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Assessing Pediatric Hematology and Transplant Providers' Perspectives on Bone Marrow Transplant Evaluation for Sickle Cell Disease: A National Survey

Study Purpose and Rationale

The specific aim of our study is to assess providers' knowledge, perspectives and referral patterns for bone marrow transplant (BMT) evaluation for children with sickle cell disease (SCD), by surveying pediatric hematology and BMT providers nationally, using an anonymous electronic survey.

There is considerable variability in attitudes, knowledge, and referral practices amongst pediatric hematology providers. These views can affect the number of potentially eligible patients with SCD referred for BMT. Our hypothesis is that providers from transplant centers are likely to have more awareness about and positive attitudes towards transplant for SCD. Understanding views and soliciting what information would be desired from providers could help elucidate potential barriers to referral for transplant and improve communication about transplant to families of children with SCD.

SCD is an inherited red blood cell disorder, which affects approximately 100,000 people in the United States. The majority of patients with SCD are African American, and to a lesser degree Hispanic. SCD leads to a number of sequelae including chronic hemolysis, severe acute complications, and multi-organ dysfunction due to chronic vaso-occlusion and anemia. Hydroxyurea has been shown to reduce hospitalizations, pain crises, and other disease complications. It is the only FDA-approved drug for adults with SCD, but is used off-label in children. However, despite efficacy in clinical trials, hydroxyurea has not been uniformly adopted in the care of children with SCD, does not prevent all morbitidies due to SCD, and has uncertain long-term effects for children with SCD.

Bone marrow transplant, in contrast, provides the only known cure for SCD. To date, several hundred children with SCD worldwide have been successfully treated with BMT, with a success rate of greater than 90% for children with matched sibling hematopoietic stem cells (from marrow, peripheral blood, or umbilical cord blood sources). Despite this level of success, only 91 transplants were performed in the US in 2012 for the treatment of SCD in children ages 0-20. Of the 82 US pediatric transplant centers, only approximately half have performed transplant for the disease. Many questions remain about short and long-term morbidity, and the small but significant risk of transplant-associated mortality. Several studies have been performed surveying patients with SCD and their families about their awareness of and perspectives towards BMT. However, very little is known regarding pediatric hematology provider views on BMT for SCD, their concerns and projected concerns of families needing to make difficult decisions for their child about a transplant for a

non-malignant condition, and what providers think would help them better counsel their patients about transplant or refer them to a transplant center. One regional study in 2014 sought to gather this data, but did not include transplant providers, and was limited to practitioners in the Northeast. Information from a larger cohort of pediatric sickle cell and transplant providers would help assess information and data gaps about this potentially curative but medically risky process. The added perspective of transplant providers would help to better elucidate the reasons why potential candidates for BMT do or do not proceed to transplant, and highlight areas for future needed research on BMT conditioning regimens, using related vs unrelated matched donors, and to what extent individual sickle cell illness severity should affect criteria for proceeding to BMT. This data could be useful to specialty providers in offering informed referrals to eligible families, and help eliminate potential barriers to BMT for children with SCD.

Study Design and Statistical Analysis

We propose an anonymous cross-sectional survey of approximately 500 pediatric hematologists and 100 pediatric transplant providers. The goal response rate would be at least 50%.

Descriptive statistics will be first calculated for independent variables. For bivariate analyses, we will perform t-tests and ANOVA to assess provider and practice characteristics associated with transplant referral. We will specifically use chi-square test to compare referral patterns of those hematology providers affiliated with transplant center versus those not affiliated with a transplant center. We will perform multivariate linear regression to identify provider characteristics that may be associated with different attitudes towards transplant for SCD. We will also perform multivariate linear regression to determine factors associated with transplant providers, and to determine factors associated with whether those patients referred to a transplant center go on to receive transplants.

Study Procedures

An email listserv of pediatric hematology and transplant providers will be created. Providers will be emailed and provided a link to a questionaire using the online program “Survey Monkey”. This will be a one-time survey, without any follow-up.

Study Questionaire

The survey is expected to require 10-15 minutes to complete. It will have an introductory statement about the voluntary and anonymous nature of subject participation. Questions will solicit information about provider and practice demographics, size of pediatric SCD population, use of chronic transfusion and hydroxyurea, and detailed questions about referral and practice patterns for BMT, major concerns of providers and projected concerns of families about BMT, attitudes towards several ethical issues surrounding BMT for a non-malignant disease, and what types of information and professional guidelines would be most helpful to providers to best assist them in discussing BMT with their patients and families affected by SCD.

Study Subjects
Pediatric hematology and transplant providers will be identified through their affiliation with the American Society of Hematology, American Society for Bone Marrow Transplant, and/or the American Society for Pediatric Hematology/Oncology. From this group of providers, there will be no exclusions.

Recruitment of Subjects
Using Survey Monkey, a 25-30 question survey will be emailed to providers. The survey will have an introductory statement about the voluntary and anonymous nature of their participation. Multiple email reminders will be sent out periodically (approximately every week) to those who have not yet responded.

Confidentiality of Study Data
Responses will be tabulated in Survey Monkey to guard people's identities. All responses will be anonymous. Under these survey conditions, participation will be voluntary. Participant responses will be kept confidential

Potential Conflict of Interest
N/A

Location of the Study
Data collection and tabulation will be online via Survey Monkey, and data will be analyzed by researchers at New York Presbyterian-Columbia University Medical Center Department of Pediatric Hematology/Oncology and Bone Marrow Transplant.

Potential Risks
This protocol is not more than minimal risk. Potential risks to subjects are the possible loss of confidentiality of their opinions or practice characteristics, and potential psychological distress from being surveyed. We will take extensive steps to ensure the anonymity of the survey and confidentiality of survey participants through Survey Monkey. The risk of a breach of confidentiality is negligible.

Potential Benefits
The benefit to patients may include better knowledge about transplantation. This study will provide some important data that can be used nationally to reduce barriers to consideration of transplant, but the magnitude and direction of this effect would be a speculation.

Compensation to Subjects
N/A

Costs to Subjects
Minimal loss of time to complete survey.

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