Alopecia (1 of 12)

**ANDROGENIC ALOPECIA**

1. Patient presents with complaints of hair loss

2. **DIAGNOSIS**
   - Do history, clinical features & lab tests confirm androgenic alopecia?

   - No → **ALTERNATIVE DIAGNOSIS**
   - Yes →

3. Does patient prefers to be treated with medication?

   - No or Ludwig Stage III hair loss (females)
   - Yes →

**A** Non-pharmacological therapy
- Patient education
- Camouflage cosmetics
- Hairpiece
- Laser therapy
- Micropigmentation

**B** Pharmacological therapy
*Any one of the following:*
- Finasteride (oral) (males)
- Minoxidil (topical)

**C** Surgical therapy
- Hair transplantation
- Scalp reduction

**FOLLOW-UP**
- Does patient have improvement/stabilization of hair loss after 6 months to 1 year of treatment?

   - No →
   - Yes → **CONTINUE TREATMENT**

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*Not all products are available or approved for above use in all countries.
Specific prescribing information may be found in the latest MIMS.*
ALOPECIA AREATA

1. Patient presents with complaints of abrupt hair loss

2. Does clinical presentation confirm alopecia areata?
   - Yes
   - No

   ALTERNATIVE DIAGNOSIS

A. Non-pharmacological therapy
   - Patient education
   - Camouflage cosmetics
   - Hairpiece/scalp prostheses
   - Laser therapy
   - Micropigmentation

B. Pharmacological therapy
   - 1st-line
     - Corticosteroid (intraleisional)
     - Corticosteroid (topical)
     - Immunotherapy (topical)
       - Diphenylcyclopropenone (DPCP)
   - 2nd-line
     - Dithranol (topical)
     - Minoxidil
     - Antiglaucoma preparations (for eyelash universalis AA)
   - 3rd-line
     - Corticosteroid (oral)
     - Immunotherapy (oral)
     - Photochemotherapy
       - PUVA

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ALOPECIA

- May be localized (patchy) or generalized
- Scarring or non-scarring
  - Scarring alopecia from severe inflammation of the hair follicle result in irreversible damage
  - Non-scarring alopecias are reversible
- Abrupt or gradual onset
- Most common causes include androgenic/androgenetic alopecia (male & female pattern baldness) & alopecia areata
- History should be reviewed for medications, severe diet restriction, vitamin A supplementation, thyroid symptoms, concomitant illness & stress factor

Alopecia areata
- Autoimmune hair follicle disease characterized by patches of significant hair loss

Androgenic alopecia
- A chronic follicular disorder characterized by progressive hair loss w/ a patterned distribution
- Alopecia totalis mimics androgenic alopecia

DIAGNOSIS

Androgenic alopecia in males/females

Family History
- Some do not have a family history
- An androgen-dependent trait

Patterned hair loss
- Hamilton-Norwood staging [male pattern hair loss (MPHL)]
  - The higher the stage, the more severe the hair loss
  - Usually starts w/ bitemporal recession of frontal hairline & continuing w/ thinning over the vertex, eventually complete hair loss on the vertex; bald hair
  - The bald patch enlarges & joins the receding frontal hairline
  - Other patterns may develop, but it is the androgenic-independent hair (on the sides & back of scalp) that do not thin
- Ludwig staging [(female pattern hair loss (FPHL)]
  - Marked presence of miniaturized, vellus-like hair follicles
  - The higher the stage, the more severe the hair loss
  - Thinning usually diffuse, but more marked on the frontal & parietal regions; “monk’s haircut” in severe cases
- Christmas Tree Pattern
  - Another female hair loss pattern w/ centroparietal thinning & frontal accentuation

Age of onset
- Thinning of the hair begins between 12-40 years for MPHL
- Chronic progressive diffuse hair loss in their 20's & 30's for FPHL

