12 Near Miss (NM) Reporting n=1366

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Definition:

A 'near miss' event refers to any error which if undetected, could result in the determination of a wrong blood group or transfusion of an incorrect component, but was recognised before the transfusion took place.

Abbreviations used in this chapter

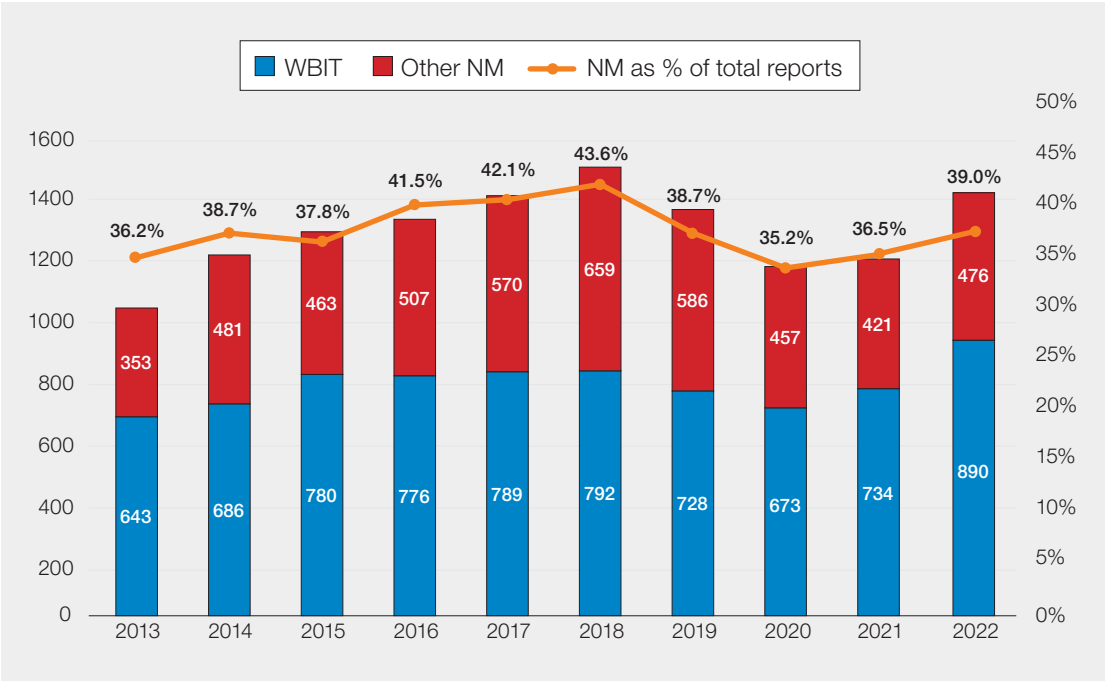
cffDNA	Cell-free fetal deoxyribonucleic acid	**NM**	Near miss
ED	Emergency department	**RBRP**	Right blood right patient
IBCT	Incorrect blood component transfused	**WBIT**	Wrong blood in tube
G&S	Group and screen	**WCT**	Wrong component transfused

Introduction

Near miss events account for the largest proportion of the events/reactions reported to SHOT, 1366/3499, (39.0%). The number of NM reports submitted continues to increase with 2022 seeing 211 more reports than in 2021 (n=1155). The largest number of NM in a single category continues to be WBIT incidents 890/1366 (65.2%). Increases in the near misses in the following categories have also been noted; IBCT-WCT 115/1366 (8.4%), RBRP 118/1366 (8.6%) and adverse events related to anti-D Ig 37/1366 (2.7%).

Figure 12.1 shows the trend in near miss and WBIT reports included in the Annual SHOT Reports between 2013-2022.

Figure 12.1: A decade of near miss and WBIT reports 2013-2022



WBIT=wrong blood in tube; NM=near miss

Near misses are often overlooked as they do result in actual patient harm. Recognising, reporting, and investigating near miss errors are vital in identifying processes and factors which increase the risk of resulting in actual transfusion errors.

Understanding how near miss errors occur requires an acknowledgement of the complexity of the transfusion process as demonstrated by the 'Ten Steps in Transfusion' (see 'Recommended resources'). While these ten steps provide an overview of the stages at which a potential error can occur, they also highlight the stages at which errors can be detected. This requires a co-ordinated, collaborative approach by all clinical and laboratory staff involved in the transfusion process.

