


Hair loss

Hair loss, also known as **alopecia** or **baldness**, refers to a loss of hair from part of the head or body.^[1] Typically at least the head is involved.^[3] The severity of hair loss can vary from a small area to the entire body.^[6] Inflammation or scarring is not usually present.^[3] Hair loss in some people causes psychological distress.^[2]

Common types include: male-pattern hair loss, female-pattern hair loss, alopecia areata, and a thinning of hair known as telogen effluvium.^[3] The cause of male-pattern hair loss is a combination of genetics and male hormones, the cause of female pattern hair loss is unclear, the cause of alopecia areata is autoimmune, and the cause of telogen effluvium is typically a physically or psychologically stressful event.^[3] Telogen effluvium is very common following pregnancy.^[3]

Less common causes of hair loss without inflammation or scarring include the pulling out of hair, certain medications including chemotherapy, HIV/AIDS, hypothyroidism, and malnutrition including iron deficiency.^{[2][3]} Causes of hair loss that occurs with scarring or inflammation include fungal infection, lupus erythematosus, radiation therapy, and sarcoidosis.^{[2][3]} Diagnosis of hair loss is partly based on the areas affected.^[3]

Treatment of pattern hair loss may simply involve accepting the condition.^[3] Interventions that can be tried include the medications minoxidil (or finasteride) and hair transplant surgery.^{[4][5]} Alopecia areata may be treated by steroid injections in the affected area, but these need to be frequently repeated to be effective.^[3] Hair loss is a common problem.^[3] Pattern hair loss by age 50 affects about half of males and a quarter of females.^[3] About 2% of people develop alopecia areata at some point in time.^[3]

Hair loss	
Other names	Alopecia, baldness
	
Hair loss on a man.	
Pronunciation	Alopecia: /ˌæloʊˈpiːfə/
Specialty	Dermatology
Symptoms	Loss of hair from part of the head or body. ^[1]
Complications	Psychological distress ^[2]
Types	Male-pattern hair loss, female-pattern hair loss, alopecia areata, telogen effluvium ^[3]
Treatment	Accepting the condition, medications, surgery ^[3]
Medication	Pattern hair loss: minoxidil, finasteride ^[4] Alopecia areata: Steroid injections ^[3]
Frequency	50% of males, 25% of females (pattern hair loss by 50) ^{[3][5]}

Contents

Terminology

Hypotrichosis

Signs and symptoms

- Skin conditions
- Psychological

Causes

- Pattern hair loss
- Infection
- Drugs
- Trauma
- Pregnancy
- Other causes
- Genetics

Pathophysiology

Diagnosis

Management

- Hiding hair loss
- Medications
- Surgery
- Chemotherapy
- Embracing baldness
- Alternative medicine

Research

- Hair follicle aging

Etymology

See also

References

External links

Terminology

Baldness is the partial or complete lack of hair growth, and part of the wider topic of "hair thinning". The degree and pattern of baldness varies, but its most common cause is androgenic hair loss, *alopecia androgenetica*, or *alopecia seborrheica*, with the last term primarily used in Europe.

Hypotrichosis

Hypotrichosis is a condition of abnormal hair patterns, predominantly loss or reduction. It occurs, most frequently, by the growth of vellus hair in areas of the body that normally produce terminal hair. Typically, the individual's hair growth is normal after birth, but shortly thereafter the hair is shed and replaced with sparse, abnormal hair growth. The new hair is typically fine, short and brittle, and may lack pigmentation. Baldness may be present by the time the subject is 25 years old.^[7]

Signs and symptoms

Symptoms of hair loss include hair loss in patches usually in circular patterns, dandruff, skin lesions, and scarring. Alopecia areata (mild – medium level) usually shows in unusual hair loss areas, e.g., eyebrows, backside of the head or above the ears, areas the male pattern baldness usually does not affect. In male-pattern hair loss, loss and thinning begin at the temples and the crown and hair either thins out or falls out. Female-pattern hair loss occurs at the frontal and parietal.

People have between 100,000 and 150,000 hairs on their head. The number of strands normally lost in a day varies but on average is 100.^[8] In order to maintain a normal volume, hair must be replaced at the same rate at which it is lost. The first signs of hair thinning that people will often notice are more hairs than usual left in the hairbrush after brushing or in the basin after shampooing. Styling can also reveal areas of thinning, such as a wider parting or a thinning crown.



A case of mid-frontal baldness: Andre Agassi

Skin conditions

A substantially blemished face, back and limbs could point to cystic acne. The most severe form of the condition, cystic acne, arises from the same hormonal imbalances that cause hair loss and is associated with dihydrotestosterone production.^[9] Seborrheic dermatitis, a condition in which an excessive amount of sebum is produced and builds up on the scalp (looking like an adult cradle cap), is also a symptom of hormonal imbalances, as is an excessively oily or dry scalp. Both can cause hair thinning.

