Technical Write-up

PSCS Scalp Cooling System

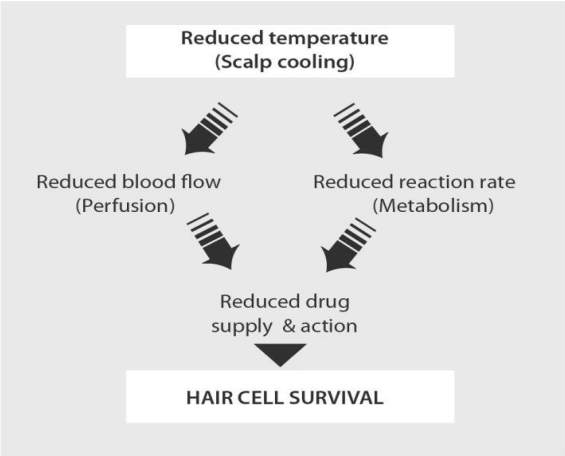
Hair loss is undoubtedly one of the most distressing side effects of chemotherapy. Preventing or reducing hair loss by scalp cooling can result in a patient's increased self confidence and positive attitude – widely recognised as beneficial in the fight against cancer.

The PSCS scalp cooler is a device which is offered to selected cancer patients receiving cytotoxic chemotherapy to help prevent or reduce hair loss. The system uses a small refrigeration unit that circulates a coolant through an insulated cooling cap. The scalp is cooled by placing a cap onto the patients' head, which remains in place for duration of the treatment.

The Paxman scalp cooler comprises of a powerful refrigerated cooling system which rapidly reduces the temperature of a liquid coolant to a pre-set temperature. When this temperature has been reached, electronic sensors monitor and control the system. The coolant is pumped, at low pressure, through a scalp cooling cap. The scalp temperature is reduced to an optimum level.

How does scalp cooling work?

By lowering the temperature of the scalp and inducing hypothermia the blood flow reduces and also the chemical reaction rates. Reduced perfusion leads to less cytotoxic drugs available for uptake, while the reduced temperature decreases uptake of and damage by chemotherapy. Altogether, less damage is done to the hair cells, and the risk of alopecia is reduced.



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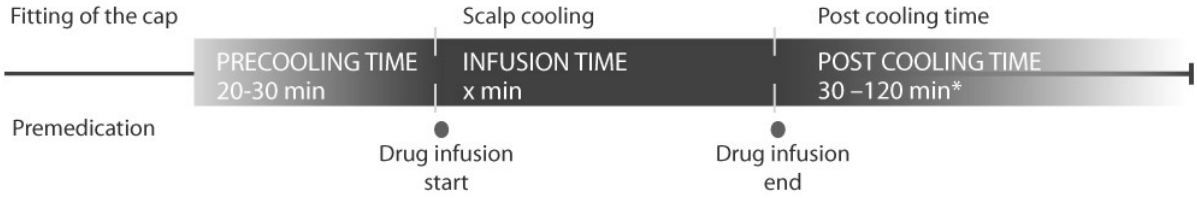
How does the treatment go?



The PSCS Scalp Cooling System

The Cooling & Control Unit and the Cooling Caps are part of a closed looped system. The Cooling Unit is enclosed within the Control Unit and together they constitute a compact and easily mobile cabinet. The system is operated through standardised software, facilitating usability and easy maintenance. All necessary programming is easily done on the system touch screen. Patient data can be saved directly on disc and kept for patient journals and/or clinical studies.

The Cooling & Control Unit gradually decreases the cap temperature at the initial phase of the treatment, in order to slowly and more comfortably adjust the patient's normal scalp temperature to the treatment temperature. This is a unique and highly appreciated feature of PSCS.

The scalp is cooled by circulating a coolant through the cooling cap with independently controlled cooling sections. The system facilitates a reduction of the scalp temperature during the chemotherapy treatment period and maintains a controlled constant epicutaneous scalp temperature of +5 degrees C during the entire treatment period.

The PSCS system has two separate cooling circuits, hence facilitating individual treatment protocols and therefore optimizing results.

Cooling Cap

The Cooling Cap is lightweight and comfortable. Patients can relax during the cooling process. The caps are attached to the PSCS system with push-in couplings, facilitating easy disconnection when necessary. Temperature sensors are applied within the cap and are in direct contact with the scalp areas, one sensor for each of the two cooling compartments of the cap. The sensors consciously monitor the temperature. Deviations from optimal treatment temperatures are immediately detected and automatically adjusted by the Cooling & Control Unit of the system.