Pre-Transfusion Blood Sampling: Predicting Future Performance from Simulated Practice

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Rationale

- This study reviews the type and frequency of labelling errors, occurring when blood is ordered for Pre-transfusion sampling in a simulated teaching environment and compares it to reported data from real-world clinical settings.

Background

- The challenges to healthcare in reducing avoidable medical error have been well documented since the publication in 2000 of the Institute of Medicine's report 'To Err is Human' (1).
- National and international data shows that errors in pre-transfusion sampling are common (2,3) and may result in fatal errors (3)
- Mislabelled samples are up to 40 times more likely to contain blood from the wrong patient. (4)

Methods

- Anonymized data was collected from standard teaching sessions delivered in Final Medical year: the Procedural Skills Laboratory and the Simulated Ward.

Methods 2

- In the Simulated Ward students were asked by a nurse to take blood for Group and Hold from a manikin arm attached to a role player who was “experiencing a miscarriage”.
- The students are told that this is a repeat sample, as the sample sent on admission was rejected due to incomplete data.

Methods 3

- In the Procedures Laboratory students were given full clinical / demographic details for a simulated case of post-partum haemorrhage and asked to take a sample for Group and Crossmatch of 4 units of blood from a manikin arm.

Methods 4

The students are given the following details:

- Pt's name, address, DOB, MRN, Ward, Consultant
- Clinical details:
  - Group and Cross Match 4 Units
  - Post partum haemorrhage
  - G^2P^1
  - Blood Group O –ve
  - 1 miscarriage 2 years ago
  - Had anti D after miscarriage
  - No known antibodies
  - No previous transfusions

Methods 5

- Students were instructed to prepare the bottles and forms for the Blood Bank. These were examined by 2 researchers and coded for omissions and errors. A judgement was made on whether the samples would be processed based on current Pre-Transfusion sampling guidelines.[5]

Results

- 223 samples were collected in total

Source	
Procedures Laboratory	207
Simulated Ward	16
Total	223

Results

Errors	Procedures Laboratory	Simulated Ward
Incomplete or Missing Information on sample tube / request form	39	5
Mismatched Information between sample tube and request form	9	0
No Signature on sample tube and / or request form	17	2
Sample tube was Unlabelled	1	1
Illegible data on sample tube	25	0
Missing Clinical Data	66	3
No Reason Given for Request	32	4

