

EMR retrieved-transfusion records analysis and blood utilization management optimization: the AUBMC experience

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Background: The American University of Beirut Medical Center (AUBMC) is the largest tertiary care center in Lebanon with a blood transfusion service that supplies around 14,000 units of blood products per year. A Blood Utilization Committee surveils the blood transfusion practice including transfusion indications, release, hand-off, documentation and reporting of transfusion reactions through monthly audit reports. With the implementation of Epic EHR system (Epic Systems, Verona, WI) in 2018, new prospects arose for robust data retrieval insuring a higher level of surveillance and abiding by the minimum sampling size set by *Joint Commission International* standards (5-10% of population size >1000).

Methods: Using Cogito Data Warehouse, Epic's enterprise intelligent suite, a crystal report was engineered to compute the percentage of compliance with documentation standards for blood components transfused in different clinical services. The reported indicators include records of (1) vital signs pre-, during and post-transfusion, (2) transfusion reactions occurrence and (3) blood transfusion informed consents. A separately generated excel sheet extensively displays de-identified stratified raw data listing comprehensive details, ensures accountability by listing involved users and allows auditors to verify clinical validity using a computed process of transfusion indications cross-checking with pre-transfusion labs.

Results: Data retrieved from November 2018- March 2019 revealed non-compliance percentages of 75% for vital signs documentation, 75% for transfusion reactions documentation and 92% for informed consents. Subsequent circulation of education tip-sheets through administrative and nursing channels, implementation of mechanical hard-stops in the transfusion administration interface, and improved data extraction algorithms lead to improvements in non-compliance percentages in the subsequent 5 month-period of April-August 2019: 65 % for vital signs documentation, 19 % for transfusion reactions documentation and 36 % for informed consents.

Conclusion: Comprehensive blood transfusions' electronic records retrieval provides Blood Utilization Committees with improved insight on patterns of incompliance with acknowledged transfusion guidelines and documentation quality standards. It hence allows targeted and effective interventions to enhance a practice conforming to the highest quality standards governing transfusion medicine.