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Brief Article

Return-to-School Practices for Pediatric Hematopoietic Cell Transplantation Recipients during the COVID-19 Pandemic



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Although organizations such as Centers for Disease Control and Prevention and American Academy of Pediatrics have published guidelines favoring the resumption of in-person schooling during the coronavirus disease 19 (COVID-19) pandemic, there is no specific guidance on hematopoietic cell transplantation (HCT) recipients' safe return to school. We conducted a cross-sectional survey of pediatric HCT physician members of the Pediatric Transplantation and Cellular Therapy Consortium practicing in the United States to describe current return-to-school practices during the COVID-19 pandemic for HCT recipients. A total of 122 respondents (response rate, 30.6%) from 60 transplant centers in 32 US states completed the survey. Most of the respondents (76%) recommended that HCT recipients consider a remote or hybrid school option at this time if possible. If not possible, the respondents recommended a return to in-person school if the patient is at least 12 months post-transplantation or off immune suppression, while taking school safety measures and local COVID-19 cases into account. These results provide valuable guidance for the HCT community, patients, and caregivers on important topics to consider while making return-to-school decisions.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) has significantly impacted the healthcare system worldwide. The United States has had one of the world's highest numbers of confirmed cases and deaths [1]. Previous studies have shown that COVID-19 disproportionately affects patients with underlying comorbidities, which includes those with compromised immune systems due to malignancy or receipt of hematopoietic cell transplantation (HCT) [2–9]. The elevated risk of COVID-19 has translated into worse outcomes in these patients compared with the general population [8,10]. During the initial stages of the pandemic, given the lack of effective treatment options, the US government and health officials enacted various policies aimed primarily at promoting social distancing and self-isolation to reduce infection transmission. These nonpharmacologic interventions included nonessential business closures, restaurant and bar closures, prohibition of

gatherings of more than 10 people, and primary, secondary, and tertiary school closures [11].

By April and May 2020, nearly all US states had closed schools for the remainder of the academic year [12]. Children and adolescents have been significantly impacted by school closures during the COVID-19 pandemic. School provides an essential framework for their social, intellectual, and academic development and is critical for obtaining the skill sets necessary to enter higher educational training and the workforce. In addition, some students depend on school for nutrition [13] and mental and behavioral health services [14], which were disrupted due to school closures during COVID-19. Studies have shown worsening physical and mental health of children related to prolonged school closure [15,16]. When considering the impact of school closure on COVID-19 incidence and transmission, several studies have shown conflicting results [17–20]. Moreover, some studies have reported that COVID-19 transmission and outbreaks were uncommon in the school setting after school reopening [21,22].

Although these studies suggest resumption of in-person schooling may be safe, it is important to note that these

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findings do not specifically consider students with impaired immune function, such as those with cancer and HCT recipients, who are at high risk of COVID-19-related complications. In addition, the Centers for Disease Control and Prevention [23] and American Academy of Pediatrics [24] have released guidelines on how to safely reopen schools. However, there is no specific guidance on safe return to school of pediatric HCT recipients. To address this knowledge gap, we conducted a cross-sectional survey to describe current return-to-school practices during the COVID-19 pandemic for HCT recipients.

METHODS

We approached pediatric HCT physician members of the Pediatric Transplantation and Cellular Therapy Consortium. A questionnaire (Supplementary Data) was developed by the study team to elicit the physicians' recommendations regarding the timing of a pediatric HCT recipient's return to in-person school, factors they consider when allowing return, and topics they address before the return during the COVID-19 pandemic. This questionnaire was a part of a larger survey that aimed to understand interphysician practice variability within and across transplant centers to guide patients' return to school post-HCT before the COVID-19 pandemic. Each respondent answered a maximum of 8 multiple choice questions. The survey was disseminated through the SurveyGizmo platform. The study was approved by the National Marrow Donor Program's Institutional Review Board. Frequency and percentages of survey responses were recorded, and answers were stratified by physician and transplant center characteristics.

RESULTS

Table 1 presents characteristics of the HCT physicians who responded to the survey. A total of 122 respondents (response rate, 30.6%) from 60 transplant centers in 32 US states completed the survey between December 14, 2020, and January 1, 2021. Sixty-eight percent of the transplant centers performed >25 transplants on average annually. Fifty-five percent of the respondents were females, and 70% had >10 years of experience. The regional distribution of respondents was 29% from

the Midwest, 20% from the Northeast, 28% from the South, and 24% from the West. Sixty-five percent of respondents reported being asked by patients and/or caregivers all or most of the time about the safety of returning to school during the COVID-19 pandemic.

