

# An overview of chemotherapy induced alopecia nursing essay



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Chemotherapy-induced alopecia has proven to be a substantial burden on an already overwhelmed and emotionally-burdened cancer patient population. Hair loss can cause detrimental effects on a patient's confidence level, happiness, and self-esteem; all of which can be important factors in determining treatment outcomes <1>. Patients can become very self-conscious to the point where they isolate themselves from friends and family at a time when moral support is needed most. Hair loss is frequently listed high among some of the most feared and worrisome aspects of receiving chemotherapy. Among breast cancer patients, Browall found that many women undergoing a mastectomy followed by chemotherapy, rated baldness as a worse result than losing their breast <2>. In order to help patients prepare for, and potentially minimize this emotionally arduous aspect of cancer therapy, all health care practitioners within a patient's circle of care need to properly address this sensitive subject.

Although recognized as a serious and concerning side-effect for many patients, alopecia is often inadequately addressed during cancer patient consultation <1>.

## **Biology of Chemotherapy-Induced Alopecia**

Many of the prevalent side effects of chemotherapy are due to its cytotoxic effects on rapidly dividing cells. Along with bone marrow cells, skin cells, and cells lining the gastrointestinal lumen, hair follicle cells are also rapidly dividing. These can all therefore easily succumb to the cytotoxic effects of chemotherapy resulting in myelosuppression, hand-and-foot syndrome, nausea, vomiting, and alopecia <3>. Although a possible side effect to

almost all types of chemotherapy, there remain certain agents which almost always result in significant hair loss to the patient (see Box 1).

BOX 1 Most Prominent Alopecia-Inducing Chemotherapies: <7>

adriamycin

cyclophosphamide

daunorubicin

docetaxel

epirubicin

etoposide

irinotecan

ifosfamide

paclitaxel

topotecan

vindesine

vinorelbine Alopecia is divided into two main types: telogen effluvium and anagen effluvium <3>. Telogen effluvium results from the majority of hair follicles on the scalp shifting to the telogen phase of the hair growth cycle. The resulting appearance is more hair-thinning than complete hair loss <3>. Anagen effluvium on the other hand results from hair follicles in the anagen

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phase becoming weakened due to the cytotoxic effects of chemo and subsequently falling out. Since the majority of scalp hair is in the anagen phase, this generally results in complete baldness <3>.

## **Treatment & Preventative Therapies**

### **Aesthetics**

Although not all chemotherapy patients experience obvious hair loss and in some cases preventative measure can be taken, it is always best to plan for the worst and invest time in consulting a wig-fitting specialist. Synthetic and natural hair wigs are available, sometimes at the expense of private insurance payers, and are best selected and fitted prior to complete hair loss <3>. Alternative cover-up methods can involve scarves or turbans depending on patient preferences. What may seem like an unimportant cosmetic cover-up, studies are proving can be an immense healing tool to rid people of their “ sick stigma” within society and substantially improve their coping strategies with such a crippling disease <4>.

### **Support**

It is very important for healthcare providers to acknowledge the emotional and psychological impact of alopecia. To illustrate such an effect, McGarvey found that alopecia was cited as the most disturbing effect of undergoing chemotherapy treatment by 58% of breast cancer patients <5>. Among them, 8% reported being at risk of avoiding treatment altogether because of the risk of alopecia <5>. Although limited studies exist which examine the impact of social worker counselling and psychologist referrals for patients dealing with the effects of chemotherapy induced alopecia, the vast range of

resources utilized throughout the internet and cancer treatment facilities can attest to the need for these interventions. One intervention study found that positive re-enforcement and hair loss counselling videotapes showed to ovarian cancer patients prior to starting chemotherapy improved their body image and confidence levels <6>.

## **Cold Caps**

Aside from coping strategies, one of the best studied and potentially beneficial prevention strategies against chemotherapy induced alopecia remains the use of “ cold-caps”. Numerous “ cold caps” have been introduced and studied in oncology since the early 1970s. Despite the under-utilization of these devices in general oncology wards today, there remain 6 out of 7 randomized trials that have shown significant benefits in these patient populations with regards to minimizing alopecia <7>. The downfall in this area of research is the lack of standardization regarding type of cooling caps used, temperatures reached, and duration of treatments.

Throughout cold cap experimentation, there has remained concern regarding metastases to the scalp. Due to the fact that cooling the scalp constricts blood vessels and thereby reduces exposure of hair follicles to chemotherapeutic agents, it's believed this mechanism of action provides a “ safe-haven” for migrating malignant cells. Although studies regarding increased incidence of scalp metastases are limited, so far this hypothesis has not been proven to be true, specifically in the case of a median 15 month follow up of 74 patients post cold cap therapy by Ridderheim <8>.

Despite a lack of evidence regarding increased risk of metastases to the scalp during cooling cap therapy, this type of treatment method remains  
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contraindicated in patients with lymphomas and other hematological malignancies <7>.

## **AS101**

Although limited, fairly new research is currently being done on several pharmacological agents for prevention of chemotherapy-induced alopecia. The novel immunomodulator AS101 is one such agent which has shown promise in phase II clinical trials. Prior to carboplatin & etoposide treatment regimens, 58 patients were injected with AS101 and demonstrated significantly less hair loss compared to controls.\*SR In the same study, similar analyses were done on rat populations and in addition, showed alopecia protecting effects using both topical and injectable formulations of AS101 <9>. It was hypothesized that these effects were due to endogenous stimulation of IL-1 production by AS101 which plays a role in proliferation of epidermal keratinocytes <9>.

BOX 2 Non-Pharmacological Therapies to Combat Chemotherapy-Induced Alopecia: <12, 13>

Wash hair less frequently

Use gentle, mild shampoo

Do not use blow dryers or curling irons

Protect hair from sun and cold temperatures

Avoid colouring agents or other chemical products

Use a soft hairbrush

## **Minoxidil**

With regards to speeding up hair re-growth, there are very few pharmacological options. However the most commonly studied and utilized agents is 2% topical minoxidil. Hair re-growth tends to occur around 6 weeks post-treatment in the majority of patients. Minoxidil has been proven to reduce the period of baldness by an average of 50 days in breast cancer patients receiving chemotherapeutic regimens of cyclophosphamide, doxorubicin as well as cisplatin <10>. In earlier trials involving gynaecological cancer patients however, it failed to prove any benefit in preventing alopecia <11>.

## **Care Providers Responsibility**

The historical method of dealing with chemotherapy-induced alopecia has been to simply refer the patient to a wig-fitting service and cease further consultation about the subject. Although still readily used, and for good reason, wig-fitting services remain only one avenue of alopecia treatment that should be discussed with patients about to undergo chemotherapy.

Pharmacists remain one of the most accessible healthcare professionals and are well placed to provide such

appropriate consultation and referrals. Along with providing patients counselling on their chemotherapy and supportive medication regimens, pharmacists can utilize time to make recommendations regarding pharmacological & non-pharmacological recommendations (see Box 2)

regarding alopecia prevention strategies and treatment. Pharmacists also remain ideally positioned to screen and refer cancer patients to other supportive resources regarding alopecia and its effects on patient quality of life.