Psychological

Hair thinning and baldness cause psychological stress due to their effect on appearance. Although societal interest in appearance has a long history, this particular branch of psychology came into its own during the 1960s and has gained momentum as messages associating physical attractiveness with success and happiness grow more prevalent.^[10]

The psychology of hair thinning is a complex issue. Hair is considered an essential part of overall identity: especially for women, for whom it often represents femininity and attractiveness. Men typically associate a full head of hair with youth and vigor. Although they may be aware of pattern baldness in their family, many are uncomfortable talking about the issue. Hair thinning is therefore a sensitive issue for both sexes. For sufferers, it can represent a loss of control and feelings of isolation. People experiencing hair thinning often find themselves in a situation where their physical appearance is at odds with their own self-image and commonly worry that they appear older than they are or less attractive to others. Psychological problems due to baldness, if present, are typically most severe at the onset of symptoms.^[11]

Hair loss induced by cancer chemotherapy has been reported to cause changes in self-concept and body image. Body image does not return to the previous state after regrowth of hair for a majority of patients. In such cases, patients have difficulties expressing their feelings (alexithymia) and may be more prone to avoiding family conflicts. Family therapy can help families to cope with these psychological problems if they arise.^[12]

Causes

Although not completely understood, hair loss can have many causes:

Pattern hair loss

Male pattern hair loss is believed to be due to a combination of genetics and the male hormone dihydrotestosterone.^[3] The cause in female pattern hair loss remains unclear.^[3]

Infection

- Dissecting cellulitis
- Fungal infections (such as tinea capitis)
- Folliculitis
- Secondary syphilis^[13]
- Demodex folliculorum, a microscopic mite that feeds on the sebum produced by the sebaceous glands, denies hair essential nutrients and can cause thinning. *Demodex folliculorum* is not present on every scalp and is more likely to live in an excessively oily scalp environment.

Drugs

- Temporary or permanent hair loss can be caused by several medications, including those for blood pressure problems, diabetes, heart disease and cholesterol.^[14] Any that affect the body's hormone balance can have a pronounced effect: these include the contraceptive pill, hormone replacement therapy, steroids and acne medications.^[15]
- Some treatments used to cure mycotic infections can cause massive hair loss.^[16]
- Medications (side effects from drugs, including chemotherapy, anabolic steroids, and birth control pills^{[17][18]})

Trauma

- Traction alopecia is most commonly found in people with ponytails or cornrows who pull on their hair with excessive force. In addition, rigorous brushing and heat styling, rough scalp massage can damage the cuticle, the hard outer casing of the hair. This causes individual strands to become weak and break off, reducing overall hair volume.
- Frictional alopecia is hair loss caused by rubbing of the hair or follicles, most infamously around the ankles of men from socks, where even if socks are no longer worn, the hair often will not grow back.
- Trichotillomania is the loss of hair caused by compulsive pulling and bending of the hairs. Onset of this disorder tends to begin around the onset of puberty and usually continues through adulthood. Due to the constant extraction of the hair roots, permanent hair loss can occur.
- Traumas such as childbirth, major surgery, poisoning, and severe stress may cause a hair loss condition known as telogen effluvium,^[19] in which a large number of hairs enter the resting phase at the same time, causing shedding and subsequent thinning. The condition also presents as a side effect of chemotherapy – while targeting dividing cancer cells, this treatment also affects hair's growth phase with the result that almost 90% of hairs fall out soon after chemotherapy starts.^[20]
- Radiation to the scalp, as when radiotherapy is applied to the head for the treatment of certain cancers there, can cause baldness of the irradiated areas.

Pregnancy

Hair loss often follows childbirth in the postpartum period without causing baldness. In this situation, the hair is actually thicker during pregnancy owing to increased circulating oestrogens. Approximately three months after giving birth (typically between 2 and 5 months), oestrogen levels drop and hair loss occurs, often particularly noticeably around the hairline and temple area. Hair typically grows back normally and treatment is not indicated.^{[21][22]} A similar situation occurs in women taking the fertility-stimulating drug clomiphene.

Other causes

- Alopecia areata is an autoimmune disorder also known as "spot baldness" that can result in hair loss ranging from just one location (*Alopecia areata monolocularis*) to every hair on the entire body (*Alopecia areata universalis*). Although thought to be caused by hair follicles becoming dormant, what triggers alopecia areata is not known. In most cases the condition corrects itself, but it can also spread to the entire scalp (alopecia totalis) or to the entire body (alopecia universalis).
- Localized or diffuse hair loss may also occur in cicatricial alopecia (lupus erythematosus, lichen plano pilaris, folliculitis decalvans, central centrifugal cicatricial alopecia, postmenopausal frontal fibrosing alopecia, etc.). Tumours and skin outgrowths also induce localized baldness (sebaceous nevus, basal cell carcinoma, squamous cell carcinoma).
- Hypothyroidism (an under-active thyroid) and the side effects of its related medications can cause hair loss, typically frontal, which is particularly associated with thinning of the outer third of the eyebrows (also seen with syphilis). Hyperthyroidism (an over-active thyroid) can also cause hair loss, which is parietal rather than frontal.^[23]
- Temporary loss of hair can occur in areas where sebaceous cysts are present for considerable duration (normally one to several weeks).
- Congenital triangular alopecia – It is a triangular, or oval in some cases, shaped patch of hair loss in the temple area of the scalp that occurs mostly in young children. The affected area mainly contains vellus hair follicles or no hair follicles at all, but it does not expand. Its causes are unknown, and although it is a permanent condition, it does not have any other effect on the affected individuals.^[24]
- Gradual thinning of hair with age is a natural condition known as involutional alopecia. This is caused by an increasing number of hair follicles switching from the growth, or anagen, phase into a resting phase, or telogen phase, so that remaining hairs become shorter and fewer in number.
- An unhealthy scalp environment can play a significant role in hair thinning by contributing to miniaturization or causing damage. Air and water pollutants, environmental toxins, conventional styling products and excessive amounts of sebum have the potential to build up on the scalp.. This debris can block hair follicles and cause their deterioration and consequent miniaturization of hair.. It can also physically restrict hair growth or damage the hair cuticle, leading to hair that is weakened and easily broken off before its natural lifecycle has ended.