Discussion of near miss errors in other categories

Near miss cases have been appraised in each relevant chapter for this Annual SHOT Report and Table 12.1 shows the chapters that include near miss events according to SHOT definitions.

		Discussed in chapter	Number of cases	Percentage of cases
Incorrect blood component transfused (IBCT)	Wrong component transfused (WCT)	Chapter 9	115	8.4%
	Wrong blood in tube (WBIT)	Chapter 12a	890	65.2%
	Specific requirements not met (SRNM)	Chapter 9	52	3.8%
Handling and storage errors (HSE)		Chapter 10	140	10.3%
Right blood right patient (RBRP)		Chapter 13	118	8.6%
Adverse events related to Anti-D Ig (Anti-D Ig)		Chapter 8	37	2.7%
Avoidable, delayed or under/overtransfusion (ADU)		Chapter 11	14	1.0%
Total			**1366**	**100%**

Table 12.1: Categorisation of all near misses according to SHOT definitions (n=1366)

The promotion of reporting NM events helps to identify and control risks before actual harm results, providing valuable opportunities to improve transfusion safety. Systems and processes involved in the transfusion pathway should have control measures in place to ensure quality outcomes for patients and where variations occur opportunities for improvement should be identified (Barnard 2020). Additionally, in organisations where NM are seen as vulnerabilities i.e., events which 'nearly happened' rather than a sign of resilience in which events 'could have happened' there is stronger willingness amongst healthcare professionals to report (Jung et al. 2021).

Reporting, investigating, and analysing the factors associated with near miss events provides additional vital information to determine corrective actions and areas for improvement to improve transfusion safety. While a NM event provides valuable opportunities to learn and improve systems, it is important to have clear definitions and clear pathways to investigate NM, address causal factors and implement corrective actions. Without these, in depth investigations are futile.

A scoping review about the value of learning from near misses to improve patient safety concluded that interventions following investigations of near misses are commonly aimed at the human and there is a need for more system-level actions (Woodier et al. 2023).

Recommended resources

Ten steps in transfusion
https://www.shotuk.org/resources/current-resources/

SHOT Bite No.17: Learning from Near Misses (NM)
https://www.shotuk.org/resources/current-resources/shot-bites/

References

Barnard S. 'This is the wrong patient's blood!': Evaluating a Near-Miss Wrong Transfusion Event. Patient Safety Network. (2020) https://psnet.ahrq.gov/web-mm/wrong-patients-blood-evaluating-near-miss-wrong-transfusion-event. [accessed 28 April 2023].

Jung OS, Kundu P, Edmondson AC, et al. Resilience vs. vulnerability: psychological safety and reporting of near misses with varying proximity to harm in radiation oncology. *Jt Comm J Qual Patient Saf. 2021;***47(1)**:15-22. https://www.jointcommissionjournal.com/action/showPdf?pii=S1553-7250%2820%2930241-5 [accessed 28 April 2023].

Woodier N, Burnett C, Moppett I. The Value of Learning From Near Misses to Improve Patient Safety: A Scoping Review. *J Patient Saf*. 2023;**19**(1):42-47. https://pubmed.ncbi.nlm.nih.gov/36538339/ [accessed 28 April 2023].

SHOT
Serious Hazards of Transfusion

Near Miss – Wrong Blood in Tube (WBIT) n=890

12a

Authors: Paula Bolton-Maggs, April Molloy and Simon Carter-Graham

Definition:

Blood is taken from the wrong patient and is labelled with the intended patient's details
Blood is taken from the intended patient, but labelled with another patient's details

Key SHOT messages

- Failure to adhere to basic safe procedures remains the major cause of WBIT
- In almost a fifth of cases, 159/890 (17.9%) the patient was neither correctly identified nor was the sample labelled at the patient's side

Recommendations

- Correct patient identification is fundamental for patient safety whether related to blood sampling or any other interaction with health services. This must be reinforced with all staff and by mandatory transfusion training and be audited regularly
- Blood sample tubes must be labelled next to the patient and systems adjusted to facilitate this

Action: Hospital chief executives and medical directors

Introduction

WBIT samples continue to be a problem with a large increase in reports in 2022 (n=890) compared to 2021 (n=734) (Figure 12.1). Cases from maternity departments make up 40% of the reports.

