

THE 2015 TOP 10

WAYS TO SLOW, STOP OR REVERSE MALE PATTERN HAIR LOSS

Disclaimer: This document provides medical information of a general nature for the purposes of education. It should not be taken as specific individual medical advice as this cannot be supplied without a consultation and adjustments to suit an individual's own medical status. Seek medical advice specific to you before embarking on a hair maintenance programme.

It's been said that there has never been a better time to be losing your hair. And that remains true in 2015. The established treatments (finasteride, dutasteride, minoxidil and ketoconazole) remain available. The fringe treatments of skin needling and red light laser and LED therapy now have a solid body of clinical data behind them and an evidence base on how to get the best results. Also new lines of treatment using prostaglandins, peptides, growth factors and stem cells are close to emerging over the horizon.

Being bald can have a certain macho chic. And a confident, outgoing manner totally overshadows any impression anyone may make from how much hair a guy has on his head. On the other hand first impressions count and a bald man is generally labeled as older, less healthy and often less sexually attractive than a similar man with a full head of hair.

In the USA and UK it is said that few bald men have been elected to a major office (and none have made president) since the arrival of television. The US Vice President (Joe Biden) is open about having once had a hair transplant.

Read on if you want to look at what medical hair loss treatment can do for you

YOUR OPTIONS FOR TREATMENT

If you're not yet ready to be another guy with a thin number one cut then your options are:

1. Hair transplant at \$5000-\$15000. Rapid results (it takes six months for the transplanted hair to recover and grow) but a permanent scar at the back of your head which is visible if you shave your head. The transplant fills in the gaps between your current hair follicles so to maintain results as time goes on you need to use medical treatment or undergo further transplant procedures. In New Zealand I recommend Russell Knudsen at www.treathairloss.co.nz.
2. Coverups and wig systems costing up to \$5200. This is the membrane system that Martin Crowe promotes for Ashley & Martin. If this is the answer for you then I recommend that you see Jo Muru at www.kiwihair.co.nz for caring, reasonably priced service that I think is the best quality that you will get in NZ.
3. Medical treatment. This is the only solution aimed at treating the actual hair loss condition..

MEDICAL TREATMENT WORKS

Scientifically proven, effective treatment is available. Studies show that a combination treatment will at least slow down your hair loss. And for greater than 90% of guys hair loss stops and they regrow some hair, more than with any single treatment. Regularly using a properly organised treatment regime will give better results than stopping and starting this or that treatment for short periods of time.

How much regrowth? This varies from person to person but studies have shown results in the range of 5-10% up to as much as 120% more hair.

IT'S NOT A NINE MONTH COURSE OF TREATMENT IT'S LONG TERM HAIR CARE

Treating hair loss involves three things:

1. Stop doing all the things that are causing the hair loss.
2. Take specific treatment directed to the cause or causes of your hair loss.
3. Take other measures that are known to improve the condition of your hair.

Male Pattern Hair Loss (MPHL) occurs as a result damage to hair follicles due to inflammation triggered by exposure to the hormone Dihydrotestosterone (DHT). DHT is derived from testosterone and we all have some DHT in our systems. If the system is working normally hormone levels are normal and no hair loss occurs.

Most cases of MPHL (and Female Pattern Hair Loss) are probably due to diet⁽¹⁴⁾. Modern diets full of processed carbohydrates cause a rise in DHT levels. It is called the endocrine effect of food. How?

1. High processed carbohydrate intake leads to a rapid rise in blood glucose.

2. The pancreas responds by pumping out insulin in order to force the muscle and fat cells to suck that glucose out of the blood.
3. Insulin also causes a brief surge in free testosterone levels in the blood. It does this suppressing the testosterone carrier protein Sex Hormone Binding Globulin.
4. That excess free testosterone is rapidly converted to DHT.
5. DHT causes male and female pattern hair loss, acne and the growth of excess facial and body hair (in men and women). We all vary in which effects we are susceptible to as well as how severely we are affected. DHT's effect on the hair follicle occurs as a result of the inflammation it provokes.
6. DHT is not the only cause of inflammation and damage to hair follicles. The effects of nutrient deficiencies or the stress hormone cortisol also impact.
7. The body has a capacity to fight damage to the hair follicles and to repair existing damage.
8. Some hair loss treatments work through mechanisms that do not involve DHT. These include skin needling, light therapy and minoxidil.
9. The severity and speed of hair loss depends on the balance of the effects listed above as 5,6,7 and 8.

