# Using HL7-FHIR to Automate Mandatory Reporting of Bone Marrow Transplant Data Decreases Staff Effort and Improves Data Quality

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## BACKGROUND

Transplant centers are required to submit outcomes data on every transplant performed to the Center for International Blood and Marrow Transplant Research (CIBMTR).

Data is manually abstracted from the Electronic Health Record (EHR) entered by data managers (DM) into an online data capture system, called FormsNet3 (FN3).

## PROBLEM

Data staff spend on average 16.5 hours per patient on data entry for CIBMTR form completion per year

Manual data entry is inefficient, time consuming and error prone

## METHODS

Data automation planning began in June 2021 and the BMTverse App went into production in December 2021.

Our rollout was conducted in 3 phases:

1) Automation of demographics submissions in December 2021
2) Automation of select pre-transplant labs in March 2022
3) Automation of complete blood count with differential labs at post- transplant in November 2022.

We monitored time and effort savings as our main key performance indicator (KPI).

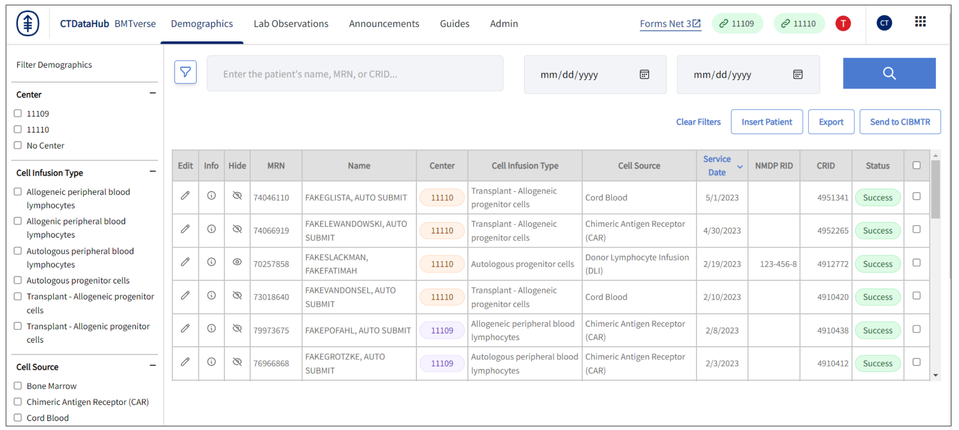
## GOAL

Eliminate, manual data entry via automation of data submission to CIBMTR.

[1] Gonzales et al., 2020, "Time-Driven Activity-Based Costing (TDBAC) Identifies Time and Effort Required for Completion of CIBMTR Forms and Can Assist in Resource Planning for HCT Centers", Biol. Blood Marrow Transplant 26:S96-S255

## BMTVERSE

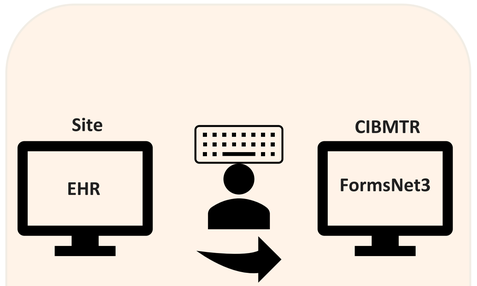
User interface for triggering and monitoring data submission to CIBMTR




Automatically extracts and sends source data to CIBMTR forms using Health Level 7-Fast Health Interoperability Resources (HL7-FHIR) technology.

MSK was the first center to leverage Direct FHIR and not Epic FHIR.

Facilitate new research opportunities, while reducing the time research staff is required to maintain and report on the data timely.




Manual Data Entry

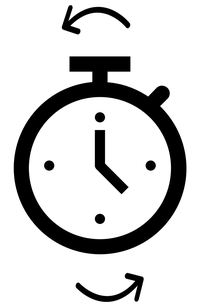

Direct FHIR


## RESULTS

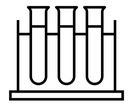
- Phase 1: Automation of **demographics** data submission to CIBMTR to register a patient saved 5 minutes/patient[1].
- Phase 2: Automation of certain pre-transplant and post-transplant **lab results** data to CIBMTR saved 3-20 minutes/patient[1].

**DEMOGRAPHICS**

**Saves 5 minutes Per patient**



**LABS**



**Saves 3-20 minutes per patient**

(depending on disease/form type)

## CONCLUSIONS

Digital tools like BMTVerse powered by HL-7-FHIR can:

- Decrease the time burden associated with mandatory data reporting requirements
- Improve data management operational efficiencies
- Increase data accuracy
- Reduce data submission latency

## FUTURE DIRECTIONS

Partner with CIBMTR to automate other high-value data fields in 2023.

## ACKNOWLEDGEMENTS

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