Scalp Cooling

The prevention of chemotherapy-induced alopecia

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Scalp cooling device, the Dignicap® system, was approved by the U.S. Food and Drug Administration in December 2015. The system has sensors that measure the scalp temperature, as well as two independent cooling systems that allow the coolant to flow through the front and back separately (see Figure 1). The caps are attached to a unit, and users do not need to change caps during treatments, as is required for other devices, such as Penguin Cold Caps. Hair loss is most frequently graded using either the World Health Organization Toxicity scale grading system or the Dean scale (see Table 1); some studies measure the success or failure of cryotherapy by whether a wig or head covering is deemed necessary by the patient.

Review of the Literature

A PubMed search was conducted using the keywords scalp cooling, alopecia, and prevention of chemotherapy-induced alopecia, and three studies using the Dignicap system were reviewed. In addition, four reviews of the effectiveness of scalp cooling have been published. The earliest (Grevelman & Breed, 2005) concluded that, although scalp cooling appears effective, particularly for patients receiving taxanes or anthracyclines, the 53 studies reviewed were small and poorly designed. The authors noted that great variation exists in scalp cooling success rates, which may be related to different cooling times and temperatures, as well as different chemotherapy regimens. A more recent review (Komen, Smorenburg, van den Hurk, & Nortier, 2013) of 32 studies revealed the same conclusions. Kadakia, Rozell, Butala, and Loprinzi (2014) included eight studies...