Accelerating Bone Marrow Transplant Unrelated Donor Searches and Ensuring Data Quality: Development of a Cutting-Edge Tool for Seamless Data Transmission to National Marrow Donor Program

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1. Background
Every 3-4 minutes, someone in the U.S. is diagnosed with a blood cancer. At Memorial Sloan Kettering Cancer Center (MSK), approximately 70 percent of our hematology patients require a blood or marrow transplant donor. In partnership with the National Marrow Donor Program (NMDP), MSK launched the American Symphony Campaign in November 2023 encouraging the population at large, especially those of diverse communities, to become a registry member. NMDP connects the patients in need to transplant with these unrelated donors through their national registry, by collecting the patients' data to match with a registered donor. The information was entered manually by MSK coordinators until June 2023. Since then, the MSK-developed tool, NMDP Patient Export Tool (NMDP PET), leverages electronic data transfer to replace this manual and error-prone task with a faster and more accurate step to identify a matching life-saving donor.

2. Goals
Improve data quality and accuracy: Eliminate manual entry to reduce translation errors while allowing users to verify the data before initiating the data transfer.

Enhance Efficiency and Timeliness: Develop a technology solution to reduce the time spent on data entry into the NMDP's registry.

3. Solutions and Methods
The NMDP PET application was built to connect MSK's electronic health record (EHR) with NMDP's database, MatchSource, by leveraging NMDP's Patient Import Application Programming Interface (APIs) and using HL7 FHIR standards for seamless data transfers. User interviews of MSK donor program coordinators were conducted and enabled NMDP field mapping to the EHR source. A core principle of our approach was to prioritize real-time data acquisition, aligning closely with the overarching goal of expediting unrelated donor searches.

NMDP PET's interface provides coordinators with an intuitive user experience to interact with the patient data with full control and transparency over the submission process.

To measure the time efficiency gain and user satisfaction, eight coordinators participated in a survey issued one-month post-implementation.

4. Outcomes
The implementation of automated patient demographics, labs, and HLA has resulted in a remarkable reduction in the day one preliminary data entry time. The manual data entry which took 23 minutes per patient now takes less than a minute. That is a 95 percent reduction in time savings per patient. The result of our survey shows that around 88 percent of our users reported that they are very satisfied with the electronic data transfer process and 100 percent reported that they are confident with the data accuracy.

5. Lessons Learned and Future Directions

Transferring data from the EHR to NMDP requires a thorough understanding of source data intricacies, FHIR compliance, and LOINC code integration for lab data. To achieve a successful integration, a comprehensive mapping and review process is essential to ensure data accuracy. In the next phase we plan to integrate patient updates and explore the tool's utility for other transplant centers.