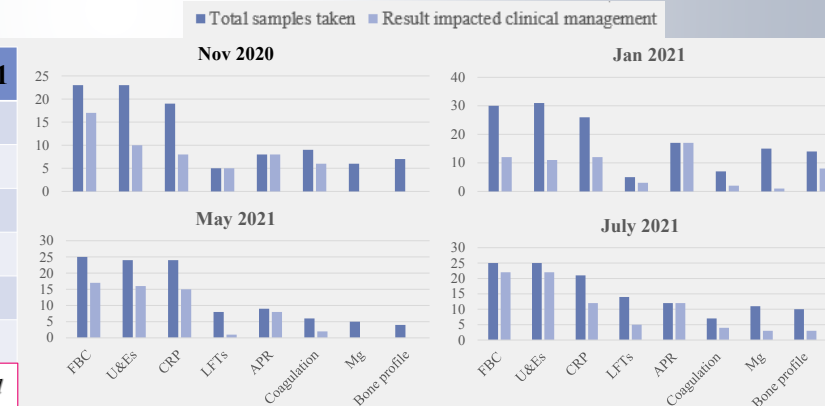
CONCLUSIONS

❖ Education and creating awareness is key to improvement
❖ Initial progress was poor, likely due to the strain of the COVID-19 pandemic and an increased proportion of temporary and agency staff who were less exposed to educational material.
❖ Later cycles achieved a **improvement in all measured parameters.**
❖ Through a process of education and engagement, we were able to reduce the proportion of unnecessary blood tests taken on ICU.

REFERENCES

1. Choosing Wisely (2014). *Regular Diagnostic Tests*. Available at: https://www.choosingwisely.org/clinician-lists/critical-care-societies-collaborative-regular-diagnostic-tests/ (accessed 20/01/2022)