Other causes of hair loss include:

- Alopecia mucinosa
- Biotinidase deficiency
- Chronic inflammation
- Diabetes^[25]
- Lupus erythematosus

- Pseudopelade of Brocq
- Telogen effluvium
- Tufted folliculitis

Genetics

Genetic forms of localized autosomal recessive hypotrichosis include:

Type	OMIM	Gene	Locus
LAH1	607903 (https://www.omim.org/entry/607903)	<u>DSG4</u>	18q12
LAH2	604379 (https://www.omim.org/entry/604379)	<u>LIPH</u>	3q27
LAH3	611452 (https://www.omim.org/entry/611452)	<u>P2RY5</u>	13q14.12-q14.2

Pathophysiology

Hair follicle growth occurs in cycles. Each cycle consists of a long growing phase (anagen), a short transitional phase (catagen) and a short resting phase (telogen). At the end of the resting phase, the hair falls out (exogen) and a new hair starts growing in the follicle beginning the cycle again.

Normally, about 40 (0–78 in men) hairs reach the end of their resting phase each day and fall out.^[26] When more than 100 hairs fall out per day, clinical hair loss (telogen effluvium) may occur. A disruption of the growing phase causes abnormal loss of anagen hairs (anagen effluvium).

Diagnosis

Because they are not usually associated with an increased loss rate, male-pattern and female-pattern hair loss do not generally require testing. If hair loss occurs in a young man with no family history, drug use could be the cause.

- **The pull test** helps to evaluate diffuse scalp hair loss. Gentle traction is exerted on a group of hairs (about 40–60) on three different areas of the scalp. The number of extracted hairs is counted and examined under a microscope. Normally, fewer than three hairs per area should come out with each pull. If more than ten hairs are obtained, the pull test is considered positive.^[27]
- **The pluck test** is conducted by pulling hair out "by the roots". The root of the plucked hair is examined under a microscope to determine the phase of growth, and is used to diagnose a defect of telogen, anagen, or systemic disease. Telogen hairs have tiny bulbs without sheaths at their roots. Telogen effluvium shows an increased percentage of hairs upon examination. Anagen hairs have sheaths attached to their roots. Anagen effluvium shows a decrease in telogen-phase hairs and an increased number of broken hairs.
- **Scalp biopsy** is used when the diagnosis is unsure; a biopsy allows for differing between scarring and non-scarring forms. Hair samples are taken from areas of inflammation, usually around the border of the bald patch.
- **Daily hair counts** are normally done when the pull test is negative. It is done by counting the number of hairs lost. The hair from the first morning combing or during washing should be counted. The hair is collected in a clear plastic bag for 14 days. The strands are recorded. If the hair count is >100/day, it is considered abnormal except after shampooing, where hair counts will be up to 250 and be normal.

- **Trichoscopy** is a noninvasive method of examining hair and scalp. The test may be performed with the use of a handheld dermoscope or a video dermoscope. It allows differential diagnosis of hair loss in most cases.^[28]

There are two types of identification tests for female pattern baldness: the Ludwig Scale and the Savin Scale. Both track the progress of diffused thinning, which typically begins on the crown of the head behind the hairline, and becomes gradually more pronounced. For male pattern baldness, the Hamilton–Norwood scale tracks the progress of a receding hairline and/or a thinning crown, through to a horseshoe-shaped ring of hair around the head and on to total baldness.

In almost all cases of thinning, and especially in cases of severe hair loss, it is recommended to seek advice from a doctor or dermatologist. Many types of thinning have an underlying genetic or health-related cause, which a qualified professional will be able to diagnose.

Management

Hiding hair loss

Head

One method of hiding hair loss is the "comb over", which involves restyling the remaining hair to cover the balding area. It is usually a temporary solution, useful only while the area of hair loss is small. As the hair loss increases, a comb over becomes less effective.

Another method is to wear a hat or a hairpiece—a wig or toupee. The wig is a layer of artificial or natural hair made to resemble a typical hair style. In most cases the hair is artificial. Wigs vary widely in quality and cost. In the United States, the best wigs—those that look like real hair—cost up to tens of thousands of dollars. Organizations also collect individuals' donations of their own natural hair to be made into wigs for young cancer patients who have lost their hair due to chemotherapy or other cancer treatment in addition to any type of hair loss.



General Douglas MacArthur wearing a "comb over".

Eyebrows

Though not as common as the loss of hair on the head, chemotherapy, hormone imbalance, forms of hair loss, and other factors can also cause loss of hair in the eyebrows. Loss of growth in the outer one third of the eyebrow is often associated with hypothyroidism. Artificial eyebrows are available to replace missing eyebrows or to cover patchy eyebrows. Eyebrow embroidery is another option which involves the use of a blade to add pigment to the eyebrows. This gives a natural 3D look for those who are worried about an artificial look and it lasts for two years. Micropigmentation (permanent makeup tattooing) is also available for those who want the look to be permanent.