The sebaceous glands in the face are easy to switch off and on so acne responds rapidly to avoidance of the processed carbs. Hair follicles on the scalp switch off easily but are much harder to switch back on again with a simple dietary change, maybe impossible.

Currently MPHL and FPHL need to be considered chronic conditions. There is no current cure, only maintenance and slow regrowth. Treatment needs to be long term. And if you stop treatment you go back to losing your hair. Its not like a course of antibiotics but more like being on a blood pressure tablet.

Think about hair loss treatment as like brushing your teeth or showering every day. These are things that no-one did 100 years ago but we now do it for our health and appearance's sake. And we shave, dye our hair, wear nice clothes, apply fake tan, use sunscreen and go to the gym. So it's not that big a deal to also take some hair loss treatment.

Treatment of MPHL can be categorised into four classes:

1. Block the mechanism by which MPHL occurs. This includes finasteride (or dutasteride) and ketoconazole drug treatment, controlling the glycaemic index of your diet, normalising body fat and avoiding anabolic supplements.
2. Stop doing other things that are bad for your hair like smoking or following a low protein diet.
3. Doing other things which promote hair growth like topical minoxidil, red light therapy, skin needling and taking supplements which promote hair growth.
4. Considering cosmetic treatments like keratin fibres and thickening products.

The Top 10 treatments are:

1. DON'T SMOKE or stop if you do.

Smokers lose hair faster and go grey quicker than nonsmokers. Fact. You are pretty much wasting your time treating hair loss if you continue to smoke.

I know, it's been fun and everything, but you know you need to stop one day:

- Smoking bad for your health.
- Smoking makes you lose your hair faster
- After the age of 30 smoking makes you look older.
- Men and women who lose their hair are at increased risk of sudden death from heart attack, a risk that is increased still further by smoking.

There is no single way to quit that works for everyone. Keep trying until you find the one that works for you:

- Stop cold turkey.
- You can cut down then stop cold turkey.
- Substitute nicotine gum, patches, lozenges, sprays or ecigarettes for cigarettes and then wean off those. Free nicotine replacement is available via your own GP or QUITLINE 0800 778 778.
- Some people quit with the help of hypnosis or acupuncture.
- Your GP may be able to prescribe medication to help you quit.
- Some people get inspiration from reading Allan Carr's "Easy Way to Stop Smoking" available from major bookshops. He says that you are not really addicted to smoking, you just think that you are. He changes the way that you think about smoking so that you no longer want a cigarette.

We are all different and, whether you stop first try or take a few goes, one of these methods will work you.

2. TRY FINASTERIDE OR DUTASTERIDE

These are prescription medicines (in tablet form). They are the most effective proven hair loss remedies. You definitely should consider making one of these drugs part of your hair loss treatment regimen as they suppress DHT levels (ie directly target the mechanism of MPHL). Most men have mediocre results treating their hair loss without one or other of these medications.

The herbal alternative Saw Palmetto just does not pack the punch of the drugs and will not work as an alternative. It can help as an additional treatment but is not strong enough on its own.

EVOLUTION OF KNOWLEDGE ON MPHL

It was the ancient Greek doctor Hippocrates who first documented that eunuchs do not lose their hair if they are castrated before hair loss starts. Interestingly, he also noticed that eunuchs who are castrated after they start to lose their hair kept losing it.

That was about it until the 1930s when the American Dr O'Tar Norwood (of the Hamilton-Norwood scale) demonstrated that MPHL was due to the effects of the hormone testosterone which is produced in the testicles.

Dr Norwood was a medical doctor at a psychiatric hospital. In those days castration was about the most effective treatment for schizophrenia in men. He noticed that while all of his castrated patients had good hair many of their brothers were bald.

He gave testosterone injections to some of his castrated psychiatric patients and then watched to see if they went bald. They did.

Further knowledge was gained with the discovery of a family in Central America in which all men are born partial hermaphrodites and never go bald. If you have studied any anthropology or human biology at university you will have heard about this family as the cause was traced to a single nucleotide polymorphism (a SNP) in one woman many years ago.

This famous family is born without a functioning enzyme 5 alpha reductase (5AR) which converts testosterone to DHT. DHT is important for normal male sexual development before birth and is the major trigger for puberty. After puberty DHT is the cause of baldness, acne and the growth of excess body hair.

Not all DHT is from natural sources. In athletes the conversion of injected anabolic steroids and testosterone to DHT is why so many become bald, pimply or hairy.