Next, a vignette-based question was asked to elicit respondents' preference for HCT recipients' return to school during the pandemic. We described a case of a 1-year survivor of matched unrelated donor HCT without any post-HCT complications. The physicians were asked how they would respond regarding this patient's potential return to school. Seventy-six percent of the respondents (n = 88) recommended distance learning only or a hybrid model (alternating between a traditional classroom setting and distance learning from home). Only 23% (n = 27) preferred a traditional classroom setting option during the COVID-19 pandemic. A higher percentage of physicians with >20 years of experience (93%) than those with less experience (71%) recommended distance or hybrid learning.

Those physicians who recommended remote learning or a hybrid model were asked what they would recommend if such distance learning options were not available. Eighty-seven respondents answered the question. Almost 80% (n = 69) recommended a traditional classroom setting in this scenario, and the remainder recommended that the patient described in the vignette opt-out of the academic year. Again, a higher percentage of physicians with more experience (30%) than those with less experience (17%) recommended opting out of the academic year.

Respondents were also asked about their recommendations regarding the ideal timing of a return to in-person school for pediatric HCT recipients in a pre-COVID-19 scenario and during the COVID-19 pandemic. The results show that although nearly 50% of respondents would recommend that patients return to school before 1-year post-HCT in the pre-COVID-19 era, only one-third of the respondents would make that recommendation during the COVID-19 era (Figure 1A). The respondents were then asked about the factors they would consider when deciding about recommending in-person school to an allogeneic HCT recipient. Ninety-two percent (n = 86) indicated that they would consider the school's policy regarding social distancing, hygiene/disinfection, classroom size, and staff/student illness, 70% (n = 65) would consider patient and/or caregiver preference for attending in-person school, and 67% (n = 62) would consider the number of COVID-19 cases in the school's city or county (Figure 1B).

Finally, when asked about the topics addressed by transplant centers before patients' in-person return to school, nearly all the physicians (98%) reported that they educate patients and/or caregivers to communicate with school officials regarding important safety plan details. Seventy-one percent (n = 65) reported that they recommend that patients and/or caregivers review the Centers for Disease Control and Prevention and state guidelines, and 41% (n = 37) reported that they directly communicate with school officials to discuss the student safety plan (Figure 1C).

DISCUSSION

The majority of HCT physicians who responded to the survey recommended that HCT survivors should consider remote or hybrid schooling during the COVID-19 pandemic, if possible. If not possible, they can return to in-person school if they are at least 12 months post-transplantation or off immune suppression after taking school safety measures and local COVID-19 cases into account.

Table 1
Respondent Characteristics

Characteristic	Value
Respondents, n	122
Centers, n	60
States, n	32
Age group, n (%)	
30–40 yr	20 (16.4)
41–50 yr	58 (47.5)
51+ yr	43 (35.2)
Missing	1 (0.8)
Sex, n (%)	
Male	55 (45.1)
Female	67 (54.9)
Years in practice, n (%)	
0–10	36 (29.5)
11–20	53 (43.4)
>20	33 (27)
Region, n (%)	
Midwest	35 (28.7)
Northeast	24 (19.7)
South	34 (27.9)
West	29 (23.8)
Average pediatric HCTs performed at their center, n (%)*	
≤25	40 (32.8)
26–60	43 (35.2)
>60	39 (32.0)

* 3-year average total of allogeneic and autologous HCTs for patients age <21.