Medications

Treatments for the various forms of hair loss have limited success. Three medications have evidence to support their use in male pattern hair loss: minoxidil, finasteride, and dutasteride.^{[29][30]} They typically work better to prevent further hair loss, than to regrow lost hair.^[29]

- Minoxidil (Rogaine) is a nonprescription medication approved for male pattern baldness and alopecia areata. In a liquid or foam, it is rubbed into the scalp twice a day. Some people have an allergic reaction to the propylene glycol in the minoxidil solution and a minoxidil foam was developed without propylene glycol. Not all users will regrow hair. The longer the hair has stopped growing, the less likely minoxidil will regrow hair. Minoxidil is not effective for other causes of hair loss. Hair regrowth can take 1 to 6 months to begin. Treatment must be continued indefinitely. If the treatment is stopped, hair loss resumes. Any regrown hair and any hair susceptible to being lost, while Minoxidil was used, will be lost. Most frequent side effects are mild scalp irritation, allergic contact dermatitis, and unwanted hair in other parts of the body.^[30]
- Finasteride (Propecia) is used in male-pattern hair loss in a pill form, taken 1 milligram per day. It is not indicated for women and is not recommended in pregnant women. Treatment is effective starting within 6 weeks of treatment. Finasteride causes an increase in hair retention, the weight of hair, and some increase in regrowth. Side effects in about 2% of males, include decreased sex drive, erectile dysfunction, and ejaculatory dysfunction. Treatment should be continued as long as positive results occur. Once treatment is stopped, hair loss resumes.^[30]
- Corticosteroids injections into the scalp can be used to treat alopecia areata. This type of treatment is repeated on a monthly basis. Oral pills for extensive hair loss may be used for alopecia areata. Results may take up to a month to be seen.
- Immunosuppressants applied to the scalp have been shown to temporarily reverse alopecia areata, though the side effects of some of these drugs make such therapy questionable.^[31]
- There is some tentative evidence that anthralin may be useful for treating alopecia areata.^[32]
- Hormonal modulators (oral contraceptives or antiandrogens such as spironolactone and flutamide) can be used for female-pattern hair loss associated with hyperandrogenemia.

Surgery

Hair transplantation is usually carried out under local anaesthetic. A surgeon will move healthy hair from the back and sides of the head to areas of thinning. The procedure can take between four and eight hours, and additional sessions can be carried out to make hair even thicker. Transplanted hair falls out within a few weeks, but regrows permanently within months. Hair transplants, takes tiny plugs of skin, each which contains a few hairs, and implants the plugs into bald sections. The plugs are generally taken from the back or sides of the scalp. Several transplant sessions may be necessary.^[33]

- Surgical options, such as follicle transplants, scalp flaps, and hair loss reduction, are available. These procedures are generally chosen by those who are self-conscious about their hair loss, but they are expensive and painful, with a risk of infection and scarring. Once surgery has occurred, six to eight months are needed before the quality of new hair can be assessed.
 - Scalp reduction is the process is the decreasing of the area of bald skin on the head. In time, the skin on the head becomes flexible and stretched enough that some of it can be surgically removed. After the hairless scalp is removed, the space is closed with hair-covered scalp. Scalp reduction is generally done in combination with hair transplantation to provide a natural-looking hairline, especially those with extensive hair loss.

- Hairline lowering can sometimes be used to lower a high hairline secondary to hair loss, although there may be a visible scar after further hair loss.
- Wigs are an alternative to medical and surgical treatment; some patients wear a wig or hairpiece. They can be used permanently or temporarily to cover the hair loss. High-quality, natural-looking wigs and hairpieces are available.

Chemotherapy

Hypothermia caps may be useful to prevent hair loss during some kinds of chemotherapy, specifically when tazanes or anthracyclines are used.^[34] It should not be used when cancer is present in the skin of the scalp or for lymphoma or leukemia.^[35] There are generally only minor side effects from treatment.^[36]

Embracing baldness

Instead of concealing hair loss, some may embrace it by shaving their head. A shaved head will grow stubble in the same manner and at the same rate as a shaved face. The general public has become accepting of the shaved head as well, though female baldness can be considered less socially acceptable in various parts of the world.

Alternative medicine

Dietary supplements are not typically recommended.^[30] There is only one small trial of saw palmetto which shows tentative benefit in those with mild to moderate androgenetic alopecia.^[30] There is no evidence for biotin.^[30] Evidence for most other produces is also insufficient.^[39] There was no good evidence for ginkgo, aloe vera, ginseng, bergamot, hibiscus, or sorophora as of 2011.^[39]



French soccer player Zinedine Zidane popularized a shaved head during the 1990s.^{[37][38]}

Many people use unproven treatments.^[29] Egg oil, in Indian,^[40] Japanese, Unani (Roghan Baiza Murgh)^[41] and Chinese^[42] traditional medicine, was traditionally used as a treatment for hair loss.