What errors lead to WBIT?

WBIT errors result from two main causes: failure to identify the patient correctly at phlebotomy (n=353) and labelling the blood samples away from the patient (n=286). In 50 reports, the cause of error was left blank. In 159/890 (17.9%) cases where the cause was recorded both errors occurred together.

Mistakes can occur at the first contact with the hospital. In 5 cases, patients were wrongly identified at initial registration. In 1 case this was associated with the patient being non-English speaking. In another instance a woman was misidentified by clerical staff on admission to the ED because a patient with a similar name was picked from the patient information system. This mistake was detected when the blood group was found to be discrepant with the previous records of the wrong patient. These cases are another reminder that correct patient identification is vital at all times.

Overall, 639/890 (71.8%) were attributed to failure to identify the patient at the time of sampling or the sample was not labelled at the bedside.

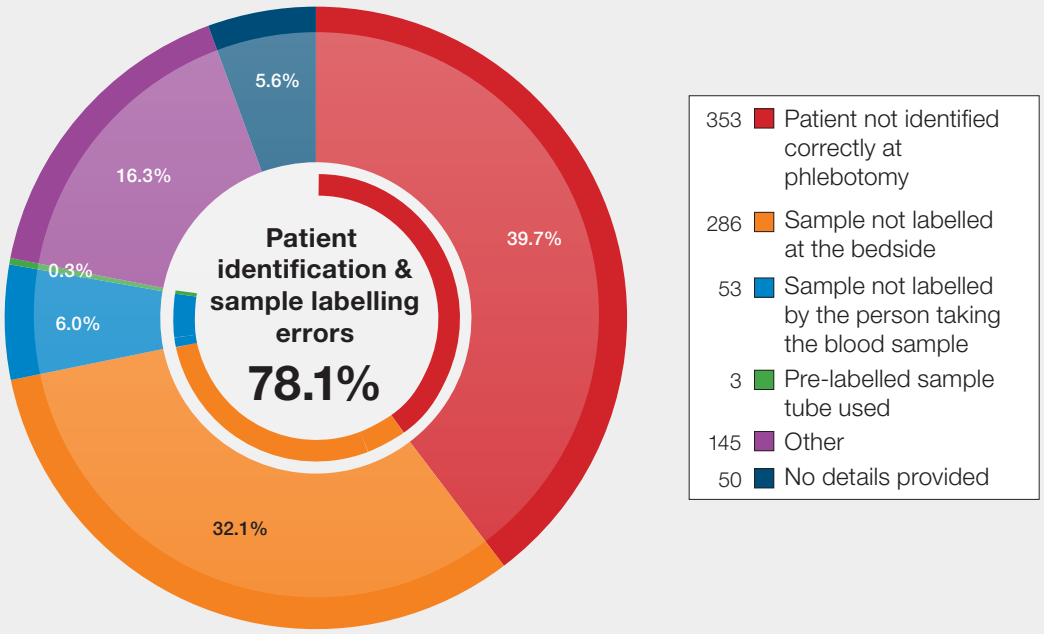
Case 12a.1: Multiple errors resulted in a WBIT

A nurse asked the phlebotomist to take a group and screen sample from the 'patient in bed 2'. The intended patient had been moved to another bed and no positive patient identification was carried out before or after taking the sample. The phlebotomist then handed the blood sample to the nurse to label. This was done away from the patient's bedside using the request form.

Learning points

- Failure to adhere to safe procedures remains the major cause of WBIT. Staff involved in taking pre-transfusion samples from patients should be aware of the potential consequences of patient misidentification
- Positive patient identification, sample taking, and labelling are part of a single, continuous process (see 'Sample circle', Narayan et al. 2022)