Diagnostic Tests
- Rarely indicated for MPHL & females w/ normal menstrual cycle
- Include pull test & examination of facial & body hair & nails
  - Pull test must be performed in the right & left parietal areas, frontal & occipital areas & in visibly affected areas
  - Hair pull test is positive in active early hair loss but negative in long standing hair loss
- If w/ evidence of androgen excess in FPHL, consider total testosterone, free testosterone, dehydroepiandrosterone sulfate (DHEAS), prolactin levels
- If without evidence of androgen excess: Rule out thyroid disease, syphilis, iron deficiency & systemic lupus erythematosus (SLE) as cause of hair loss
- Biopsy is sometimes necessary for FPHL to exclude chronic telogen effluvium, diffuse alopecia areata or cicatricial hair loss
- Trichoscopy (also known as dermoscopy) should be considered in doubtful cases
  - Features typical for androgenic alopecia include vellus hairs >10%, increased percentage of follicular units w/ only 1 hair shaft, hair shaft thickness heterogeneity of ≥20%, yellow dots, perifollicular discoloration, empty follicles, circle hair & honey comb pigment pattern
Alopecia (4 of 12)

## 2 DIAGNOSIS (CONT’D)

### Alopecia areata

**History**
- Family history of alopecia
- Patients often give a history of emotional trauma/stress prior to its onset
- Usually rapid hair loss in a well-defined, typically round area
- Patients complain of 1-4 cm² of hair loss on the scalp
  - Patch is usually clean-looking without scaling
- May be asymptomatic, but some patients experience paresthesias w/ pruritus, burning sensation, pain or tenderness prior to loss of hair

**Clinical presentation**
- Non-scarring w/ hairs located at the periphery of the patch extending a few millimeters above the scalp (“exclamation mark”) hair
- Nail dystrophy occurs in 10%
  - Pitting w/ irregular pattern or organized transverse or longitudinal rows, concave dorsal nail plate, etc
- 100% loss of scalp hair (alopecia totalis), 100% loss of hair on scalp & body (alopecia universalis)

**Age of onset**
- Most patients are <40 years of age

**Diagnostic Tests**
- Diagnosis is usually clinical
- Hair pull test may be positive at the margins which is indicative of active disease
- Trichoscopy (dermoscopy) may be helpful for visualizing findings consistent w/ alopecia areata
  - Features typical of alopecia areata include short vellus hairs, black dots, yellow dots, tapering hairs & broken hairs
- Patch biopsy of the scalp in rare difficult cases
- Thyroid stimulating hormone (TSH) level determination is routinely performed by many physicians to rule out any related thyroid abnormality

## NON-PHARMACOLOGICAL THERAPY

### Patient Education

#### Androgenic Alopecia (Males & Females)
- Androgenic alopecia affects a large percentage of the population
- Educate the patient on his/her treatment options
  - Patients may choose not to treat when presented w/ their options
- Provide reassurance & supportive counseling to assist them in overcoming their hair loss
- Patient may use hairstyling techniques (eg hair spray, teasing, coloring, etc) as a way of dealing w/ hair loss
  - Frequent shampooing does not increase hair loss
  - Avoidance of hair care products likely to damage scalp or hair
- Adequate diet, especially one w/ adequate protein
  - National Institute of Health recommendation: 0.8 g/kg daily
- Discontinue drugs that could negatively affect hair growth

#### Alopecia Areata
- It is important to educate patient about alopecia areata
  - Autoimmune disease where the trigger factors are unknown
  - Treatment options are palliative & do not alter the ultimate course of the disease
  - Alopecia areata is a dynamic condition & quite often undergoes spontaneous resolution
- Explain to patient that the condition does not affect one’s general health
- Provide psychosocial support
# A Non-Pharmacological Therapy (Cont’d)

## Camouflage Cosmetics
- Eyebrow pencil may be suggested to cover alopecia areata patches on eyebrows
- Waterproof eyebrow pencils are highly recommended

## Hairpiece/Scalp Prostheses
- Reassure patients with >50% hair loss that this does not mean that hair will not regrow, but it may be comforting to have it available for periods of more extensive hair loss
- Wigs, hair extensions, hairpieces, headscarves, hats, & false eyelashes have been used to cover patches/areas with hair loss
- Wigs are highly recommended for patients with extensive patchy alopecia and alopecia areata totalis & universalis

## Laser Therapy
- E.g., Infrared diode laser, 308-nm excimer laser, low-level laser
- Produces cosmetically acceptable hair regrowth with 60% response rate