Research

Research is looking into connections between hair loss and other health issues. While there has been speculation about a connection between early-onset male pattern hair loss and heart disease, a review of articles from 1954 to 1999 found no conclusive connection between baldness and coronary artery disease. The dermatologists who conducted the review suggested further study was needed.^[43]

Environmental factors are under review. A 2007 study indicated that smoking may be a factor associated with age-related hair loss among Asian men. The study controlled for age and family history, and found statistically significant positive associations between moderate or severe male pattern hairloss and smoking status.^[44]

Vertex baldness is associated with an increased risk of coronary heart disease (CHD) and the relationship depends upon the severity of baldness, while frontal baldness is not. Thus, vertex baldness might be a marker of CHD and is more closely associated with atherosclerosis than frontal baldness.^[26]

Hair follicle aging

A key aspect of hair loss with age is the aging of the hair follicle.^[45] Ordinarily, hair follicle renewal is maintained by the stem cells associated with each follicle. Aging of the hair follicle appears to be primed by a sustained cellular response to the DNA damage that accumulates in renewing stem cells during aging.^[46] This damage response involves the proteolysis of type XVII collagen by neutrophil elastase in response to the DNA damage in the hair follicle stem cells. Proteolysis of collagen leads to elimination of the damaged cells and then to terminal hair follicle miniaturization.

Etymology

The term *alopecia* (/ˌæləˈpiːfiə/) is from the Classical Greek ἄλωπιξ, *alōpēx*, meaning "fox". The origin of this usage is because this animal sheds its coat twice a year, or because in ancient Greece foxes often lost hair because of mange.

The term *bald* likely derives from the English word *balde*, which means "white, pale" or Celtic *ball*, which means "white patch or blaze", such as on a horse's head.^[47]


See also

- Alopecia in animals
- Lichen planopilaris
- List of conditions caused by problems with junctional proteins

References

1. "Hair loss" (<http://www.nhs.uk/conditions/Hair-loss/Pages/Introduction.aspx>). *NHS Choices*. Archived (<https://web.archive.org/web/20130927020342/http://www.nhs.uk/conditions/Hair-loss/Pages/Introduction.aspx>) from the original on 27 September 2013. Retrieved 22 September 2013.
2. Nalluri, R; Harries, M (February 2016). "Alopecia in general medicine" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4954340>). *Clinical Medicine*. **16** (1): 74–8. doi:10.7861/clinmedicine.16-1-74 (<https://doi.org/10.7861%2Fclinmedicine.16-1-74>). PMC 4954340 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4954340>). PMID 26833522 (<https://pubmed.ncbi.nlm.nih.gov/26833522>).
3. Vary JC, Jr (November 2015). "Selected Disorders of Skin Appendages--Acne, Alopecia, Hyperhidrosis". *The Medical Clinics of North America*. **99** (6): 1195–211. doi:10.1016/j.mcna.2015.07.003 (<https://doi.org/10.1016%2Fj.mcna.2015.07.003>). PMID 26476248 (<https://pubmed.ncbi.nlm.nih.gov/26476248>).
4. McElwee, K. J.; Shapiro, J. S. (2012). "Promising therapies for treating and/or preventing androgenic alopecia" (<http://www.skintherapyletter.com/2012/17.6/1.html>). *Skin Therapy Letter*. **17** (6): 1–4. PMID 22735503 (<https://pubmed.ncbi.nlm.nih.gov/22735503>). Archived (<https://web.archive.org/web/20151212040921/http://www.skintherapyletter.com/2012/17.6/1.html>) from the original on 2015-12-12.