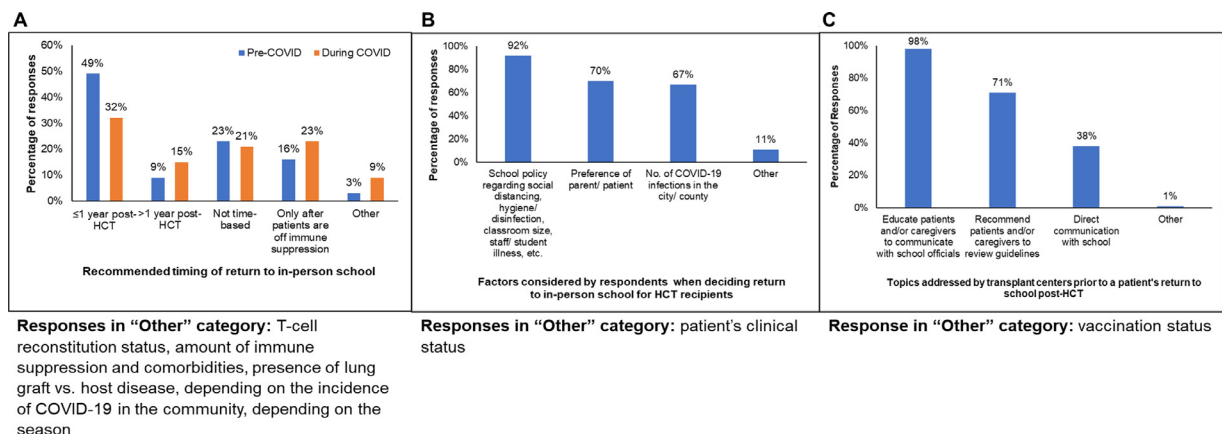


Figure 1. (A) Recommended timing of return to in-person school for HCT survivors (respondents, n = 96). (B) Factors to be considered when deciding return to in-person school during the COVID-19 pandemic (respondents, n = 93). (C) Topics addressed by transplant centers in preparation of a patient's return to school post-HCT during COVID-19 pandemic (respondents, n = 92).

This study has some limitations that are important to consider. This survey reflects preferences of HCT physicians before the availability of COVID-19 vaccines for children aged ≥ 12 years [25] and before emergence of the delta (B.1.617.2) variant of SARS-CoV-2 [26]. Physician preferences are likely to change over time as the pandemic evolves and vaccines become available for children of all ages. Given that the survey was completed by only 30% of the eligible participants, the answers could be skewed. Nevertheless, we had a balanced representation of HCT physicians from all 4 US regions. Variations in the survey responses highlight the lack of standardized transplantation center guidelines on returning to school post-HCT. As a next step, we plan to further explore the interphysician practice variability by analyzing the results of our pre-COVID-19 questionnaire with the ultimate goal of standardizing return-to-school practices post-HCT across the United States. Given the limitation of the survey-based study design, we could not address several other important patient-, disease-, and transplantation-related factors, such as underlying cardiometabolic and respiratory comorbidities, history of stem cell manipulation (eg, T cell depletion), use of antithymocyte globulin or alemtuzumab, use of cord blood grafts, post-HCT lymphopenia, or graft-versus-host disease, which could impact the decision about returning to in-person school during COVID-19 pandemic. Additional studies are needed to understand their impact. Finally, our study did not include the opinions of patients and/or caregivers on in-person schooling during the COVID-19 pandemic, which is important to address when making these decisions.

In conclusion, although our survey data are based on physician preference, they highlight what HCT physicians across the country are recommending in terms of when a pediatric HCT recipient should return to in-person school during the COVID-19 pandemic. Our data provide valuable guidance to the HCT community, patients, and caregivers regarding important topics to consider while making return-to-school decisions. Patients and/or caregivers should discuss the risks and benefits of attending school during the pandemic with their HCT team, and although specific guidelines for HCT recipients are unavailable, they should follow recommendations of national organizations on preventive strategies, such as wearing masks and maintaining physical distancing [23,27,28]. In addition, adolescents age ≥ 12 years who are at least 3 months post-HCT should receive the COVID-19 vaccine according to the American Society of Hematology and American Society of

Transplantation and Cellular Therapy recommendations to help protect against COVID-19 [29]. Based on the data showing reduced immunogenicity of 2 doses of the mRNA vaccine in immunocompromised patients [30–33], the Food and Drug Administration recently granted an emergency use authorization for a third dose of mRNA-based vaccine for certain immunocompromised individuals [34]. Whether these patients would achieve immunogenicity after the 3-dose series is unclear, and we anticipate that the BMT CTN 2101 study will provide more data on vaccine responses among HCT recipients [35]. In the meantime, HCT recipients should continue wearing masks and practice physical distancing, and their household contacts also should receive the COVID-19 vaccination if eligible.

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Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jctc.2021.09.007.

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