

Istanbul2024

Health for People and Planet

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40th International Conference

24 - 27 September
#ISQua2024

ISQua International Society for Quality in Health Care

REPUBLIC OF TÜRKİYE MINISTRY OF HEALTH

TÜSKA TÜRKİYE HEALTH CARE QUALITY AND ACCREDITATION INSTITUTE

PRIMAYA HOSPITAL

WESTERINDO

Critical Thinking: Addressing Wrong Blood in Tube

N. V. LAKSONO[1], W. PROMINENSA[2], and N. WIDYAWATY[3]

1 Quality Management Department, Primaya Hospital Pasar Kemis, Indonesia

2 Clinical Pathologist, Primaya Hospital Pasar Kemis and Westerindo Laboratory

3 Hospital Director, Primaya Hospital Pasar Kemis, Indonesia

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Patient Safety & Quality Improvement

INTRODUCTION

Wrong blood in tube (WBIT) can cause significant delays in diagnosis and treatment, potentially leading to severe consequences such as incorrect blood component transfusion (IBCT). Two and a half years after our hospital was built, we experienced **a near-miss incident involving WBIT** for the first time in December 2023. This study aims to identify the factors contributing to WBIT incidents and to determine how we can mitigate the risk in the future.

CASE PRESENTATION

- Two patients arrived at the Emergency Room and were admitted to the hospital.



Patient A
- 4 years 6 months
- Temperature 38.1°C
- Tonic seizure, 10 mins prior



Patient B
- 3 years 7 months
- Temperature 39.3°C
- Flu symptoms, 1 day prior

- After a few days, these two male preschoolers, in the same room and seen by the same pediatrician, had the same routine blood tests before discharge.
- The inpatient nurses collected and sent the blood samples to the laboratory.
- The analyst verified the data and ran the sample.

Patient A	Admission	Day 4
Hb (g/dL)	12	11
WBC (/uL)	13,690	10,380
MCV (fL)	82	66
MCH (pg)	27	21
MCHC (g/dL)	32	32

Patient B	Admission	Day 4
Hb (g/dL)	10.5	12.6
WBC (/uL)	20,070	8,060
MCV (fL)	65	82
MCH (pg)	21	26
MCHC (g/dL)	32	32

- The analyst suspected a swap and consulted the clinical pathologist, who instructed comparing the blood smears and types with the admission results, resulting in:
  - ✓ Erythrocyte size (normocytic vs. microcytic)
  - ✓ Leucocyte count per high-power field
  - ✓ Blood types (B+ vs. O+)
- After confirmation from additional tests, re-drawing blood was recommended and **the samples were confirmed swapped**.

METHODS

A **root cause analysis** was performed to identify the contributing factors in this event, which included conducting interviews with relevant staff, reviewing our hospital group's standard operating procedures (SOPs), and creating an Ishikawa diagram. **Protective factors** and **corrective actions** were examined, and a simple audit tool was developed as a **preventive measure** for the inpatient ward and medical laboratory unit.