5. Leavitt, M. (2008). "Understanding and Management of Female Pattern Alopecia". *Facial Plastic Surgery*. **24** (4): 414–427. doi:10.1055/s-0028-1102905 (<https://doi.org/10.1055/s-0028-1102905>). PMID 19034818 (<https://pubmed.ncbi.nlm.nih.gov/19034818>).
6. "Hair loss" (<http://dermnetnz.org/hair-nails-sweat/hair-loss.html>). *DermNet*. Archived (<https://web.archive.org/web/20160625012752/http://www.dermnetnz.org/hair-nails-sweat/hair-loss.html>) from the original on 2016. Retrieved 2016-08-03.
7. Dawber, Rodney P. R.; Van Neste, Dominique (2004). *Hair and scalp disorders: common presenting signs, differential diagnosis and treatment* (2nd ed.). Informa Health Care. pp. 53–54. ISBN 978-1-84184-193-9.
8. Alaiti, Samer. "Hair growth" (<https://web.archive.org/web/20150121093543/http://emedicine.medscape.com/article/837994-overview>). *eMedicine*. Archived from the original (<http://emedicine.medscape.com/article/837994-overview>) on January 21, 2015.
9. Bergler-Czop, B; Brzezińska-Wcisło, L (2004). "Hormonal factors in etiology of common acne". *Polski Mercuriusz Lekarski : Organ Polskiego Towarzystwa Lekarskiego*. **16** (95): 490–2. PMID 15518435 (<https://pubmed.ncbi.nlm.nih.gov/15518435>).
10. 'The psychology of appearance: Why health psychologists should "do looks"', Nichola Rumsey, September 2008: "Research in the Faculty of Health and Applied Sciences - UWE Bristol: Faculty of Health and Applied Sciences" (http://hls.uwe.ac.uk/research/Data/Sites/1/docs/CAR/EHP_Sept_2008_NRumsey.pdf) (PDF). Archived (https://web.archive.org/web/20120330223418/http://hls.uwe.ac.uk/research/Data/Sites/1/docs/CAR/EHP_Sept_2008_NRumsey.pdf) (PDF) from the original on 2012-03-30. Retrieved 2013-09-21.
11. Passchier J, Erdman J, Hammiche F, Erdman R (2006). "Androgenetic alopecia: stress of discovery". *Psychol Rep*. **98** (1): 226–8. doi:10.2466/PRO.98.1.226-228 (<https://doi.org/10.2466/PRO.98.1.226-228>). PMID 16673981 (<https://pubmed.ncbi.nlm.nih.gov/16673981>).
12. Poot F (2004). "[Psychological consequences of chronic hair diseases]". *Revue Médicale de Bruxelles*. **25** (4): A286–8. PMID 15516058 (<https://pubmed.ncbi.nlm.nih.gov/15516058>).
13. "Infectious hair disease – syphilis" (<http://www.keratin.com/aq/aq010.shtml>). Keratin.com. Retrieved 2011-11-17.
14. "Drug-Induced Hair Loss" (<http://www.webmd.com/skin-problems-and-treatments/hair-loss/drug-induced-hair-loss?page=2>). Archived (<https://web.archive.org/web/20130824215708/http://www.webmd.com/skin-problems-and-treatments/hair-loss/drug-induced-hair-loss?page=2>) from the original on 2013-08-24.
15. 'Drug Induced Hair Loss', American Hair Loss Association: "American Hair Loss Association - Drug Induced Hair Loss" (http://www.americanhairloss.org/drug_induced_hair_loss/). Archived (https://web.archive.org/web/20130921055101/http://www.americanhairloss.org/drug_induced_hair_loss/) from the original on 2013-09-21. Retrieved 2013-09-21.
16. Pappas P, Kauffman C, Perfect J, Johnson P, McKinsey D, Bamberger D, Hamill R, Sharkey P, Chapman S, Sobel J (1995). "Alopecia associated with fluconazole therapy". *Ann Intern Med*. **123** (5): 354–7. doi:10.7326/0003-4819-123-5-199509010-00006 (<https://doi.org/10.7326/0003-4819-123-5-199509010-00006>). PMID 7625624 (<https://pubmed.ncbi.nlm.nih.gov/7625624>).
17. "Alopecia: Causes" (<http://www.localhealth.com/article/alopecia/causes>). Better Medicine. Archived (<https://web.archive.org/web/20120323013815/http://www.localhealth.com/article/alopecia/causes>) from the original on 23 March 2012. Retrieved 28 March 2012.
18. "Drug-Induced Hair Loss" (<http://www.webmd.com/skin-problems-and-treatments/hair-loss/drug-induced-hair-loss>). Archived (<https://web.archive.org/web/20130726162053/http://www.webmd.com/skin-problems-and-treatments/hair-loss/drug-induced-hair-loss>) from the original on 2013-07-26.
19. Nnoruka E, Nnoruka N (October 2005). "Hair loss: is there a relationship with hair care practices in Nigeria?". *Int J Dermatol*. **44** (Suppl 1): 13–7. doi:10.1111/j.1365-4632.2005.02801.x (<https://doi.org/10.1111/j.1365-4632.2005.02801.x>). PMID 16187950 (<https://pubmed.ncbi.nlm.nih.gov/16187950>).

