Scalp Cooling Guidelines for Adult Oncology Patients

West Midlands Cancer Alliance
Expert Advisory Group for Systemic Anti-Cancer Therapy (SACT)

NHS England and NHS Improvement

West Midlands Cancer Alliance

This sheet is to accompany all documentation agreed by the West Midlands Cancer Alliance Expert Advisory Groups. This will assist the Cancer Alliance to endorse the documentation and request implementation.

EAG name	West Midlands Cancer Alliance Systemic Anticancer Treatment (SACT) Expert Advisory Group	
Document Title	Scalp Cooling Guidelines for Adult Oncology Patients	
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Document Purpose	The purpose of this guideline is to provide clear guidance on the management of scalp cooling to all practitioners, clinicians and health care professionals providing a service to all patients across the West Midlands Cancer Alliance.	
Authors	These guidelines were originally authored by Sam Neale. These have been agreed and adopted by the West Midlands Cancer Alliance Systemic Anticancer Treatment (SACT) Expert Advisory Group.	
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Key Amendments to Document

Version	Date	Amendment	By
0.1	July 2017	Updated for West Midlands Clinical Network Expert Advisory Group for Chemotherapy	Carole Connor
V1	September 2017	Changes agreed by EAG	Carole Connor
V2	September 2020	Updated by West Midlands Cancer Alliance SACT EAG Changes agreed by EAG	Sam Toland

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Scalp Cooling Guidelines for Adult Oncology Patients

1. SCOPE

This guideline applies to oncology healthcare professionals caring for patients receiving alopecia inducing Systemic Anti-Cancer Therapy (SACT) agents. It is cytotoxic chemotherapy agents that generally cause alopecia.

This guideline does not override the individual responsibility of health professionals to make appropriate decisions according to the circumstances of the individual patient, in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from these guidelines.

2. INTRODUCTION

Alopecia is a common and distressing side effect of chemotherapy treatment. Chemotherapy induced alopecia is frequently reported as the most distressing side effect of treatment (Roe 2011), and can cause psychosocial disturbances such as poor body image, social withdrawal and even refusal of potentially curative therapy (Breed et al 2011, Collett et al 2013). Chemotherapy induced alopecia affects all parts of the body including eyebrows and eyelashes, beard, underarm and pubic hair although hair loss on the scalp is more pronounced (Breed et al 2011). Hair loss starts one to three weeks after starting chemotherapy (Breed et al 2011), with patients reporting irritation, soreness, pain and headaches before losing hair from the scalp (Roe 2014).

Scalp cooling works by inducing vasoconstriction and reduction of metabolism. Vasoconstriction leads to reduced blood flow to the hair follicles during the peak period for peak plasma concentration of chemotherapy agents being administered (Breed et al 2011). It is estimated that the blood flow is reduced to 20-40% of the normal rate through scalp cooling (Collett et al 2014). The reduction in metabolism makes the hair follicles less susceptible to damage caused by the chemotherapeutic agent (Breed et al 2011).

3. STATEMENT OF INTENT

It is intended that where, clinically appropriate, patients receiving chemotherapy should be offered scalp cooling to reduce the severity of hair loss (see Patient Selection).

4. DETAILS OF THE DOCUMENT

4.1 Intravenous Chemotherapy Regimens Suitable for Scalp Cooling

Scalp cooling can be used with all solid tumour cancers treated with intravenous SACT agents such as taxanes, alkylating agents and anthracyclines / DNA intercalating agents. The most suitable agents include:

- Cyclophosphamide
- Daunorubicin
- Docetaxel
- Doxorubicin
- Epirubicin
- Paclitaxel

4.2 Contraindications to Scalp Cooling

Scalp cooling is contraindicated in paediatric patients. Scalp cooling is contraindicated in adult patients with:

- An existing history of scalp metastases or the presence of scalp metastasis is suspected
- Cancers of the head and neck
- CNS malignancies (either primary or metastatic)
- Cold sensitivity, cold agglutinin disease, cryoglobulinaemia, cryofibrinogenaemia, cold migraine, cold urticaria, and post-traumatic cold dystrophy
- Haematological malignancies (leukaemia, non-Hodgkin and other generalized lymphomas) or haematological malignancies that are being treated for cure
- Imminent bone marrow ablation chemotherapy
- Imminent skull irradiation
- Previously received, or scheduled to undergo skull irradiation
- Severe liver or renal disease from any aetiology who may not be able to metabolize or clear the metabolites of the chemotherapeutic agent
- Skin cancers including melanoma, squamous cell carcinoma, and Merkel cell carcinoma
- Small cell carcinoma of the lung
- Solid tumours that have a high likelihood for metastasis in transit
- Squamous cell carcinoma of the lung

(Paxman 2020)

4.3 Factors Influencing Success

Scalp cooling success rates vary from patient to patient and with different drug regimes. Patients cannot be guaranteed that they will not lose any or all of their hair. The amount of hair loss experienced is dependent on a number of factors:

- Inadequate fitting of the cap
- Involvement of the liver with metastatic disease (altered liver function) leads to elevated plasma levels of some chemotherapy drugs for a longer period, therefore extension of the cooling period is recommended (Paxman 2016)
- Inadequate cooling because of exceptionally thick hair may lead to partial loss. It has been demonstrated that maximum cooling occurs 20 minutes after the cap has been placed in position. In patients with thicker hair / afro-Caribbean hair the cap should be left in situ for an extra 15 minutes prior to chemotherapy (Paxman 2016).
- In patients who experience significant hair loss after the first cycle of chemotherapy, the post infusion cooling time may be increased by 30-60 minutes to improve the success rate.

4.4 Patient Selection

- Patients must fit the criteria as above (i.e receiving appropriate drug regime and having no contra-indications) and must have discussed the option of scalp cooling with their oncology consultant.
- Patients must be given information on scalp cooling and the opportunity to discuss its contents, to see the scalp cooling machine and to try on the cold caps prior to their first chemotherapy appointment. The appropriate cap size will be selected and the size documented in the patient's medical records.
- Verbal consent must be obtained prior to offering the intervention, and from the patient prior to implementing the procedure. Documentation of patient consent must be kept in the patient's medical records. It is essential that the patient has been fully informed about the nature and length of the procedure, success rates, side effects and, where appropriate, the potential risk of scalp metastases.
- Patients must also be informed that they may discontinue the procedure at any time if they find it too physically or psychologically traumatic or if they fail to retain their hair.

4.5 Patient Information

- Patients should be offered written information on Scalp Cooling appropriate to the device that is being used for them, along with information on how to look after their hair following the procedure.

4.6 Hair Care

- Wetting the hair and applying a small amount of conditioner before scalp cooling is recommended (Paxman 2016).

- Patients should be advised to avoid using a hair dryer or straighteners, products containing alcohol or peroxide, hot water and hard brushing (Roe 2014).

- A wide tooth comb may reduce damage to thinned hair (Breed et al 2011).

4.7 Applying the Cap

- For successful scalp cooling there needs to be good contact between the cap and the scalp to ensure a constant scalp temperature – water and conditioner should be applied prior to applying the cap to enhance the contact (Komen et al 2013).

- The cap should be positioned so that it comes below the patient's hair line and the top of the cap is touching the crown to ensure all parts of the scalp maintain good contact with the cap (Paxman 2016). Often bald patches are a sign that the cap has not been fitted properly (Breed et al 2011).

- A headband is recommended by some manufacturers to make the cap more comfortable (Paxman 2016).