RESULTS

Figure 1. Contributing factors

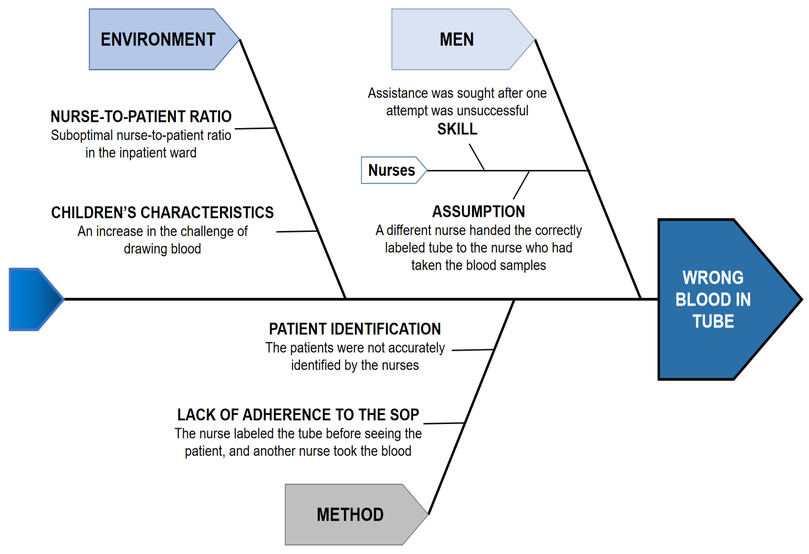


Figure 2. Protective factors

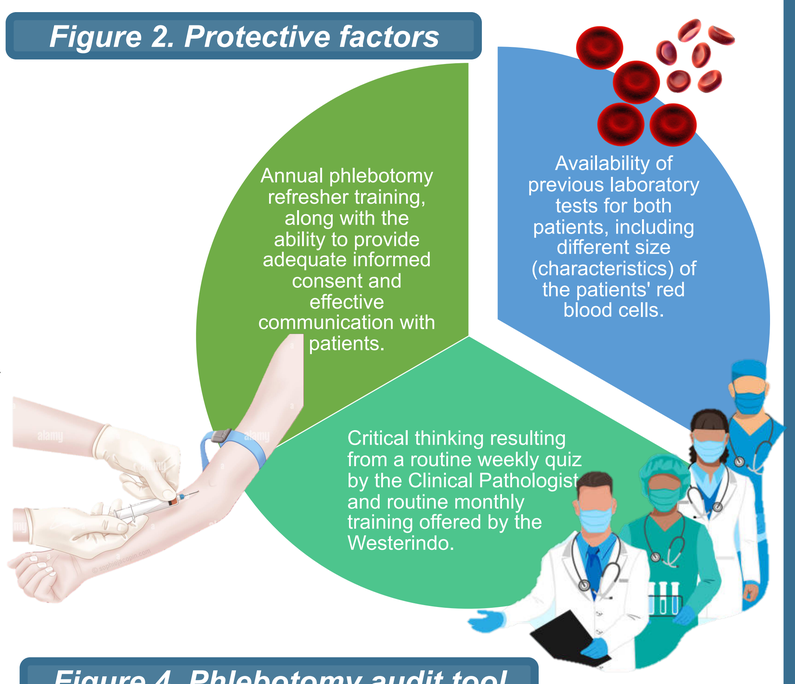
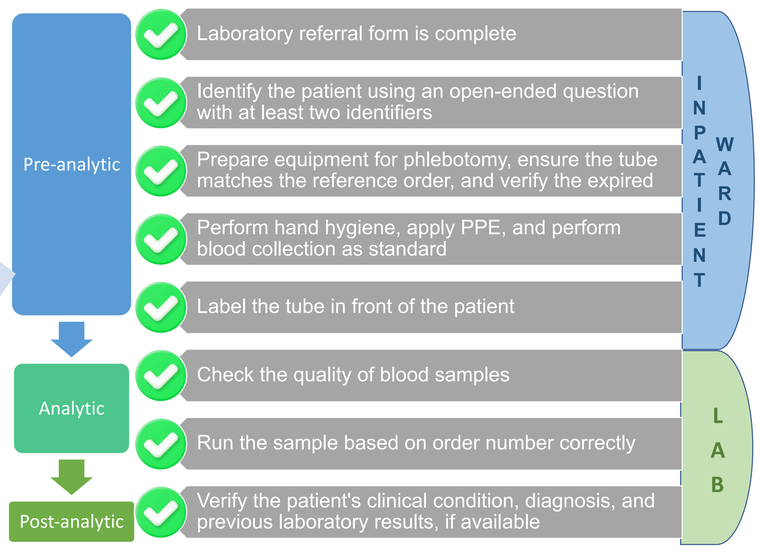


Figure 3. Corrective actions (Jan - May)

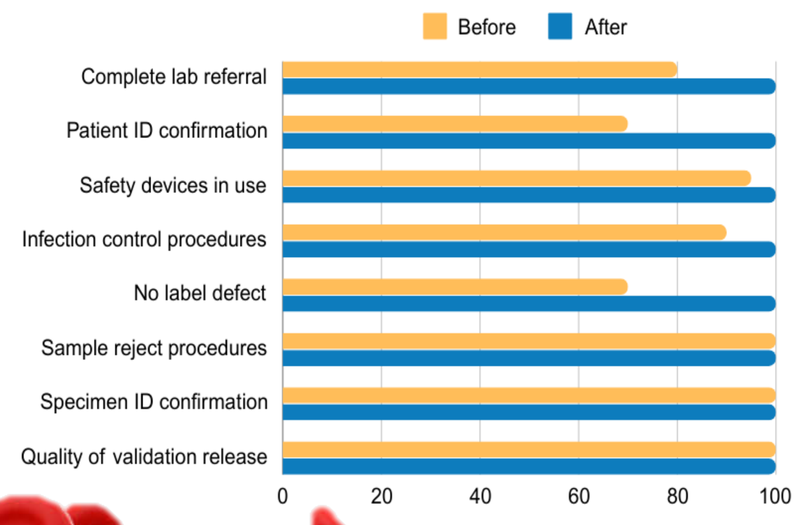


Figure 4. Phlebotomy audit tool



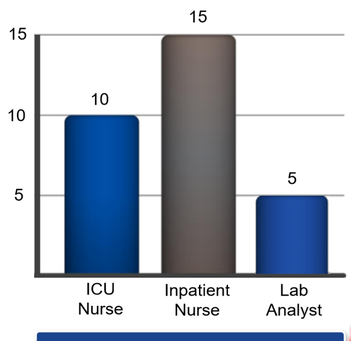
The audit tool is adapted from Westerindo Laboratory's original version.

Figure 5. Compliance results monitoring









After a 3-month monitoring, we assessed the compliance rates as detailed above.

CONCLUSIONS

Patient safety requires a comprehensive commitment from all hospital staff. While patient identification is crucial, **critical thinking is vital in detecting and preventing near-miss incidents**. Our Clinical Pathologist's extra effort paid off when her team demonstrated great critical thinking to identify the wrong blood in tube. A modified phlebotomy audit tool can help minimize the risk of incorrect blood samples and improve patient safety.

Video illustration

REFERENCES

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CONTACT INFORMATION

LinkedIn

Natasha Valeska Laksono, MD, MBA
Quality Management Department
Primaya Hospital Pasar Kemis, Indonesia
Taipei Medical University, Taiwan
LinkedIn: linkedin.com/in/natasha-laksono
e-mail: natashalaksono@gmail.com