### Low-level laser (light) therapy (LLLT)
- Also known as laser phototherapy or photobiomodulation therapy
- Stimulate cell proliferation by increasing endogenous growth factors & cutaneous microcirculation by exposing tissues to low levels of visible or near infrared light
- May be used as an ancillary procedure for male or female patients with androgenic alopecia
- Generally well tolerated with mild adverse effects such as scalp dryness, itching, tenderness & warm sensation
- More studies are needed to determine optimal treatment regimen & duration of effect

## Micropigmentation/Tattooing
- Permanent/semi-permanent tattooing of the eyebrows may be suggested
- Recoloring may be needed every 1-2 years

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# B Pharmacological Therapy

## Treatments for Androgenic Alopecia
- Most effective in males aged 18-41 with Norwood/Hamilton stage II-V hair loss
- Early intervention, when thinning is first noticed, hairs are incompletely miniaturized, optimizes treatment
- Neither Finasteride nor Minoxidil can regrow hair in areas of total hair loss
- No well-controlled studies on combination treatment with Finasteride & Minoxidil
- Switching treatment
  - Continue using the original medication in addition to the new agent for at least 3 months before discontinuing

### Finasteride (Oral)
- Recommended for treatment of male patients >18 years old with mild to moderate (Hamilton-Norwood stage II-V) androgenic alopecia
- Effects: Studies have shown up to 66% of males show improved scalp coverage after 24 months of treatment & up to 83% showed hair loss stabilization
  - ~20-30% of patients do not respond to therapy
  - One study showed that 5 years of continuous intake showed no further visible hair loss in 90% of male subjects
- Combination therapy with topical Minoxidil (2% or 5% solution or 5% foam) may be considered for better therapeutic effects
- Treatment response should be evaluated at 6-12 months & if successful, therapy must be continued indefinitely to maintain benefit
- Discontinuation of therapy leads to reversal of effect within 12 months

### Dutasteride (Oral)
- Alternative therapy for male patients >18 years old with mild to moderate (Hamilton-Norwood stage II-V) androgenic alopecia when previous treatment with Finasteride is ineffective after 12 months

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Treatments for Androgenic Alopecia (Cont’d)

Minoxidil (Topical)
- Recommended to improve or prevent progression of androgenic alopecia in males >18 years old with mild to moderate (Hamilton-Norwood stage II-V) & females >18 years old
  - 2% solution applied twice daily was found to be effective in preventing progression & improve androgenic alopecia in the frontotemporal & vertex regions in males
  - 5% topical solution or foam applied twice daily has shown greater efficacy than 2% solution in males
  - In females, 50% have minimal regrowth & 13% moderate regrowth using 2% solution
- Treatment response should be evaluated at 6 months & if successful, therapy must be continued indefinitely to maintain benefit
- Discontinuation of therapy leads to reversal of effect within 3-6 months

Cyproterone acetate
- An oral antiandrogen that suppresses luteinizing hormone (LH) & follicle-stimulating hormone (FSH) release
- May be used for female patients clinically diagnosed with hyperandrogenism

Spironolactone
- An aldosterone antagonist that competitively blocks androgen receptors & inhibits androgen synthesis
- May be used for female patients with hyperandrogenism

Platelet-rich plasma (PRP)
- Have been utilized in the treatment of androgenic alopecia in males & females
- More studies are needed to confirm effectiveness & determine optimal regimen

Treatments for Alopecia Areata
- Effects: The treatments used stimulate hair growth but do not prevent hair loss
  - It is unlikely that they influence the course of the disease
  - Treatment tends to be the most effective in mild disease
- Continue treatment until remission occurs or until alopecia patches are concealed by hair regrowth (may take a month to a year)

Corticosteroids
- Intraleisonal
  - Eg Triamcinolone acetonide
  - First-line treatment for adult patients with <50% (limited patchy) hair loss
  - Recommended when there is patchy hair loss of limited extent & for cosmetically sensitive sites such as eyebrows & beard
  - Effects: Patients with rapidly progressive, extensive or long standing alopecia areata responds poorly
  - Regrowth usually seen within 4-8 weeks in responsive patients
- Intravenous (pulse therapy)
  - Studies showed that patients achieved >50% hair growth after 3 consecutive days of pulsed IV corticosteroid courses
- Oral
  - Use of systemic corticosteroids is controversial because long-term therapy may be necessary which increases risk of adverse effects
  - Based on a small number of studies, short-taper or pulse corticosteroid delivery may be used in cases of advancing alopecia areata
  - Effects: Promotes hair growth but hair shedding occurs soon after the drug is discontinued
### Treatments for Alopecia Areata (Cont’d)