4.8 Patient Preparation and Procedure for Scalp Cooling

Equipment needed:

- Scalp cooling device/cap
- Skin protection e.g. head band, gauze, cotton wool
- Comfortable chair e.g. recliner or bed
- Extra pillows and blankets as required
- Hair conditioner and water

Action	Rationale
Before beginning, it is important to explain procedure to patient and obtain verbal consent. Explain that the coldest and most uncomfortable time is the first 15 minutes after the cap has been applied. The patient should understand that the scalp cooling could be discontinued at any time.	To ensure that the patient understands the procedure and the potential success rate according to the chemotherapy regime used. To ensure that the patient knows that if scalp cooling does not work or is discontinued he/she can obtain a wig.
Cannulation should be performed prior to application of the cold cap as per Trust policy	To cannulate the patient before any potential vasoconstriction occurs.
The patient should be seated prior to fitting of the cooling cap and hair soaked with water and hair conditioner. The cap should be applied to the patients head making sure that it fits closely and covers the whole hairline.	To help reduce the insulating effect of the hair, and to facilitate cap to scalp contact. To ensure cooling over the head, including the hair roots.
Place skin protection in any areas where the cap touches the skin with a head band, gauze or cotton wool (Paxman stipulate that a headband must be worn around the hair line)	To prevent cold injury and improve patient comfort.
Offer the patient the use of a blanket.	To improve patient comfort.
Leave the patient for the manufacturer's recommended cooling time before administering chemotherapy.	To obtain initial cooling of the scalp.
Administer chemotherapy drugs according to Policy.	To adhere to policy and to administer treatment safely and appropriately.
On completion of chemotherapy leave the scalp cooler on the patient for the manufacturer's recommended cooling time.	To maintain cooling until the plasma levels of the drug have fallen.
When sufficient time has elapsed switch off pump and power and leave in situ for 10 minutes then ask patient to remove cap.	To prevent damage to the scalp and hair.
Encourage patient to rest.	To prevent light headedness.

4.9 Timings

Manufacturers recommended cooling times must be followed. Recommendations for cooling times are based on peak plasma concentrations, drug half-life, potential interactions, recent trials and the experience of current users of each system. Please refer to manufacturer's guidance for recommended cooling times. Paxman recommended cooling times are as below:

DRUG REGIMENS	**MINIMUM RECOMMENDED PRE-COOLING TIME (MINS)**		**MINIMUM RECOMMENDED POST-INFUSION COOLING TIME (MINS)**
ALL REGIMENS	30 MINS (+15 mins for thick / afro-Caribbean hair)		90 MINS
PACLITAXEL WEEKLY	30 MINS (+15 mins for thick / afro-Caribbean hair)	**+ INFUSION TIME**	60 MINS
DOCETAXEL	30 MINS (+15 mins for thick / afro-Caribbean hair)		20 MINS

(Paxman 2016)

4.10 Side Effects

The most common side effects reported include

- Chills
- Dizziness
- Headache
- Nausea
- Paresthesia (an abnormal sensation such as tingling, tickling, pricking, numbness, or burning of the skin–a "pins and needles" feeling)
- Pruritus (severe itching)
- Sinus pain
- Skin tissue disorders (Paxman, 2020)
- Skin ulceration

Breed et al (2011) state that headaches can usually be prevented by taking paracetamol before scalp cooling commences.

4.11 Scalp Metastases

Concerns are often expressed regarding the possibility of patients developing scalp metastases in the curative setting (Breed et al 2011). The scalp is a rare site for recurrence (Lemieux et al 2011, Collett et al 2014). Scalp metastases are often discovered after or at the same time as metastases of other sites (van den Hurk et al 2013). A systematic review by Shin et al (2015) concluded that no serious adverse effects associated with scalp cooling have been reported, thus there is no evidence in the literature to support the use of scalp cooling contributing to scalp metastases (Roe 2014).

Scalp and/or cutaneous metastases have been reported in patients with non-small cell lung cancer, colon cancer, renal cell carcinoma, ovarian cancer, and bladder cancer. Patients with advanced forms of these tumours may be more likely to experience scalp metastases with the scalp cooling system, and use of Scalp Cooling in the palliative setting in patients with metastatic cancer may also increase the risk for scalp metastases (Paxman 2020)

4.12 Training

- Training may be provided by individual manufacturers.
- It is advised that users of the system undergo competency assessment before using the equipment

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