program of music therapy during hospitalization. Music therapy is available to HSCT patients as a weekly group session, incorporated in an existing exercise class three times a week, or on an individual consultation basis.

**Evaluation:** At the end of each week, participants in music therapy are asked to complete a survey on their perceptions of the effects of the therapy on a number of factors, including stress, anxiety, sleep, comfort, pain and others. Results will be used to refine the program and potentially lead to nursing research.

**Discussion:** Music therapy has been reported to reduce pain and depression, promote rest and relaxation, and enhance patient satisfaction. Given the complexities involved in hematopoietic stem cell transplantation, interdisciplinary collaboration between nurses and music therapists can support the integration of music therapy to enhance patient care outcomes and promote patient satisfaction.

### 303

**Phototoxic Dermatoses in Pediatric BMT Patients Receiving Voriconazole**

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Voriconazole has been increasingly used in the treatment of invasive aspergillosis and for antifungal prophylaxis after allogeneic BMT. The incidence of drug-induced skin reactions is estimated to be 7%. There is a growing awareness of the higher risk of acute and cumulative phototoxicity, and the risk of chronic photo-damage and non-melanoma sun-related skin cancers in immunocompromised patients. Between August 2009 and June 2012, 40 of 43 consecutive allo-BMT recipients (mean age 9.8 y; 83% Caucasian) received voriconazole prophylaxis [7 mg/kg/dose BID (≤ 12 yrs age); 200 mg BID (> 12 yrs); adjusted to target trough ≥ 1 mg/mL]. Nine of forty (22.5%) patients, all Caucasian, developed skin rashes in sun-exposed distributions during spring-summer season. The average prior voriconazole exposure was 6 months (1.8–12.5 mo). Dermatologic findings included 1) diffuse sunburn-like erythema over the face, outer aspects of forearm, and hands 2) linear papulovesicular lesions 3) severe bullous cheilitis (Figure 1) dermatoheliosis and 5) lentigines. Voriconazole was continued in four, substituted with fluconazole in four and with posaconazole in one patient. Patients were treated with sun avoidance, high-potency sun-screen, and topical steroids with significant improvement in all cases.

<table>
<thead>
<tr>
<th></th>
<th>All (40)</th>
<th>No Phototoxic rash (31)</th>
<th>Phototoxic rash (9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Vori- level (mg/mL)</td>
<td>1.3</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Mean -N oxide (mg/mL)</td>
<td>3.5</td>
<td>3.2</td>
<td>4.8</td>
</tr>
</tbody>
</table>

While trough voriconazole plasma concentrations do not appear to be different, N-oxide metabolite concentrations were higher in photosensitive patients. Significant higher incidence of photosensitivity occurs in voriconazole-treated children, especially Caucasians, during prolonged drug use and intense sunshine. Voriconazole N-oxide may act as a chromophore for phototoxicity, and its potential role in individual susceptibility should be explored. Voriconazole may be continued, although change to other azoles may be necessary in some patients. Prolonged voriconazole use requires close monitoring for chronic skin toxicities. Long-term risks including the risk of skin cancer need to be investigated.

### 304

**Evaluation of Pre-Transplant Risk Factors of Bacterial Bloodstream Infection (BSI) in Patients with Hematopoietic Stem Cell Transplantation (HSCT) and Comparison of BSI Between Allogeneic and Autologous HSCT**

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**Background:** Although improvement of supportive cares including antimicrobial prophylaxis has significantly ameliorated treatment outcomes in patients with hematopoietic stem cell transplantation (HSCT), bacterial bloodstream infection (BSI) is still a major cause of morbidity and mortality of HSCT. The purpose of this study is to evaluate pre-transplant risk factors of BSI after HSCT and compare the nature of BSIs between allogeneic and autologous HSCT.

**Methods:** Adult patients (age ≥ 18 years) who received either allogeneic or autologous HSCT in a single institution between November 2002 and June 2012, were analyzed. Report of blood cultures from the start time of conditioning therapy to hospital discharge, and clinical relevance of the BSIs, were reviewed. Evaluated potential risk factors of BSI were type of HSCT (allogeneic vs. autologous), age, gender, disease (AML vs. others), time from diagnosis to HSCT, amount of infused CD34+ stem cell, HCT-CI score, and use of antibiotics from conditioning for prophylactic or therapeutic intent. Blood level of C-reactive protein (CRP), albumin, and ferritin within 14 days from HSCT were also included in the analysis. Among patients with allogeneic HSCT, modified EBMT score, concomitant acute GVHD, type of donor and intensity of conditioning were additionally evaluated.