20. "Anagen Effluvium" (http://americanhairloss.org/women_hair_loss/causes_of_hair_loss.asp). Archived (https://web.archive.org/web/20100616025307/http://americanhairloss.org/women_hair_loss/causes_of_hair_loss.asp) from the original on 2010-06-16. Retrieved 2010-06-29.
21. SCHIFF, BENCEL L. (1963-05-01). "Study of Postpartum Alopecia". *Archives of Dermatology*. **87** (5): 609–11. doi:10.1001/archderm.1963.01590170067011 (<https://doi.org/10.1001%2Farchderm.1963.01590170067011>). ISSN 0003-987X (<https://www.worldcat.org/issn/0003-987X>). PMID 13991677 (<https://pubmed.ncbi.nlm.nih.gov/13991677>).
22. Eastham, John H (February 2001). "Postpartum Alopecia". *The Annals of Pharmacotherapy*. **35**: 255–258. doi:10.1345/1542-6270(2001)035<0255:pa>2.0.co;2 (<https://doi.org/10.1345%2F1542-6270%282001%29035%3C0255%3Apa%3E2.0.co%3B2>). ISSN 1060-0280 (<https://www.worldcat.org/issn/1060-0280>).
23. Alopecia Areata (<http://health.yahoo.com/beauty-treatment/alopecia-areata/healthwise--ug2838spec.html>) Archived (<https://web.archive.org/web/20081013064923/http://health.yahoo.com/beauty-treatment/alopecia-areata/healthwise--ug2838spec.html>) 2008-10-13 at the Wayback Machine, by Maria G. Essig, MS, ELS, Yahoo! Health
24. "Congenital triangular alopecia" (<http://www.keratin.com/af/af005.shtml>). Retrieved 2010-06-29.
25. "What is Alopecia: What Causes Alopecia?" (<http://www.medicalbug.com/what-is-alopecia-what-causes-alopecia/>). MedicalBug. 6 February 2012. Archived (<https://web.archive.org/web/20130122081220/http://www.medicalbug.com/what-is-alopecia-what-causes-alopecia/>) from the original on 22 January 2013. Retrieved 28 March 2012.
26. Yamada, T; Hara, K; Umematsu, H; Kadowaki, T (2013). "Male pattern baldness and its association with coronary heart disease: A meta-analysis" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3641488>). *BMJ Open*. **3** (4): e002537. doi:10.1136/bmjopen-2012-002537 (<https://doi.org/10.1136%2Fbmjopen-2012-002537>). PMC 3641488 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3641488>). PMID 23554099 (<https://pubmed.ncbi.nlm.nih.gov/23554099>). 
27. "The hair pull test" (<http://www.keratin.com/ab/ab017.shtml>). Keratin.com. Retrieved 28 March 2012.
28. Rudnicka L, Olszewska M, Rakowska A, Kowalska-Oledzka E, Slowinska M (2008). "Trichoscopy: a new method for diagnosing hair loss". *J Drugs Dermatol*. **7** (7): 651–654. PMID 18664157 (<https://pubmed.ncbi.nlm.nih.gov/18664157>).
29. Banka, N; Bunagan, MJ; Shapiro, J (January 2013). "Pattern hair loss in men: diagnosis and medical treatment". *Dermatologic Clinics*. **31** (1): 129–40. doi:10.1016/j.det.2012.08.003 (<https://doi.org/10.1016%2Fj.det.2012.08.003>). PMID 23159182 (<https://pubmed.ncbi.nlm.nih.gov/23159182>).
30. Rogers, Nicole E.; Avram, Marc R. (Oct 2008). "Medical treatments for male and female pattern hair loss". *Journal of the American Academy of Dermatology*. **59** (4): 547–566, quiz 567–568. doi:10.1016/j.jaad.2008.07.001 (<https://doi.org/10.1016%2Fj.jaad.2008.07.001>). ISSN 1097-6787 (<https://www.worldcat.org/issn/1097-6787>). PMID 18793935 (<https://pubmed.ncbi.nlm.nih.gov/18793935>).
31. Joly P (October 2006). "The use of methotrexate alone or in combination with low doses of oral corticosteroids in the treatment of alopecia totalis or universalis". *J Am Acad Dermatol*. **55** (4): 632–6. doi:10.1016/j.jaad.2005.09.010 (<https://doi.org/10.1016%2Fj.jaad.2005.09.010>). PMID 17010743 (<https://pubmed.ncbi.nlm.nih.gov/17010743>).
32. Shapiro, J (Dec 2013). "Current treatment of alopecia areata". *The Journal of Investigative Dermatology. Symposium Proceedings*. **16** (1): S42–4. doi:10.1038/jidsymp.2013.14 (<https://doi.org/10.1038%2Fjidsymp.2013.14>). PMID 24326551 (<https://pubmed.ncbi.nlm.nih.gov/24326551>).

33. 'Hair Transplants', WebMD: "Hair Transplant Procedures: Average Cost, What to Expect, and More" (<http://www.webmd.com/skin-problems-and-treatments/hair-loss/hair-transplants>). Archived (<https://web.archive.org/web/20130921061040/http://www.webmd.com/skin-problems-and-treatments/hair-loss/hair-transplants>) from the original on 2013-09-21. Retrieved 2013-09-21.
34. Grevelman, EG; Breed, WP (March 2005). "Prevention of chemotherapy-induced hair loss by scalp cooling". *Annals of Oncology*. **16** (3): 352–8. doi:10.1093/annonc/mdi088 (<https://doi.org/10.1093/annonc/mdi088>). PMID 15642703 (<https://pubmed.ncbi.nlm.nih.gov/15642703>).
35. Breed, WP (January 2004). "What is wrong with the 30-year-old practice of scalp cooling for the prevention of chemotherapy-induced hair loss?". *Supportive Care in Cancer*. **12** (1): 3–5. doi:10.1007/s00520-003-0551-8 (<https://doi.org/10.1007/s00520-003-0551-8>). PMID 14615930 (<https://pubmed.ncbi.nlm.nih.gov/14615930>).
36. Komen, MM; Smorenburg, CH; van den Hurk, CJ; Nortier, JW (2011). "[Scalp cooling for chemotherapy-induced alopecia]". *Nederlands Tijdschrift voor Geneeskunde*. **155** (45): A3768. PMID 22085565 (<https://pubmed.ncbi.nlm.nih.gov/22085565>).
37. Benedictus, Leo (February 2, 2013). "The 10 rules for bald men" (<https://www.theguardian.com/fashion/shortcuts/2013/feb/12/10-rules-bald-men-david-cameron>). *The Guardian*. ISSN 0261-3077 (<https://www.worldcat.org/issn/0261-3077>). Retrieved December 1, 2018.
38. Rockwell, Taylor (October 16, 2015). "The 20 Greatest Bald Heads in the History of Soccer" (<https://www.pastemagazine.com/articles/2015/10/the-20-greatest-bald-heads-in-the-history-of-socce.html>). *pastemagazine.com*. Retrieved December 1, 2018.
39. Blumeyer, A; Tosti, A; Messenger, A; Reygagne, P; Del Marmol, V; Spuls, PI; Trakatelli, M; Finner, A; Kiesewetter, F; Trüeb, R; Rzany, B; Blume-Peytavi, U; European Dermatology Forum, (EDF) (October 2011). "Evidence-based (S3) guideline for the treatment of androgenetic alopecia in women and in men". *Journal of the German Society of Dermatology*. 9 Suppl 6: S1–57. doi:10.1111/j.1610-0379.2011.07802.x (<https://doi.org/10.1111/j.1610-0379.2011.07802.x>). PMID 21980982 (<https://pubmed.ncbi.nlm.nih.gov/21980982>).
40. Panda, H (2004). *Handbook on Ayurvedic Medicines with Formulae, Processes and Their Uses* (<https://books.google.com/books?id=64s1LkjmPmQC&lpg=PA146&dq=roghan%20baiza%20murgh&pg=PA146#v=onepage&q=roghan%20baiza%20murgh&f=false>). ISBN 9788186623633. Archived (<https://web.archive.org/web/20160516105009/https://books.google.com/books?id=64s1LkjmPmQC&lpg=PA146&dq=roghan%20baiza%20murgh&pg=PA146#v=onepage&q=roghan%20baiza%20murgh&f=false>) from the original on 2016-05-16.
41. Suresh Babu, S (2002-01-01). *Home Made Herbal Cosmetics* (<https://books.google.com/books?id=Y8s9suG-P7EC&lpg=PA103&dq=roghan%20baiza%20murgh&pg=PA103#v=onepage&q&f=false>). ISBN 9788122307757. Archived (<https://web.archive.org/web/20160610020922/https://books.google.com/books?id=Y8s9suG-P7EC&lpg=PA103&dq=roghan%20baiza%20murgh&pg=PA103#v=onepage&q&f=false>) from the original on 2016-06-10.
42. Zhou, Zhongying; Jin, Hui De (1997). *Clinical Manual of Chinese Herbal Medicine and Acupuncture* (<https://books.google.com/books?id=JaFIATxmduUC&lpg=PA222&dq=%22egg%20yolk%20oil%22%20skin&pg=PA222#v=onepage&q=%22egg%20yolk%20oil%22%20skin&f=false>). ISBN 978-0-443-05128-9.
43. Rebora A (1 July 2001). "Baldness and coronary artery disease: the dermatologic point of view of a controversial issue". *Arch Dermatol*. **137** (7): 943–7. PMID 11453815 (<https://pubmed.ncbi.nlm.nih.gov/11453815>).

