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Background & Objectives:

Traceability from blood unit to patient is crucial to ensure the availability and the quality of blood products transfusion. RFID based system would help in optimization of transfusion process with fast and contact less communication with real time traceability and monitoring on the ongoing bed side transfusions

To assess the utility of RFID based system for bedside monitoring

Methods:

RFID based inventory as well as bedside transfusion monitoring was implemented in March 2023. A total number of 6200 Packed Red Blood Cell and 2700 platelet requisition were assessed for completion of transfusion details. The units are tagged with RFID from Biolog-id.

Parameters assessed were based on time (12Hrs) as per Departmental Policy, Concurrence of data. Ethical clearance has taken the from the institute ethical committee.

Process flow of RFID



Figure A Shows - Storage of RFID Enabled Bag
Figure B Shows - RFID Scanner User Code (Bed Side)
Figure C Shows - RFID Scanning Procedure Matched (Bed Side)
Figure D Shows - Completion of Blood Transfusion (Bed Side)

BEDSIDE TRANSFUSION AUDIT: MANUAL MONITORING V/S RFID SYSTEM

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Results:

A total of 8900-blood component requisition were analysed. Transfusion follow-up forms which were received within 12 hours were 8377(94.12%) versus form which were not sent back within 12 hours were 523(5.87%)

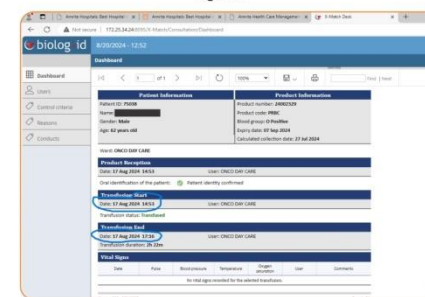
On comparison of RFID system verses manual data capture of transfusion, 87 %(n=7763) had concurrence. Whereas 13% (n=1137) of requisition there was mismatch of transfusion timing details.

We also observed that there was incomplete data capture on RFID system amounted up to 10.97%(n=977). There were 9.20%(n=819) request were only start (ongoing)time was captured verses 1.77%(n=158) request where only end time was captured. Both time available 89.02% (n=7923).

Figure 1



Figure 2



Transfusion follow-up received within 12 hours

Parameters	Details	Percentage
Transfusion follow up forms received within 12 hours	8377	94.12%
Transfusion follow up form not received within 12 hours	523	5.87%

Comparison of RFID system verses manual data capture of transfusion

Total Transfusion Transfused	(n=8900)	Percentage
Transfusion time capture concurrence (RFID vs manual)	7763	87%
Transfusion time capture concurrence (RFID vs manual)	1137	13%

Information on RFID System

Information on RFID System	(n=8900)	Percentage
Incomplete data captured on RFID	977	10.97%
Only Start (ongoing) time captured	819	9.20%
Only end time captured	158	1.77%
Both time available	7923	89.02%

Figure 3

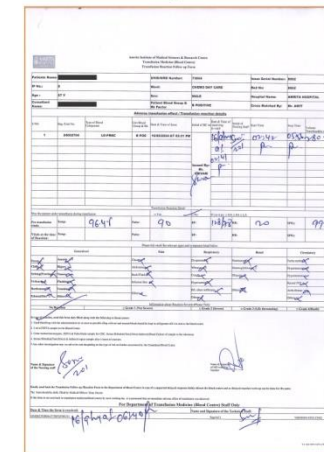


Figure 4



Figure 5



Figure 6



Figure 1 Shows - Manual Transfusion Follow up Form (Time Unmatched)
Figure 2 Shows - RFID Generated Report (Time Unmatched)
Figure 3 Shows - Manual Transfusion Follow up Form (Time Matched)
Figure 4 Shows - RFID Generated Report (Time Matched)
Figure 5 Shows - RFID Start (Ongoing)
Figure 6 Shows - RFID End Time

Conclusion:

There was no mismatch transfusion reported, it was suggested for regular training of staff would help to reach 100% compliance from 87%. Similar result were also observed by Clive Hohberger.et.el, 2011

Reference:

- Transfusion Medicine Technical Manual ,Third Edition,2022
- Good Blood Transfusion Practices –Guidance for Rational use of Blood,2022
- AABB Guidelines 19th Edition,2020
- Basic & Applied Concepts of Blood Banking and Transfusion Practices, 5th Edition - July 28, 2020