

Digital transfusion – panacea or tar pit?

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Background



Full vein-to-vein electronic blood management system (EBMS), Haemonetics BloodTrack, was introduced in our organisation in 2017. System includes sample collection, blood fridge control and component administration.



Service review in 2019 noted a significant reduction in wrong blood in tube (WBIT) events, handwritten (1:5609) compared to EBMS on-demand (0:28,207). On-demand sample labelling reduced rejected sample rate by approximately 57%, with around 80% of samples labelled using EBMS.



EBMS effectively prevented administration of incorrect blood component/product on 15 occasions (2016-2018), including prevention of ABO incompatible red cell transfusion.



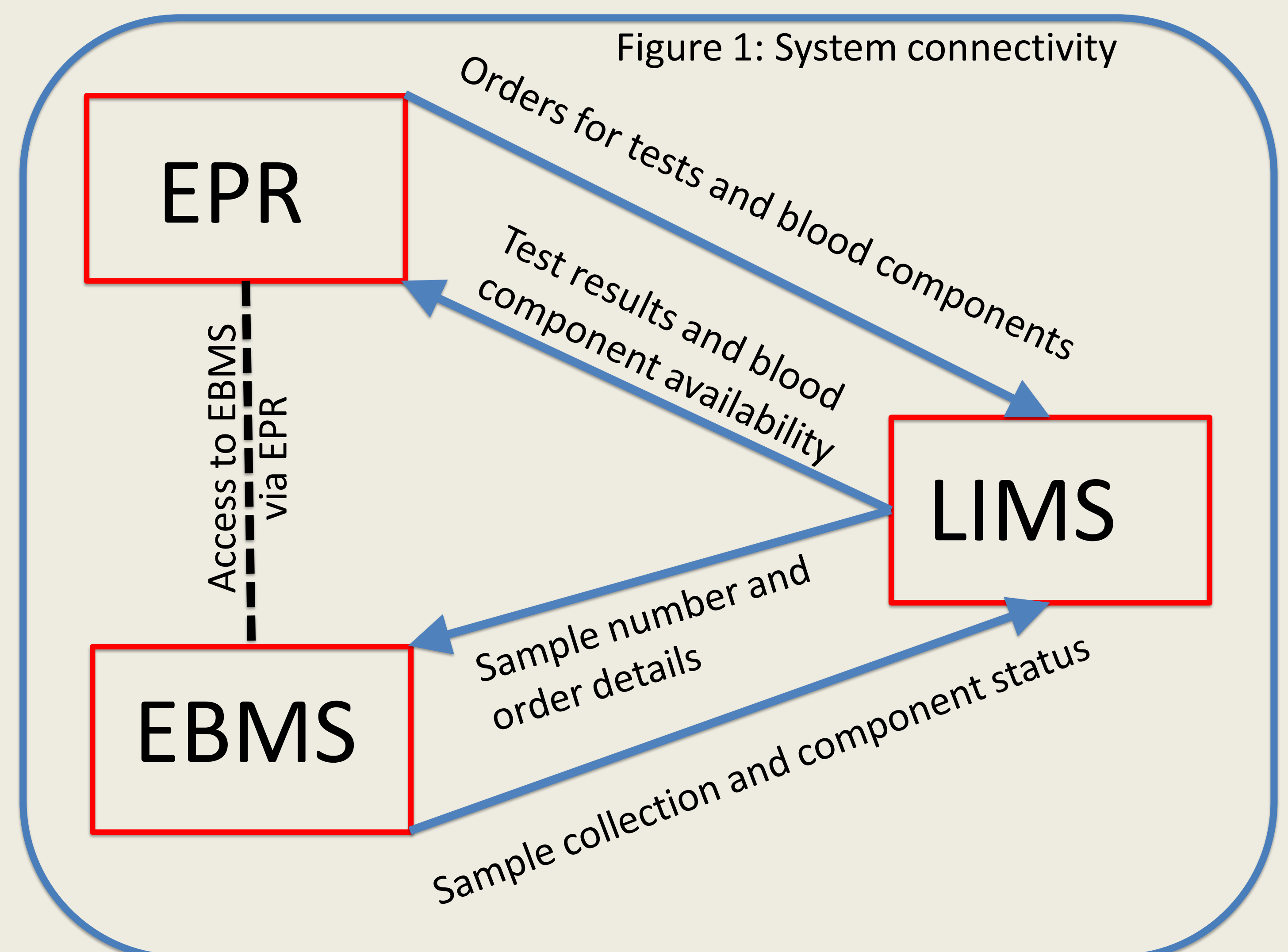
In 2020 an electronic patient record (EPR- EPIC) system was implemented, including electronic test/component ordering, EBMS was retained for patient safety and integrated with EPR and LIMS (Haemonetics SafeTrace Tx) (figure 1).



The impact of a fully digital transfusion service on patient safety was reviewed. The focus was on WBITs, rejected samples and errors in the administration of blood components.

Aims

A review of WBIT, rejected sample themes and administration errors was performed investigating the impact of implementation of a fully digital transfusion service.



Results

EBMS WBIT rates increased from 0 in 2020 to 4 in 2021 and 4 in 2022. All WBITs in out-patient settings or maternity and using ID bands not attached to the patient. Contributory factors included increased workload and equipment failures.

Rejected sample themes changed with introduction of connectivity from handwritten transcription/omission errors to electronic errors including; printer misalignment cutting off patient ID, electronic labels over handwritten information, and electronic orders not coming across the interface to the LIMS.

One error reported a nurse prescribing red cells, outside of competence scope. Changes to process were contributory to the errors, including no access rights control in EPR to limit prescriptions to authorised staff only and ambiguity of the terminology. Audit noted one other occasion where an unauthorised nurse had prescribed, and 4 near miss events. No similar errors were noted in the historic paper-based system. Access rights have now been enabled within the EPR along with clarity of the terminology in the prescription process.

Failure to use EBMS for safety scan at administration increased from 16 components per year (2020) to 27 (2022) despite prompts in EPR pathway. Contributory factors included scanner configuration unable to read component barcode format, staff omissions, and complexity of using two IT systems.

Recording transfusions in the EPR is not intuitive. Therefore, approximately 10% are not recorded and so not visible to clinicians. Where prescriptions are not 'released' in the EPR, they remain active and can be used for a further transfusion.

Discussion

- This review highlights the impact of human factors and ergonomics on 'work as done' and 'work as imagined' when implementing a digital transfusion service
- Staff workarounds in the face of sample label printer malfunction increased sample rejection rates and WBITs
- Barcode scanner configuration issues and complexities of using two systems for recording administration of components has reduced compliance with the EBMS safety scan
- Scanning patient ID bands that are not on the patient now appears to be the 'norm'
- There is an element of technology complacency with expectation that the EPR will control access rights and over reliance on electronic ordering processes
- Fatigue, distraction, pressure and stress were also implicated in errors as staff attempt to provide a service with post-pandemic challenges
- There is no doubt that IT supports transfusion safety but only when configured and connected correctly using human factors and ergonomic principles
- Sharing learning from our organisation experience will support others looking at a fully digital transfusion service