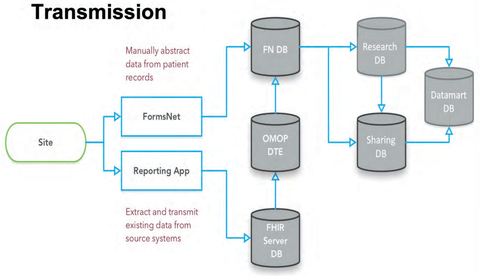
Assessing the Technical and Operational Feasibility of a Next-generation Data Capture and Processing Approach—An Extension of OMOP-based Data Translation Developed by the Center for International Blood and Marrow Transplant Research (CIBMTR)

INTRODUCTION

The Center for International Blood and Marrow Transplant Research® (CIBMTR) is a research collaboration between the National Marrow Donor Program® (NMDP)/Be The Match® and the Medical College of Wisconsin (MCW). The CIBMTR collaborates with the global scientific community to advance hematopoietic cell transplantation (HCT) and cellular therapy worldwide to increase survival and enrich the quality of life for transplant patients. The CIBMTR collects outcomes data from approximately 400 cellular therapy centers worldwide, including for all allogeneic HCTs and 80% of autologous HCTs performed in the US.

The CIBMTR aims to reduce the administrative burden on transplant centers, In the first phase, CIBMTR focused on reducing manual data capture by beginning to transmit data directly from participating sites' source databases formatted in HL7 Fast Healthcare Interoperability Resources (FHIR). (Figure 1)

Figure 1. DTI FHIR Transmission



METHODS

The traditional forms-based approach can potentially result in unnecessary effort throughout data capture and management.

A domain-based workflow was implemented to mitigate or eliminate many of these inefficiencies, creating a more flexible data collection approach, a significantly streamlined data processing pipeline, and expanded analysis and sharing options.

The tool's user interface optimizes hybrid manual and automatic data entry.

Combining abstracted and extracted data in a centralized **OMOP CDM**, the CIBMTR **significantly streamlines** its data processing pipeline and creates the **foundation** for **expanded analysis** and **sharing** options

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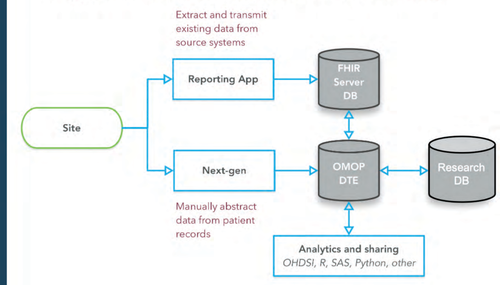
The next generation system assesses what data exists from the EMR extracts and combines them together with the manually abstracted data. (Figure 2)

Figure 2. Next Generation Transmission



As the chart abstractor enters information, the system intelligently sequences questions based on multiple criteria:

1. Determination of variable collection requirements, considering factors like the primary disease and the time of the transplant (e.g., pre-HCT, post-HCT, extended follow-up milestones)
2. Optimal time to validate assumptions and derivations based on real-time confidence and risk scoring (e.g., selecting the right lab panel for a target date when it may likely be inferable but not fully disambiguated)
3. Impact on downstream variable collection (e.g., position in the scenario tree, degree of use in subsequent derivation logic)
4. Simplification of process for abstractor (e.g., treatment chronology vs grouping similar data types)
5. Site and abstractor preferences

CONCLUSION

Upcoming work will build on this foundation by developing a collaborative research environment featuring prototype stakeholder portals, analysis tools, and links to additional datasets such as genomics, patient-reported outcomes, reimbursement claims, and manufacturing data.

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