

to visually represent determinants of post-HCT morbidity, along with the direct and indirect contributing factors.

**Methods, Intervention, & Analysis:** A literature synthesis, supplemented with clinical expertise from HCT care teams, informed the construction of this evidence-based conceptual model. The model displays the working relationships between indirect contributing factors, direct contributing factors, and immediate determinants of post-HCT morbidity.

**Findings & Interpretation:** Four main determinants were found to result in post-transplant morbidity: Malnutritive state, infection, organ disease/failure, and malignancy. Nine direct- and seventeen indirect-factors have been shown to contribute to these determinants.

**Discussion & Implications:** The model is intended for use by future nurse researchers to identify opportunities for targeted interventions aimed at improving post-HCT morbidity. In addition, the model may be used as an educational tool for HCT recipients and their families to explain risks, build trust, and evolve understanding of the HCT process.

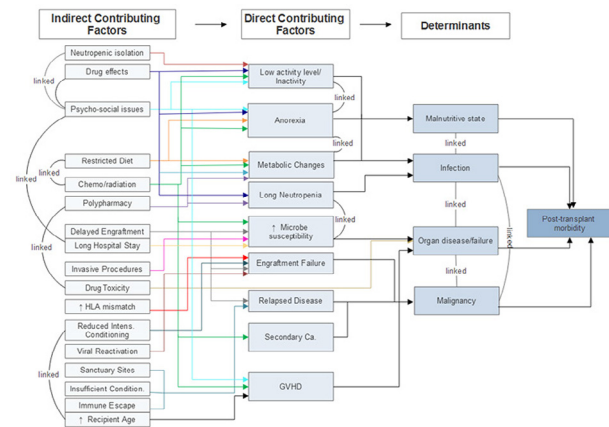


Figure 1. Origins of post-transplant morbidity model.

## 702

### Development and Testing of the Tmo-App Application for Families of Children/Adolescents with Cancer Receiving Hematopoietic Stem Cell Transplantation

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**Topic Significance & Study Purpose/Background/Rationale:** searching information is one the most used resource for coping of the illness experience provided empowerment and decision making for the family to the illness situation. Considering the potential of virtual environment for health information dissemination allied to the context of hematopoietic stem cell transplantation (HSCT), it is indispensable to innovate this field, proposing the use of new technology information. Our objective was to design, develop, and test the usability and satisfaction of an informative mobile application for families of children or adolescents with cancer who are undergoing HSCT.

**Methods, Intervention, & Analysis:** The Patient-and Family-Centered Care Model and User-Centered Design constituted the theoretical framework of this methodological study. An integrative review of the literature, a qualitative field study to identify the family's needs for information, and a biblio-

graphical study were conducted for the development of the software application prototype. Subsequently, content validations were carried out with experts and the target population, and finally a usability evaluation conducted by information technology specialists. In the end, a qualitative case study was conducted to evaluate usability from the family perspective.

**Findings & Interpretation:** The prototype TMO-App has 268 screens and 95 illustrations. Information needs were taken into account to develop the prototype, subsequently validated by specialists, with over 80% agreement, and by end users, who endorsed the application's potential to mitigate the suffering experienced by family members. In the validated by target population, a global content value index of 0.98 was obtained. Because usability severity was rated by experts as simple, the application was given a final version and interactively tested with a family, whose members subsequently acknowledged feeling strengthened by the information thus acquired, which enabled them to cope with the experience of having a child undergoing HSCT.

**Discussion & Implications:** The study provides advancement in proposing new informative strategies for family empowerment in situations of chronic illness. Evidence was also provided on the recognition of user needs as essential to the design and implementation of new technologies. The TMO-App application software is a potential strategy to serve the families of children/adolescents with cancer submitted to HSCT in their right to information, facilitating their coping process in a strengthened way.

## 703

### Bone Density Loss Following Allogeneic Hematopoietic Stem Cell Transplant

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**Topic Significance & Study Purpose/Background/Rationale:** Advances in stem cell transplant have increased the long-term survival rate of our patient population. Allogeneic SCT-associated bone loss is usually described in the first 6-12 months following the transplant. Pre- transplant chemotherapy, conditioning regimens, graft vs. host disease prophylaxis, glucocorticoid use, older age, and genetic factors all play a role in bone loss. We analyzed 45 patients retrospectively pre- transplant and one year post transplant and identified the percentage of bone loss using bone mineral density measured in g/m<sup>2</sup>.

**Methods, Intervention, & Analysis:** We looked at 45 patients pre- transplant and one year post transplant. To determine percentage of bone loss, we reviewed DEXA scans all performed at Siteman Cancer Center through the Washington University Bone and Mineral Division. We looked at bone mineral density (g/m<sup>2</sup>) at L1-4 and femoral head.

**Findings & Interpretation:** We found a significant difference at one year post transplant in the DEXA scan scores. There was a statistically significant difference in osteopenia/osteoporosis in patients who have undergone transplantation.

**Discussion & Implications:** Significant loss of bone mineral density post transplantation leads to the need for more clinical trials looking at medications that can prevent further bone loss in this patient population. We need clear guidelines for the screening, prevention and treatment of bone loss following stem cell transplant.