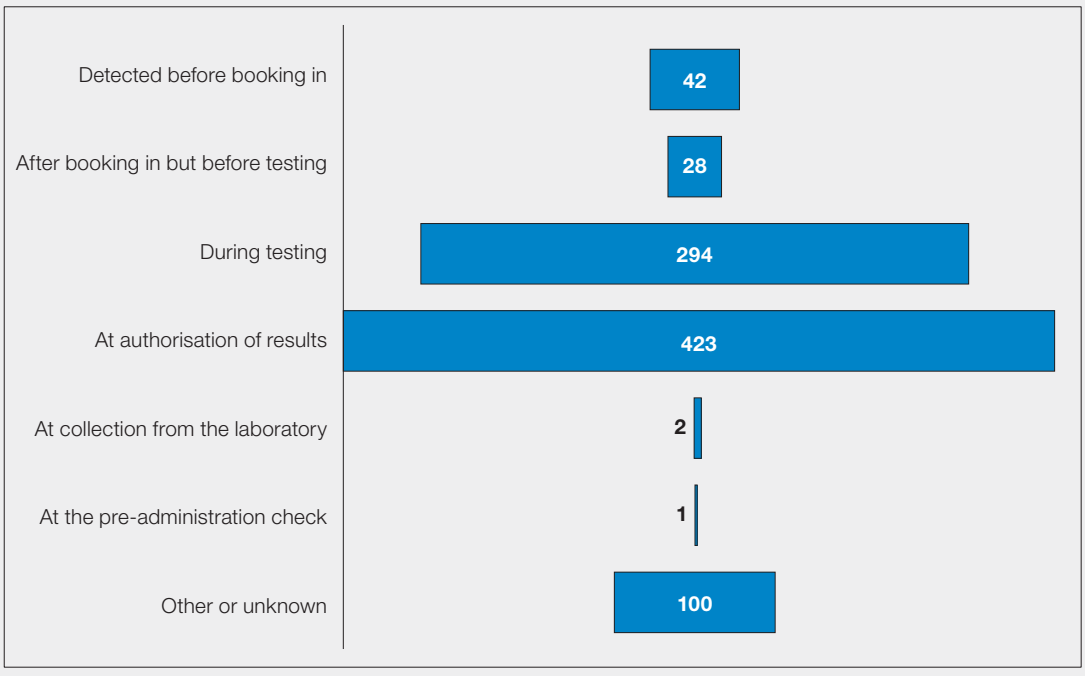
Figure 12a.1: Primary errors leading to WBIT (n=890)



There were 7 cases of mix-ups between maternal and cord blood samples, and 2 cases where an agency staff nurse (who had not received transfusion training) took samples from multiple patients and labelled them later away from the bedside 'to save time'.

Most errors were detected by laboratory staff, 717/890 (80.6%) during testing or at authorisation of results.

Figure 12a.2: Point in the process where the error was detected (n=890)



ABO-incompatibility

In 689 cases blood group data were provided. If these WBIT had not been detected, 320/689 (46.4%) could have received ABO-incompatible components with a risk of serious harm or death.

Patient blood group	Group of the blood component that might have been transfused					
	A	B	AB	O	Compatible	Incompatible
A	45	40	11	141	186	51
B	35	7	4	52	59	39
AB	16	4	2	17	39	0
O	146	64	20	85	85	230
Totals	**242**	**115**	**37**	**295**	**369**	**320**

Table 12a.1: Potential for ABO-incompatible transfusion

Who takes the samples?

Information about the healthcare professional involved in taking the pre-transfusion sample was available in 767/890 (86.2%). In these cases, as in previous years many errors are noted for midwives (Figure 12a.3).