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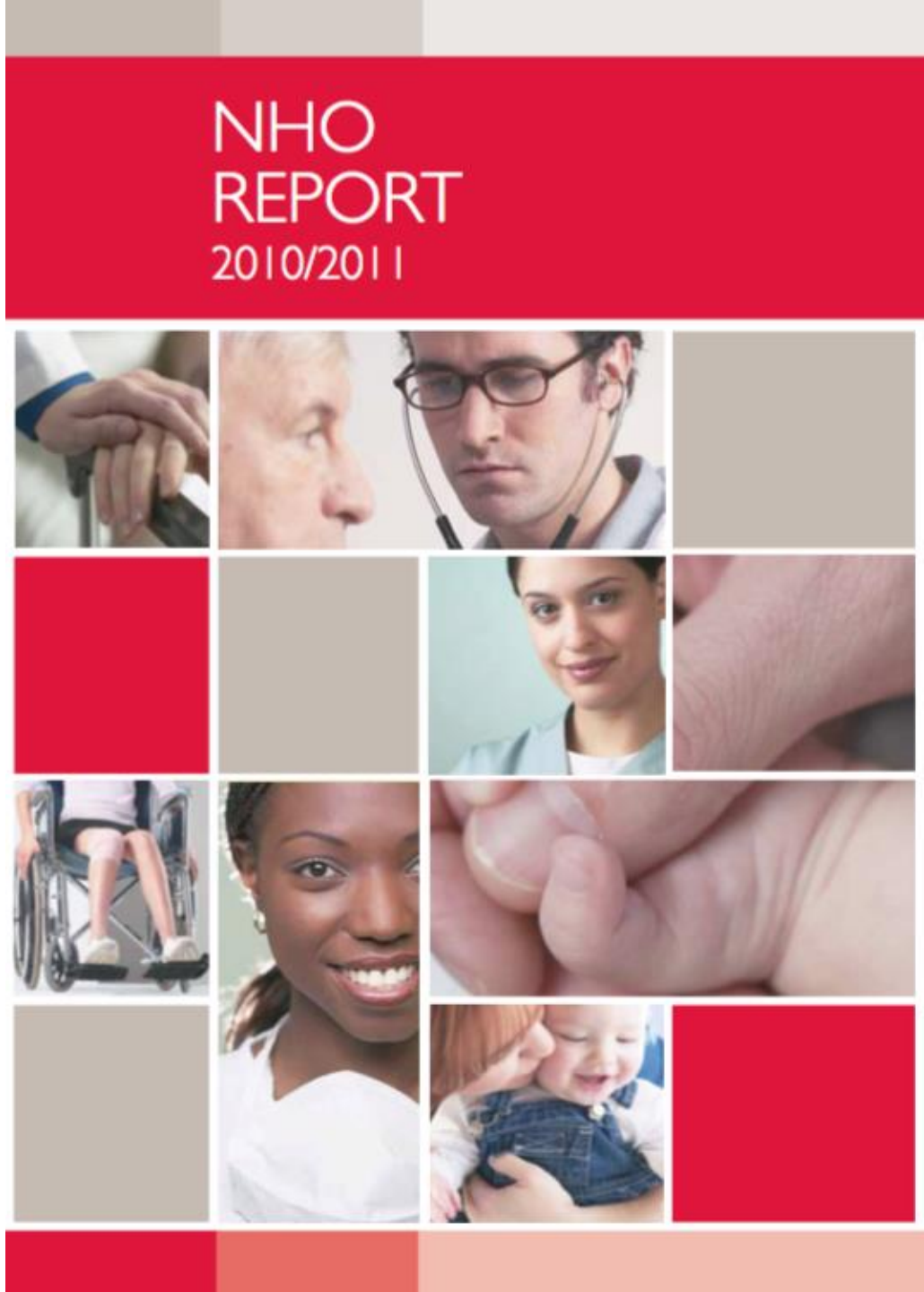
Results

	Procedures Lab	Simulated Ward
Would be processed	145	11
Would not be processed	62 (31%)	5 (30%)
Total	207	16

- Error types in this study corresponds to the same reporting categories as the results from a National Survey in 2011
- Overall, no significant difference between the 2 types of teaching sessions

Discussion

- **Pre-transfusion Sampling in Ireland: Results of a National Survey 2011**
- 71,314 pre-transfusion sample received in June, July and August 2011 from 41 hospitals in Ireland
- To evaluate sampling practice in Ireland
- On average, 4% of pre-transfusion samples rejected (up to 10.8% in some hospitals)



Discussion

Reason sample rejected (n = 2922 samples rejected)	No of Samples
Incomplete or missing information from sample tube and/or request form	1181
Mismatched information between sample tube and request form	437
No signature on sample tube and/or request form	248
Addressograph label used on sample tube	194
Sample tube was unlabelled	62
Illegible data on sample tube	6
Other	746

Discussion

- Similar findings with 2011 study and our data with exception of sample size
- Most common errors in both studies were due to incomplete and mismatched information
- According to the SHOT report, number of near-misses continue to increase
- “Wrong Blood in Tube” (WBIT) errors have the potential to result in ABO-incompatible transfusions
- Majority of WBIT errors due to misidentification of patient and labelling sample away from bedside
- Highlights importance of strict adherence to pre-transfusion sampling guidelines

Discussion

- Multidisciplinary training needed starting from medical school
- Majority of students agree that simulated practice is a great learning opportunity (6)
- More frequent simulated assessments on pre-transfusion sampling may be needed to further reduce sample rejection rate
- Use of 2-person dependent check (challenge and response) may provide additional safety for mislabeled samples
- Implementation of zero-tolerance approach
- Further studies should focus on why such errors occur in the clinical setting

References

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6. Hogg G, Pirie E, Ker J. The use of simulated learning to promote safe blood transfusion practice. Nurse Education in Practice. 2006;6(4):214-223.