#### Corticosteroids (Cont’d)

- **Topical**
  - Eg 0.12% Betamethasone valerate, 0.05% Betamethasone dipropionate, 0.2% Fluocinolone, 0.05% Clobetasol propionate
  - May be used as initial therapy for adults & children w/ limited patchy alopecia areata who are intolerant of intralesional corticosteroids
  - Treatment of choice in children w/ alopecia areata
  - Used as 2nd-line treatment for alopecia areata totalis/universalis, as an adjunct w/ other treatments
  - Can be combined w/ Minoxidil
  - Signs of regrowth can take 6 weeks to 3 months
  - High relapse rate (38-63%) during treatment & after treatment cessation

- **Dithranol/Anthralin (Topical)**
  - Used as short-term contact immunotherapy
  - Usually discontinued after maximum response has been achieved
  - Second-line treatment for patients >10 years old w/ <50% hair loss who responded poorly to intralesional corticosteroid/Minoxidil/topical corticosteroid treatment
  - Administered w/ or without Minoxidil
  - Also used as second-line treatment for unresponsive patients >10 years old w/ ≥50% hair loss, given w/ Minoxidil & topical corticosteroids
  - Effects: Safely stimulates hair growth in patients w/ extensive & total scalp hair loss & is useful in children
    - Cosmetically acceptable hair growth was seen in 50-60% of patients in 6 months
    - Clinical irritation is not necessary for effectiveness

- **Immunotherapy (Systemic)**
  - **Azathioprine**
    - Treatment option for patients w/ extensive alopecia areata
  - **Cyclosporine**
    - An immunosuppressant that acts on T-lymphocytes to inhibit the production of lymphokines thereby suppressing cell-mediated immune responses
    - Several studies have shown 25-76.7% success rate but w/ numerous noted side effects
    - Further studies are needed to establish the efficacy of Cyclosporine for alopecia areata
  - **Inosiplex (Inosine pranobex/Isoprinosine)**
    - Alternative treatment for patients w/ treatment-resistant alopecia areata
  - **Janus kinase (JAK) inhibitors (eg Tofacitinib, Ruxolitinib)**
    - Studies have shown its efficacy in inducing hair growth in patients w/ severe alopecia areata
    - More studies are needed to confirm efficacy & safety
  - **Methotrexate**
    - Treatment option for patients w/ severe alopecia areata, alopecia areata totalis or universalis
    - May be given w/ low-dose oral corticosteroids
  - **Sulfasalazine**
    - Treatment option for patients w/ severe alopecia areata
    - Studies have shown that 23-27% of patients on Sulfasalazine treatment exhibited hair regrowth

- **Immunotherapy (Topical)**
  - Eg Diphenylcyclopropenone (DPCP), Squaric acid dibutyl ester
  - Recommended treatment for chronic extensive alopecia areata, alopecia areata totalis & universalis
  - First-line treatment for adult patients w/ >50% (extensive) hair loss
  - A contact allergen commonly used as topical immunotherapy
  - Topical immunotherapy w/ DPCP has shown to be effective in up to 100% of patients w/ <50% hair loss; 60-88% of patients w/ 50-99% hair loss; & 17% of patients w/ alopecia totalis or alopecia universalis
    - Regrowth was apparent after 3-12 months of treatment
    - No benefit is achieved w/ continuing therapy after 24 months in the absence of regrowth
    - Relapse rate is 62% during treatment

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### B PHARMACOLOGICAL THERAPY (CONT’D)

**Treatments for Alopecia Areata (Cont’d)**

**Minoxidil**
- **Topical**
  - 1%-5% solution has been shown to be the most effective in alopecia areata patients
  - **Effects:** Hair growth is stimulated in patients w/ extensive & patchy hair loss but not in patients w/ complete hair loss
  - Hair growth may be seen within 12 weeks & maximal growth is seen at 1 year
  - Continue application until full remission
- **Oral**
  - Several studies showed significant response w/ Minoxidil intake

