actively treated for graft-versus-host disease (GVHD). The median (range) ANC and ALC at the time of RSV diagnosis was 1.6 (0 - 11) and 0.8 (0 - 7.3), respectively. Among the 35 patients with URTI, 12 received IR while 23 did not. None of the 12 patients treated with IR progressed to LRTI. In contrast, 6 of the 23 untreated patients (24%) with URTI progressed to LRTI. Of the 31 patients with LRTI (25 initially diagnosed with LRTI and 6 patients who progressed from URTI to LRTI), there were four deaths occurring within 60 days of RSV diagnosis (two deaths directly from RSV, one from disease relapse, and one from GVHD). In patients with LRTI (25 patients with LRTI at diagnosis plus 6 patients who progressed from URTI to LRTI), RSV-related mortality was (6.4%). On univariate analysis, only the presence of GVHD significantly predicted the development of LRTI in patients with URTI (P = .026); however, the use of inhaled ribavirin had a protective effect that was marginally significant (P = .074). Early use of IR in high-risk transplant and leukemia patients can both reduce the progression from URTI to LRTI and improve the historically dismal outcomes of patients with RSV pneumonia.

In addition to the symptoms and side effects, the treatment requires prolonged isolation, which can also impede functional activity and impair psychological well-being (Tremolada 2009 [1b]). Activity restrictions and limited exercise options hinder the individual’s ability to sustain physical function throughout this process. Mentally, the challenges pediatric patients experience while undergoing HSCT may have a long lasting impact on QoL (Tremolada 2009 [1b]). Because survival rates have increased, the need to address these quality of life issues and the impact of functional impairment has grown significantly. It is important to consider not only immediate survival, but also long term recovery of this patient population. The purpose of developing this BEST was to identify interventions that can improve function and positively impact outcomes improving HSCT pediatric patients’ QoL.

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Physical Therapy during the Hemopoietic Stem Cell Transplant Process to Improve Quality of Life
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Clinical Question (in PICO format)
Background / Purpose of BEST Development Hemopoietic stem cell transplant can have profound and lasting adverse effects on an individual’s physical and psychological well-being (Wolin 2010 [1a], Tsimicalis 2005 [1a], Baumann 2011 [2b], Jarden 2009 [2b]). The HSCT treatment results in a decline in physical function functioning related to loss of muscle mass and muscle strength and muscle atrophy is associated with several transplant related problems, including immunosuppressive therapy, bed rest, and drug toxicities (Wolin 2010 [1a], Wiskemann 2008 [1b], Baumann 2011 [2b]). The experience of the isolated environment and the stress of a life threatening illness, resulting in fatigue, anxiety, depression, and fear, may also contribute to negative effects on physical function and QoL (Tsimicalis 2005 [1a]).

Chemotherapy results in anemia, which can affect cardiorespiratory fitness and cause skeletal muscle atrophy and weakness. Chemotherapy toxicities can impede adequate nutrition needed to maintain muscle mass. Radiation therapy can lead to lung fibrosis, resulting in decreased pulmonary function. Cranial radiation in childhood has been strongly linked to physical inactivity during adulthood (Wolin 2010 [1a]). Individuals being treated for pediatric cancers, in particular, tend to experience adverse effects of treatment including impaired growth, decreased neurological and/or cardiac function, endocrine complications, osteoporosis and obesity (Wolin 2010 [1a]). All of these side effects can lead to a decline in physical functioning and contribute to experiences of fatigue, anxiety, and depression (Wolin 2010 [1a]).

P: Among school aged children and adolescents receiving hemopoietic stem cell transplant (HSCT)
I: does physical therapy (PT) intervention (active participation in mobility, endurance, strength exercise)
C: compared to no intervention
O: improve the patient’s quality of life (QoL)