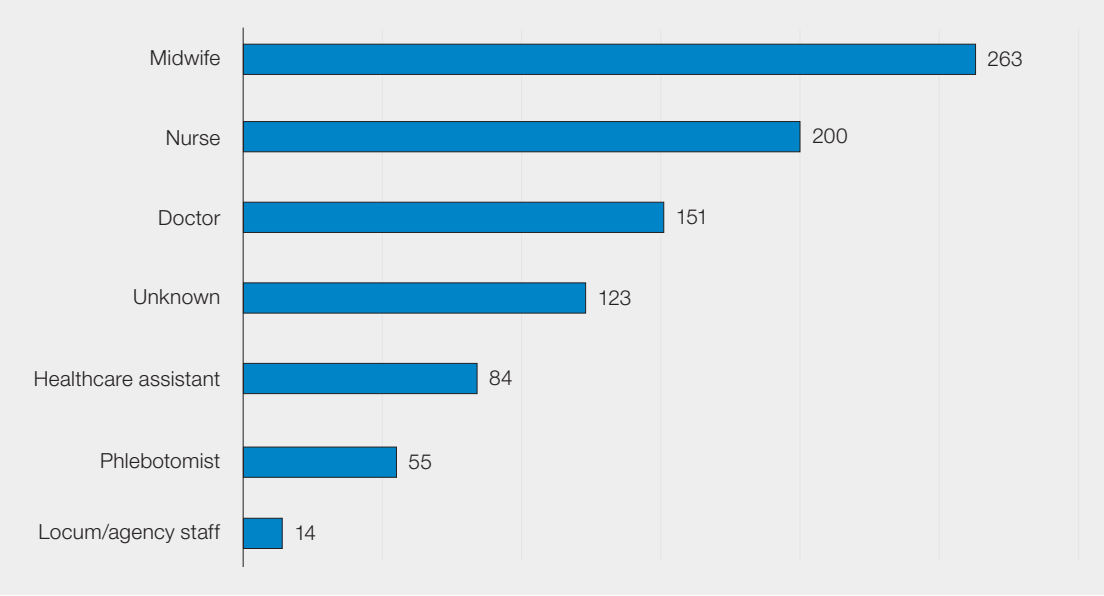


Figure 12a.3: Numbers of different healthcare professionals who took blood samples (n=890)

The pattern of error varies in the different professional groups (Table 12a.2). WBIT attributable to phlebotomists are mostly caused by failure to identify the patient correctly. Reasons noted in this group included distraction, patients not being where they were expected to be on the ward, patients having similar names, assumptions that they had found the correct patient, staff shortages and busy wards.

Midwives were over-represented in the errors where the sample was not labelled at the patient's side. In all groups of healthcare professionals, there were cases reported with both errors (Table 12a.2) with the highest percentage (15.6%) from doctors.

	Patient not identified correctly	Sample not labelled at patient's side	Total	Number with both errors
Phlebotomists	39 (70.9%)	10 (18.2%)	**55**	8 (14.5%)
Nurses/HCA	122 (43.7%)	82 (29.48%)	**279**	31 (11.1%)
Midwives	90 (34.5%)	108 (38.7%)	**261**	23 (8.8%)
Doctors	58 (41.1%)	51 (36.2%)	**141**	22 (15.6%)

HCA=Healthcare assistants

Table 12a.2: Errors associated with WBIT in different professional groups

Hospitals were asked whether they had a two-sample policy for patients receiving their first transfusion: 826/890 (92.8%) did, and 33 (3.7%) did not (31 did not answer). In 317/826 (38.4%), the error was

detected as a result of the two-sample policy. In 110 cases it was the second sample that was the WBIT. Most of these errors were detected by laboratory staff during testing or at authorisation of results usually because the results did not match with a previous sample.

A recent survey of doctors in the ED demonstrated deliberate deviation from safe practice – 65.1% (136/209) of the respondents reported having taken two G&S at once and labelling them with different times; 52 (24.9%) did this routinely and were from 17 different hospital sites. Non-compliant behaviour was not associated with training or seniority. Sample urgency 100/134 (74.6%) and difficult venepuncture 98/134 (73.1%) were the most frequent reasons for non-compliance. A high number of respondents commented on time and resource pressures in ED (Cain et al. 2023). It is essential to address these unsafe practices with an enhanced transfusion education so that clinical staff can understand the rationale behind the two-sample rule and avoid workarounds or deviations from correct practice.

Maternity and neonatal cases

Maternity cases were reported for 369/890 (41.5%), an increase compared to 2021 (n=257, 35.0%). These included 34 errors involving neonates:

- Mother and cord mix ups n=12/34
- Confusion in sampling from twins n=8/34

Sampling the infant's umbilical cord after the placenta had been removed to the ward sluice area and labelling this sample away from mother and baby was identified as a risk as noted last year.

In 45 cases women who were D-negative were incorrectly identified as D-positive, and in 9 of these, the baby was D-positive so that administration of anti-D immunoglobulin could have been missed, putting future pregnancies at risk.

Case 12a.2: Incorrect group detected by cffDNA prediction

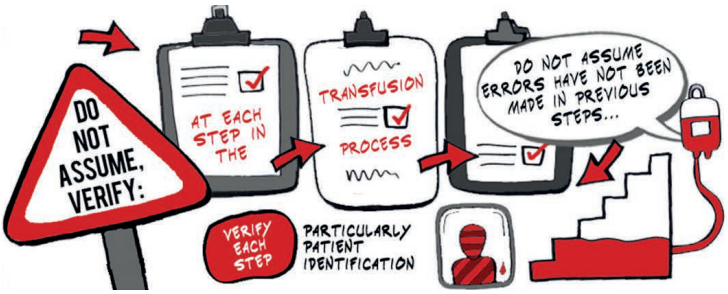
Baby group and Kleihauer samples were received in the transfusion laboratory. The baby sample grouped as O D-negative, same group recorded as maternal blood. The cffDNA test predicted baby as D-positive. Further testing confirmed the baby group was O D-positive.