**Other Eye Preparations**
- Eg Bimatoprost, Latanoprost
- Treatment option for eyelash universalis alopecia areata
- Further studies are needed to establish the efficacy of Bimatoprost/Latanoprost for alopecia areata

**Platelet-rich Plasma**
- A study has shown its effectivity in inducing hair growth
- More studies are needed to establish efficacy in the treatment of alopecia areata

**Photochemotherapy**
- UVA combined w/ Psoralens (PUVA) has been used for severe alopecia areata
- Whole body UVA irradiation may also be used
- Psoralens may be given orally or topically
- **Effects:** Effectiveness varies from 20-65% although relapse rate is high
- There is concern about the promotion of skin cancer from long-term PUVA use

### C SURGICAL THERAPY

**Hair Transplantation**
- Surgical option for androgenic alopecia & androgenic alopecia where hairs from the back & sides of the scalp are transplanted to balding areas in the front
  - Usually need 2-4 sessions depending on the number of grafts transplanted per session
  - Success depends on the viability of grafts harvested & inserted into areas w/ hair loss
  - Mini-grafts & micro-grafts w/ 2-4 follicles allows for a more natural looking result
- Follicular unit transplantation (FUT) which is the standard technique in hair transplantation, may be considered for both males & females w/ androgenic alopecia w/ sufficient donor hair
  - FUT may be combined w/ Finasteride to achieve a better clinical outcome
  - Indicated in patients w/ androgenic alopecia:
    - W/ fine or light hair
    - Who do not want to shave their head as needed while taking FU grafts
    - Who do not mind covering the linear scar w/ longer adjacent hair
    - For maximum donor yield without visible thinning of the donor area
- Follicular unit extraction (FUE) involves removal of individual follicular units, one by one from the occipital area
  - Indicated for smaller graft numbers, in patients w/ thick hair, patients who want to wear a short occipital haircut or patients who do not want a linear scar, & in cases of tight occipital scalp elasticity
  - Associated w/ greater risk of follicle injury & impairment of graft viability
- Can permanently improve androgenic alopecia by up to 3 stages on Norwood-Hamilton scale when performed by a skilled surgeon in suitable candidates w/ a good donor hair supply
- Best long-term results are seen in patients w/ medically-controlled or spontaneously stabilized androgenic alopecia
- Has limited aesthetic benefit for MPHL w/ Norwood/Hamilton stages I-II
- Not optimal surgical candidate for FPHL w/ Ludwig I stage; best candidate are patients w/ Ludwig stage II w/ sufficient permanent donor hair available & no overlying diffuse telogen effluvium

**Scalp Reduction (Alopecia Reduction Surgery)**
- Treatment option for male patients w/ hair loss at the back of the scalp
- Area w/ hair loss is surgically removed & hair-bearing scalp is stretched to fill in the void left by the excised scalp
- May be performed w/ hair transplantation or scalp expansion
- Has limited aesthetic benefit for MPHL w/ Norwood/Hamilton stages I-III because of potential for scarring

