



## The 65th ASH Annual Meeting Abstracts

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## 904. OUTCOMES RESEARCH-NON-MALIGNANT CONDITIONS

**Outpatient Costs of Patients with Sickle Cell Disease with or without Hydroxyurea at an Institution in Rio De Janeiro, Brazil**

Tarun Aurora, MD<sup>1</sup>, Patricia Moura, MD PhD<sup>2</sup>, Delaine Fidlarczyk, RN<sup>2</sup>, Jane Duran<sup>2</sup>, Roberto Barbosa<sup>2</sup>, Thais Oliveira, NP<sup>2</sup>, Emilia Nascimento, PhD<sup>2,3</sup>, Jane S Hankins, MD MS<sup>4</sup>, Clarisse Lobo, MD PhD<sup>2</sup>

<sup>1</sup> Department of Global Pediatric Medicine, St. Jude Children's Research Hospital, Memphis, TN

<sup>2</sup> HEMORIO, Instituto De Hematologia Arthur Siqueira Cavalcanti, Rio de Janeiro, Brazil

<sup>3</sup> UEZO, Rio de Janeiro, Brazil

<sup>4</sup> Departments of Hematology and Global Pediatric Medicine, St. Jude Children's Research Hospital, Memphis, TN

**Background**

Brazil is home to a growing population of patients with sickle cell disease (SCD) with an estimated 100,000 patients having some form of the disease. The use of hydroxyurea (HU) is known to decrease numerous complications, such as pain crises and acute chest syndrome, in SCD. In Brazil, this medication is provided by the Brazilian Ministry of Health through the National Health System. The overall cost of the drug, as well as the cost of patients with SCD visiting a large hematology clinic in Rio de Janeiro, HEMORIO, is not known. This study aimed to determine the landscape of patients visiting the hematology clinic and the cost of each visit as stratified by the use of hydroxyurea.

**Methodology**

A retrospective analysis of patients with SCD who were seen at the HEMORIO clinic between January 1, 2018, and June 30, 2018, was conducted. Patients were stratified by age, gender, genotype, and prescription use of HU. The total number of appointments attended, which included primary hematology, chronic transfusion, and other subspecialties, was computed. Absentee rates were determined and stratified as listed above. Cost per each type of appointment - outpatient clinic, transfusion visit, dressing change, and lab check - were then calculated. Finally, the cost of medications, which included HU, pain medications, and iron chelators, was calculated per patient. Data was collected from the Sash System (Hematology Service Attendance System) used in HEMORIO. The tool used for data extraction was Microsoft SQL Server 2014. Data were analyzed using the R software. All calculations converted to US dollars.

**Results**

A total of 3000 patients with SCD seen at the outpatient clinic were reviewed. 51.6% of patients were female and the mean ( $\pm$  standard deviation) age was 19.1 ( $\pm$  14.8). 73% of patients had HbSS, 20% had HbSC, and 5% had HbS-beta thalassemia. 984 patients (32.8%) were prescribed HU. 7 patients (0.2%) died during the time of analysis. Out of 14795 appointments scheduled at the medical facility, the highest number of appointments were made in Hematology (6199, 42%) or Chronic Transfusion (2347, 14.2%). The next most common were Ophthalmology, Dentistry, or Physical Therapy (2098 combined, 14%). Patients with HbSS had the greatest number of appointments overall. 9177 (62%) were attended, making the absenteeism rate 38%. When stratified by genotype, age group, and HU use, the highest rates of absenteeism were in patients with HbSS or S $\beta$ <sup>0</sup> (38%), in those aged 19-25 (45%), and in those not taking HU (41%). Patients with HbSS had a higher average outpatient visit cost of \$45.88 ( $\pm$  \$40.01) per person as compared to patients with all other genotypes (\$33.10  $\pm$  \$35.14 per person). The highest costs for all patients were associated with transfusion visits, with an average of \$390.43 ( $\pm$  \$299.02) per patient, followed by dressing changes at an average of \$123.68 ( $\pm$  \$109.90) per person across all genotypes. Compared to those patients not on HU, patients on HU had a statistically significant higher cost for all types of visits ( $p < .05$ ), except for dressing changes (Table 1, Figure 1). Similarly, patients on HU had a higher average medication cost of \$4438.08 ( $\pm$  \$12195.34) per person compared to those not on HU at \$778.14 ( $\pm$  \$5649.32) per person.

**Discussion**

At a medical center in a middle-income country that specializes in treating SCD, patients with the HbSS/S $\beta$ <sup>0</sup> genotypes had notably higher treatment costs compared to those with other genotypes. This is consistent with the fact that these patients often have a more severe form of the disease and require more outpatient visits, specialists, and transfusions. The most expensive aspect of treatment for all patients was transfusion appointments. These appointments are likely more costly because

they require blood, supplies, and trained staff. Patients who received HU had higher average costs for each type of clinic visit. This is potentially because those receiving hydroxyurea have a more severe disease course, requiring more outpatient and subspecialty services. In future studies, we hope to demonstrate that these same patients have lower overall costs for inpatient and emergency visits, which would provide a net cost-saving with hydroxyurea treatment and benefit the hospital system. Given the detailed information on cost of each transfusion, medication, and intervention per patient, the Ministry of Health may be able to better allocate funds to the aid of patients with SCD in the future.