Case 12a.3: Neonate not adequately identified by two doctors

During an induction week, Doctor 1 was paired with Doctor 2, who took a blood sample from a one-day old baby. Doctor 1 filled out the request form to help and did not do this at the bedside and incorrectly wrote the details out from the wrong patient's notes. Doctor 1 did not check with Doctor 2 before sending the request.

Case 12a.4: Two samples are safer than one

A neonate was transferred from another hospital for cardiac surgery. A sample grouped as O D-positive, and one unit of red cells was issued. The local agreement for neonatal cardiac surgery allows issue of red cell units with one sample. A second sample received in the afternoon grouped as O D-negative. Then staff checked with the referring hospital (which should have ideally happened when first sample was received). The patient's group recorded there was O D-negative.



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Cases from other departments

Case 12a.5: Patient wrongly identified in an emergency at home

Paramedics were called to a patient in cardiac arrest at home. A paramedic registered the patient as somebody with a similar name and these details were used by hospital staff to print the patient identity band and label blood samples. The patient deteriorated and died in the intensive care unit, and a death certificate was completed for an incorrect patient. The general practitioner was informed of his patient's death and realised the patient was still alive and there had been an incorrect identification of the patient. He requested the episode of care be removed from his patient's records. Transfusion group and screen result was removed as part of this process.

Learning points

- The labelling of neonatal samples taken from the umbilical cord is prone to error when the sample is taken from the placenta away from the mother. Correct patient identification is essential; neonates are at particular risk
- Good handovers with documentation and without assumptions will reduce risks

An international prospective study identified the same non-compliance errors or protocol violations in 260 WBIT errors reported from 36 centres in 11 countries (Dunbar et al. 2022). It was notable that in 43 cases the electronic positive patient identification was either not used when available or was used incorrectly. In this study 78% of samples were taken by nursing staff. Most WBIT errors had more than one contributing factor, mean 2.3 range 1 to 6.

Additional case studies, and a review of the human factors questions related to WBIT reports showing that the most common factor identified was a mismatch between workload and staff provision can be found in the supplementary information on the SHOT website (https://www.shotuk.org/shot-reports/report-summary-and-supplement-2022/).

Conclusion

The number of reported NM-WBIT has increased again in 2022 with several that could have resulted in potentially fatal ABO-incompatible transfusions. They are caused by the same two errors identified regularly in SHOT reporting for the past 25 years, namely failure to identify the patient correctly at the time of phlebotomy and failure to label the blood samples while next to the patient. Both these errors occurred together in a fifth of all cases. Maternity departments and clinics are high-risk areas.

It is disappointing that poor practice continues. Near miss events should be monitored and investigated using human factors principles. In 2012, the BCSH guidelines recommended that any patient who has never been transfused should have a second group-check sample taken to reduce the risk of wrong blood transfusions (BCSH Milkins et al. 2012). A recent survey of junior doctors and physician associates in ED demonstrated an alarming rate of non-compliance including 136/209 (65.1%) who reported having taken two group and antibody screen samples together and labelled them at different times (Cain et al. 2023). Clearly better understanding of the risk is needed.

Recommended resources

SHOT Bite No. 17: Learning from Near Misses (NM)
SHOT Bite No. 19: Human Factors
https://www.shotuk.org/resources/current-resources/shot-bites/

SHOT Safe Transfusion Checklist
https://www.shotuk.org/resources/current-resources/

Can you PACE yourself? The power of language to flatten hierarchy and empower multi-disciplinary healthcare teams in simulated critical scenarios
https://www.gloshospitals.nhs.uk/work-for-us/training-staff/gsqia/quality-improvements/Can-you-PACE-yourself/

15s30m stands for 15 seconds, 30 minutes – taking a few extra seconds at the start of a process can save someone a lot of time further along, reducing frustration and increasing joy at work.
https://fabnhsstuff.net/fab-stuff/15-seconds-30-minutes

References

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