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## Dosage Guidelines

### CORTICOSTEROID HORMONES

<table>
<thead>
<tr>
<th>Drug</th>
<th>Available Strength</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intralesional Injection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>5 mg/mL inj</td>
<td>0.2-6 mg intralesionally repeated every 3-5 days or 2-3 wk</td>
<td><strong>Adverse Reactions</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Skin atrophy which may be minimized by inj small volumes &amp; only into the mid-dermis</td>
</tr>
<tr>
<td>Triamcinolone acetonide</td>
<td>10 mg/mL inj</td>
<td>Scalp: Inj 2.5-5 mg into mid-dermis at multiple sites 1 cm apart</td>
<td><strong>Special Instructions</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repeat every 4-6 wk</td>
<td>• Preferred application is using 3 mL syringe w/ 30-gauge ½-in long needle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max dose scalp: 20 mg/visit</td>
<td>• Topical anesth may be used</td>
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<tr>
<td></td>
<td></td>
<td>Eyebrows: 1.25 mg inj into the mid-dermis of each brow divided into 5-6 sites</td>
<td>• Do not raise wheal or inj into SC tissue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max dose beard: 7.5 mg/visit</td>
<td>• If skin atrophy occurs, site should not be reinjected until atrophy resolves</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Do not inj soln into fat or epidermis</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
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</tr>
<tr>
<td>Prednisone</td>
<td>-</td>
<td><strong>Suggested regimens:</strong></td>
<td><strong>Adverse Reactions</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extensive, active or rapidly spreading alopecia areata in patients ≥60 kg:</td>
<td>• Gastritis. If administered long-term: Wt gain, hypertension, cataracts, adrenocortical insufficiency, osteoporosis, muscle wasting, pain or weakness, increased susceptibility to infection, impaired wound healing, electrolyte imbalances</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 mg/day PO x 1 wk; then 35 mg/day PO x 1 wk; 30 mg/day PO x 1 wk; 25 mg/day PO x 1 wk; 20 mg/day PO x 3 days; 15 mg/day PO x 3 days; 10 mg/day PO x 3 days; 5 mg/day PO x 3 days</td>
<td><strong>Special Instructions</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less extensive, active alopecia areata: 20 mg/day PO every other day. Taper dose slowly by 1 mg/day after condition is stable</td>
<td>• Take w/ food</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• May be combined w/ intralesional corticosteroids or Minoxidil soln</td>
</tr>
</tbody>
</table>

1Please see prescribing information for specific formulations in the latest MIMS. For potency listing, please refer to the Dosage Guideline section in the Atopic Dermatitis or Psoriasis Management Charts.

All dosage recommendations are for non-pregnant & non-breastfeeding women, & non-elderly adults w/ normal renal & hepatic function unless otherwise stated.

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### CORTICOSTEROID HORMONES1 (CONT’D)

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<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betamethasone dipropionate</td>
<td>0.05% cream, oint, lotion, gel</td>
<td>Apply sparingly to the affected area &amp; 1 cm beyond 24 hrly</td>
<td><strong>Adverse Reactions</strong>&lt;br&gt;- Local effects (burning, stinging, itching)&lt;br&gt;<strong>Special Instructions</strong>&lt;br&gt;- Discontinue use if skin irritation or contact dermatitis occurs&lt;br&gt;- Prolonged administration may result in HPA-axis suppression or manifestations of Cushing's syndrome</td>
</tr>
<tr>
<td>Clobetasol propionate</td>
<td>0.05% oint</td>
<td>Apply sparingly to the affected area 12 hrly</td>
<td><strong>Adverse Reactions</strong>&lt;br&gt;- Metabolic effect (HPA-axis suppression); Dermatologic effects (skin atrophy, telangiectasia, folliculitis, skin hypopigmentation, transient erythema); Local effects (pruritus, burning sensations, skin irritation)&lt;br&gt;<strong>Special Instructions</strong>&lt;br&gt;- Avoid long-term continuous therapy particularly in infants &amp; children&lt;br&gt;- Should be used w/ caution in patients w/ DM&lt;br&gt;- Occlusive dressings may induce bacterial infections (MIMS)&lt;br&gt;- Discontinue if hypersensitivity occurs</td>
</tr>
</tbody>
</table>