**Disclosures Lobo:** *Agios Pharmaceuticals*: Consultancy, Honoraria.

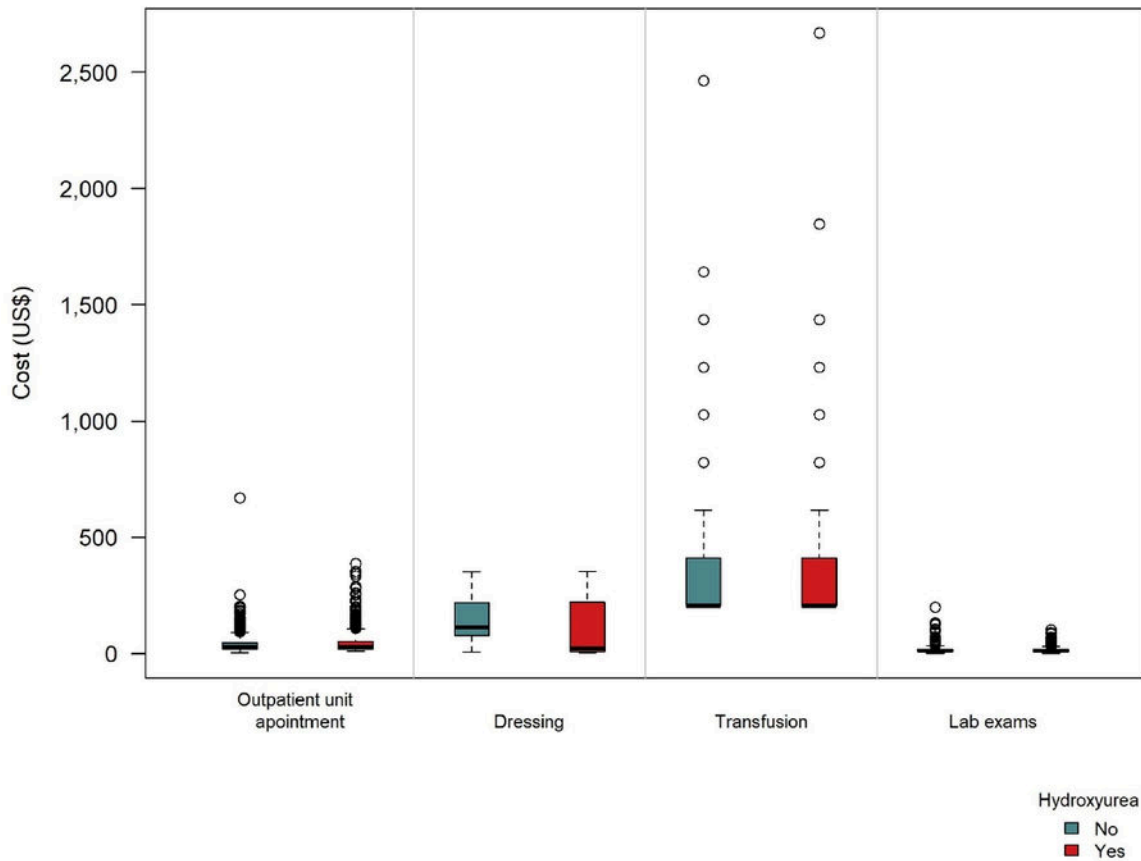
**Table 1. Costs associated with each patient seen at HEMORIO, divided by visit type and use of hydroxyurea**

		Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	Std. Dev	n	p *
Outpatient unit appointment	HU: No	3.86	19.10	28.64	36.21	38.20	386.86	35.57	1977	< 0.0001
	HU: Yes	9.55	28.65	40.88	54.96	73.54	669.41	42.90	984	
Dressing	HU: No	3.98	25.99	82.38	105.84	122.61	350.60	99.72	36	0.2087
	HU: Yes	3.98	13.56	134.44	147.45	234.62	352.48	119.95	27	
Transfusion	HU: No	205.18	205.18	205.18	380.04	410.36	2667.34	304.01	291	0.0407
	HU: Yes	205.18	205.18	205.18	401.84	410.36	2462.16	293.59	265	
Lab exams	HU: No	0.44	6.37	8.69	11.45	14.15	124.69	9.47	1615	< 0.0001
	HU: Yes	0.44	10.36	15.98	17.78	21.59	199.66	13.02	916	

HU: hydroxyurea

\* Wilcoxon rank sum test with continuity correction for use of HU

**Figure 1. Bar chart of cost associated with each patient seen at HEMORIO, divided by visit type and use of hydroxyurea**



**Figure 1**

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