44. Asian men who smoke may have increased risk for hair loss (http://www.eurekalert.org/pub_releases/2007-11/jaaj-amw111507.php) Archived (https://web.archive.org/web/20140530052250/http://www.eurekalert.org/pub_releases/2007-11/jaaj-amw111507.php) 2014-05-30 at the [Wayback Machine](#)
Su LH, Chen TH (November 2007). "Association of androgenetic alopecia with smoking and its prevalence among Asian men: a community-based survey". *Arch Dermatol*. **143** (11): 1401–6. doi:10.1001/archderm.143.11.1401 (<https://doi.org/10.1001%2Farchderm.143.11.1401>). PMID 18025364 (<https://pubmed.ncbi.nlm.nih.gov/18025364>).
45. Lei M, Chuong CM (2016). "STEM CELLS. Aging, alopecia, and stem cells". *Science*. **351** (6273): 559–60. Bibcode:2016Sci...351..559L (<https://ui.adsabs.harvard.edu/abs/2016Sci...351..559L>). doi:10.1126/science.aaf1635 (<https://doi.org/10.1126%2Fscience.aaf1635>). PMID 26912687 (<https://pubmed.ncbi.nlm.nih.gov/26912687>).
46. Matsumura H, Mohri Y, Binh NT, Morinaga H, Fukuda M, Ito M, Kurata S, Hoeijmakers J, Nishimura EK (2016). "Hair follicle aging is driven by transepidermal elimination of stem cells via COL17A1 proteolysis". *Science*. **351** (6273): aad4395. doi:10.1126/science.aad4395 (<https://doi.org/10.1126%2Fscience.aad4395>). PMID 26912707 (<https://pubmed.ncbi.nlm.nih.gov/26912707>).
47. Harper, Douglas. "Entry for \"bald\" " (<http://www.etymonline.com/index.php?term=bald>). *Online Etymology Dictionary*. Archived (<https://web.archive.org/web/20060509074629/http://www.etymonline.com/index.php?term=bald>) from the original on 2006-05-09. Retrieved 2006-12-07.

External links

- Hair loss (https://curlie.org/Health/Conditions_and_Diseases/Skin_Disorders/Hair_Loss/) at Curlie
- Media related to Alopecia at Wikimedia Commons
- The dictionary definition of *hair loss* at Wiktionary

Classification	ICD-10: L65.9 (http://apps.who.int/classifications/icd10/browse/2016/en#/L65.9) • ICD-9-CM: 704.09 (http://www.icd9data.com/getICD9Code.ashx?icd9=704.09) • MeSH: D000505 (https://www.nlm.nih.gov/cgi/mesh/2015/MB_cgi?field=uid&term=D000505) • DiseasesDB: 14765 (http://www.diseasesdatabase.com/ddb14765.htm)
External resources	MedlinePlus: 003246 (https://www.nlm.nih.gov/medli)

Retrieved from "https://en.wikipedia.org/w/index.php?title=Hair_loss&oldid=929391479"

This page was last edited on 5 December 2019, at 14:55 (UTC).

Text is available under the [Creative Commons Attribution-ShareAlike License](#); additional terms may apply. By using this site, you agree to the [Terms of Use](#) and [Privacy Policy](#). Wikipedia® is a registered trademark of the [Wikimedia Foundation, Inc.](#), a non-profit organization.