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## Dosage Guidelines

### OTHER DERMATOLOGICALS

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| Diphenylcyclopropenone (DPCP, Diphencyprone) | Soln is applied wkly preferably in physician's office | **Sensitization dose:** 2% soln applied to 4x4 cm area on one side of scalp. Wash off after 48 hr  
  - If after 1 wk no reaction or only mild-moderate reaction may continue  
  **Initial dose 1st wk:** 0.0001% soln applied to same side of scalp in 2 coats. Wash off after 48 hr  
  - Desired response: Mild itching, erythema & scaling  
  - If marked vesicular edematous reaction occurs, do not apply for 1 wk  
  Each wk DPCP is applied to same side of scalp & washed off after 48 hr  
  DPCP conc is adjusted according to response of previous wk's treatment  
  Conc varies from 0.0001-2%  
  Once hair growth occurs on one side, the other side of scalp is treated | **Adverse Reactions**  
  • Lymphadenopathy (neck & behind ears), flu-like symptoms, fever, allergic contact dermatitis, blistering, autoeczematization, pigment changes ("dyschromia in confetti")  
  **Special Instructions**  
  • Person applying needs to wear gloves  
  • Patient must protect treated area from sunlight ≥6 hr (better if 48 hr) after application  
  - DPCP is degraded when exposed to light  
  • Cover scalp when in close contact w/ partner (eczema & vitiligo have occurred in spouses of treated individuals) |
| Finasteride                  | 1 mg PO 24 hrly         | **Adverse Reactions**  
  • Decreased libido, impotence, ejaculation disorders, hypersensitivity, testicular pain, breast tenderness & enlargement  
  **Special Instructions**  
  • Daily use ≥3 mth is needed before hair growth or prevention of hair loss can be observed  
  • Continued use is needed to achieve max benefit  
  - Discontinuing treatment leads to reversal of effect within 12 mth  
  • Baseline prostate specific antigen (PSA) level should be obtained  
  - Finasteride lowers PSA level  
  • Not recommended for use in females |

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<th>Drug</th>
<th>Available Strength</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minoxidil</td>
<td>2% soln, spray</td>
<td>Soln: 1 mL (6 sprays) applied 12 hrly</td>
<td>Adverse Reactions&lt;br&gt;• Contact dermatitis, pruritus, flushing, local burning, unwanted hypertrichosis especially in women&lt;br&gt;Special Instructions&lt;br&gt;• 1 mL dose should be used regardless of size of affected area&lt;br&gt;• Sprays, extended sprays &amp; rub-on applicators are available</td>
</tr>
<tr>
<td></td>
<td>3% lotion, soln</td>
<td>Application should begin at the center of the affected area, leave for at least 4 hrs&lt;br&gt;<strong>Max dose:</strong> 2 mL/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5% lotion, soln</td>
<td><strong>Foam:</strong> 0.5 capful applied 12 hrly in males &amp; 24 hrly in females&lt;br&gt;<strong>Max dose:</strong> 1 capful /day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5% foam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### OTHER EYE PREPARATIONS

<table>
<thead>
<tr>
<th>Drug</th>
<th>Available Strength</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bimatoprost</td>
<td>0.03% ophth soln</td>
<td>Apply 1 drop 24 hrly at night</td>
<td></td>
</tr>
</tbody>
</table>

**Adverse Reactions**<br>• Local effects (pruritus, conjunctival hyperemia, ocular irritation, dry eye syndrome, erythema, blepharitis, enophthalmos, discharge, pain, swelling, eyelid edema, iris hyperpigmentation, inc lacrimation, blurred vision); Other effects (headache, skin discoloration)<br>

**Special Instructions**<br>• Place 1 drop on a disposable sterile applicator then apply evenly along the skin of the upper eyelid margin at the base of the eyelashes at night

#### TOPICAL ANTRACEN DERIVATIVE AGENT

<table>
<thead>
<tr>
<th>Drug</th>
<th>Available Strength</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithranol</td>
<td>0.5% oint, 1% oint</td>
<td>Short-contact therapy: Apply to affected area of the scalp once daily Leave on for 20-30 min daily x 2 wk, then 45 min daily x 2 wk up to max of 1 hr daily</td>
<td></td>
</tr>
</tbody>
</table>

**Adverse Reactions**<br>• Burning sensation, skin irritation especially on non-affected skin<br>• Staining of skin & hair, which usually clears 2-3 wk after treatment is discontinued. Staining can also occur on clothes & household items<br>

**Special Instructions**<br>• Remove from scalp w/ mineral oil & then wash off w/ soap & water<br>• Some patients may tolerate overnight application

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*All dosage recommendations are for non-pregnant & non-breastfeeding women, & non-elderly adults w/ normal renal & hepatic function unless otherwise stated.*

*Not all products are available or approved for above use in all countries.*

*Products listed above may not be mentioned in the disease management chart but have been placed here based on indications listed in regional manufacturers’ product information.*

*Specific prescribing information may be found in the latest MIMS.*

*Please see the end of this section for the reference list.*