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TRENDS IN RED BLOOD CELL TRANSFUSIONS WITHIN THE BIOLOGICS EFFECTIVENESS AND SAFETY (BEST) INITIATIVE NETWORK, 2012-2018

Background:

The U.S. FDA Center for Biologics Evaluation and Research (CBER) recently established the Biologics Effectiveness and Safety (BEST) Initiative which is an active surveillance system for all CBER regulated products, including blood components, and which also allows for investigation of patterns in utilization. The 2015 National Blood Collection & Utilization Survey (NBCUS) Report found an overall decrease in the number of units of red blood cells (RBCs) transfused in recent years. The aim of this study is to describe the utilization of RBCs from 2012 through 2018 using electronic health records (EHR) from three data sources participating in the BEST Initiative.

Methods:

We queried approximately 24 million patient records from three EHR data sources participating in the BEST Initiative. Using ISBT 128 codes, we determined: (i) the number of patients receiving at least one unit of RBCs per year; and (ii) the total numbers of RBC units transfused per year in each EHR data source from 2012-2018.

Results:

Table 1. Total Number of Units of Red Blood Cells Transfused and Total Number of Patients Receiving Red Blood Cell Transfusions in the BEST Initiative EHR Data Sources, 2012-2018

	BEST EHR Data Sources					
	Data Source 1		Data Source 2		Data Source 3	
	Patients	Units	Patients	Units	Patients	Units
2012	5,751	28,173	9,993	35,791	-	-
2013	5,657	29,247	9,149	30,709	-	-
2014	5,729	29,319	9,480	36,791	-	-
2015	5,915	29,769	10,132	39,422	-	-
2016	6,297	30,886	10,113	40,171	5,596	33,449
2017	6,030	29,384	10,098	39,574	6,414	25,658
2018	6,177	29,017	9,520	41,150	7,034	27,618

Table 1 shows the number of patients receiving at least one unit of RBCs and the total number of RBC units transfused in each of the sources from 2012- 2018. Data source 3 did not have transfusion data using ISBT 128 codes before 2016. The numbers of total units of RBCs transfused appeared stable for data source 1, a slight increase in data source 2, and with a slight decrease in source 3 over the study period. The number of patients transfused with RBCs was relatively stable for data source 2 and showed a slight increase for data sources 1 and 3.

Summary/Conclusions:

We demonstrated that within the BEST Initiative data sources, RBC transfusions can be identified at patient and unit levels. Using these tools, we found that the numbers of RBC transfusions per year, particularly in relation to the numbers of patients receiving any RBC transfusion, appeared relatively stable. While our RBC transfusion trend contrasts with that described by the NBCUS, our 3-hospital cohort may not reflect aggregate national trends. Access to ISBT 128 codes within EHR data sources provides the ability to capture large numbers of transfusions, and future queries promise even more granular capture of blood transfusions and utilization patterns.

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