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SETTING THE WORLD ON FHIR®

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A series of case studies illuminating how HIT professionals are using HL7®FHIR® to improve and advance modern healthcare

CASE STUDY

HL7 FHIR

BRIGHAM AND WOMEN'S HOSPITAL

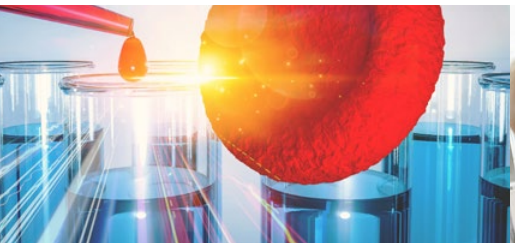
Brigham and Women's Hospital is a world-class academic medical center based in Boston, Massachusetts, USA. The Brigham serves patients from New England, across the United States and from 120 countries around the world. Part of Mass General Brigham, it is a major teaching hospital of Harvard Medical School. An international leader in virtually every area of medicine, The Brigham has led numerous medical and scientific breakthroughs that have improved lives around the world.

Goal

Improve platelet transfusion workflow to decrease the amount of time patients spend at dangerous levels of thrombocytopenia, decrease overall platelet utilization, and improve platelet matching and provider experience

Opportunity

Use SMART on FHIR® to build a point-of-care platelet inventory and transfusion visualization web application



Optimizing decision-making and workflow around platelet transfusion is complex and involves numerous pieces of data that often live in different locations.

— William J. Lane, MD, PhD, Pathologist, Brigham and Women's Hospital

Project

The initial idea for the project came from a discussion with a clinical pathologist. Frustrated with data silos and paper-based processes, this physician recognized the potential of a software application to improve the workflow around platelet transfusions. It quickly became clear that access to data was an important challenge to overcome.

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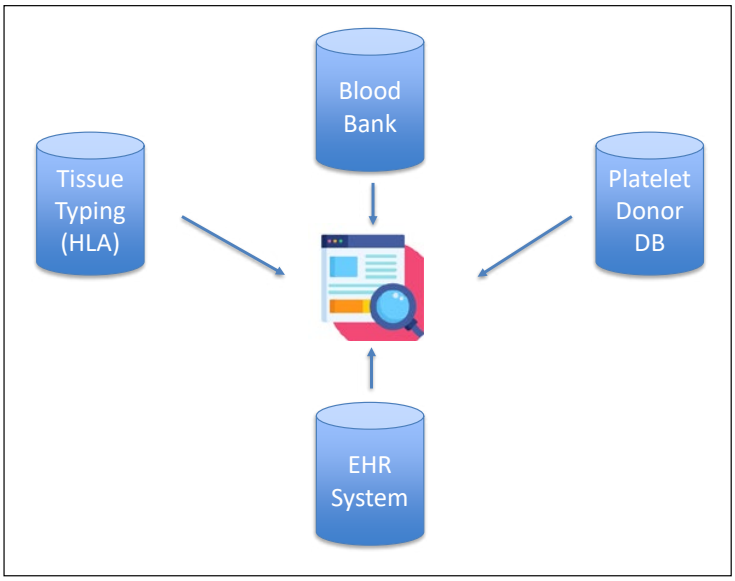
Worldwide, more than 50,000 patients undergo Hematopoietic Stem Cell Transplantation (HSCT) each year, and many of the 2 million platelet units transfused annually in the United States are used for patients who develop transfusion-dependent thrombocytopenia while undergoing HSCT. Thrombocytopenia is a life-threatening condition that can lead to spontaneous and catastrophic bleeding.



Each system required its own data interface

A visualization application was developed to improve the workflow around platelet transfusion for patients undergoing HSCT. The application is designed to support SMART on FHIR and works embedded directly within the EHR or as a standalone application. The application provides a unified view into several essential data elements relevant for patients requiring platelet transfusion, including platelet count trend, prior transfusions, patient human leukocyte antigen (HLA) data, and current blood bank platelet inventory. The application implements a custom sorting algorithm for the blood bank platelet inventory based on available HLA data, which has created an entirely new workflow and standard operating procedure for how platelets are assigned at The Brigham.

Progress

Since being operational, the application has been used by approximately 60 users/clinicians for more than 420 patients. The project is also in the process of being evaluated through two additional mechanisms:

Patient outcomes – Reducing patient-time spent at dangerous levels of thrombocytopenia by more appropriately matching platelet units to patient-specific data like HLA.

Platelet utilization – The Brigham has a donor center, but it also purchases platelets from the American Red Cross, so reduction in platelet utilization has important financial consequences for the institution.

This innovative approach to transfusion management has resulted in significant changes to the blood bank's standard operating procedures.

— William Gordon, MD,
Brigham and Women's Hospital

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