A detailed mechanism by which DHT causes hair loss is not known but DHT triggers inflammation around a follicular unit. A follicular unit is a group of 2,3 or 4 hair follicles which share the same arrector pilae muscle, the muscle which raises hair in cold weather and gives you goose bumps.

The inflammation causes the follicles to shrink with scarring. The growing hairs become finer and finer. One by one the follicles stop growing hair and shrink to tiny nubbins surrounded by shiny scar tissue. One day we may be able to resurrect all of these follicles but today we can, at best, resurrect some of those that have switched off in the last three years.

USING FINASTERIDE TO REDUCE DHT

Finasteride blocks the Type 2 form of the enzyme 5 alpha reductase in the scalp and prostate. As a result less testosterone is converted into DHT which means less prostate enlargement in older men and slowing, stabilisation or reversal of MPHL.

And the results? Studies show that 90% of men taking 1mg finasteride a day stop losing their hair and 65% regrow some hair with finasteride alone⁽¹⁵⁾. In my experience younger men do better with finasteride, older men usually need additional treatment.

Over time hair average hair counts increased by:

- 6.2% at 2 years
- 8.5% at 3 years

www.hairdoctor.co.nz

- 7.2% at 4 years
- 4.3% at 5 years⁽¹⁵⁾

But hair count is not everything. Hair thickness is also important and this is the strength of finasteride. Reduced DHT means reduced inflammation around the affected hair follicles. This means those follicles can re-expand and the hair can thicken.

Over time average hair weight increased by:

- 20.4% at 1 year
- 21.5% at 2 years
- 19.5% at 3 years
- 21.6% at 4 years⁽¹⁵⁾

And what happened to the placebo group in this trial, the ones taking the inactive pills not containing finasteride. At 4 years their average hair count had declined by 13.0% and their average hair weight had decreased by 24.5%.

These are average results which of course means that 50% of the men in the trial had below average results but you cannot quibble with an average hair weight increase of 19.5% on finasteride vs an average decrease of 24.5% off finasteride.

This means that at the end of four years the finasteride group had, on average, 46% more hair than the placebo group.

Finasteride's advantages are:

1. It has the best body of scientific evidence confirming its effectiveness out of all of the hair loss treatments.
2. It targets the major mechanism of MPHL. It is very difficult to get a result of stopping further loss or regrowing hair without it.
3. It is now fairly inexpensive.
4. Side effects do occur but they are not common and they can be managed (see below).

FINASTERIDE VERSUS DUTASTERIDE

What is the difference between finasteride and dutasteride? Basically finasteride is the original inhibitor of 5AR Type 2. Dutasteride is newer and stronger because it inhibits both Type 1 and Type 2 5AR.

There are two varieties of the 5AR enzyme, Type 1 and Type 2.

- Type 1 is present in all skin and in the prostate.
- Type 2 is only present in the prostate and the part of the scalp affected by male pattern hair loss.

DOSAGE OF FINASTERIDE OR DUTASTERIDE	AVERAGE CHANGE IN HAIR AT 12 WEEKS	AVERAGE CHANGE IN HAIR AT 24 WEEKS
PLACEBO	MINUS 2.9%	MINUS 3.5%
FINASTERIDE 1MG	PLUS 5.8%	PLUS 8.4%
DUTASTERIDE 0.5MG	PLUS 7.3%	PLUS 10.2%

- Finasteride inhibits only Type 2 5AR and lowers scalp DHT levels by 60%.
- Dutasteride inhibits both Type 1 and Type 2 5AR and reduces scalp DHT by over 90%.

Studies show that dutasteride 0.5mg a day is more effective than finasteride 1mg a day⁽⁹⁾. The following table summarises the findings of a major study in a group of guys whose average age was 36:

The big messages to get from this table are:

1. These treatments work. They not only halt hair loss in the majority of guys but give regrowth of the order of 5-10% a year.
2. Don't procrastinate! The sooner you start the better. Regrowth of 5-10% a year at an early stage is going to be better than 5-10% of a head with only a few sparse hairs growing out of it.

SIDE EFFECTS

Studies show that side effects occur in about 2% of men. Side effects are almost unheard of in women. The most common side effects are the sexual dysfunction; reduced libido, reduced semen volume and possible erectile dysfunction as well as a mild depressed mood. In my experience it is more like 10-15%. That means 85-90% of men get no side effects. Of those that do:

1. Some find that the side effects go away over time as the body adjusts.
2. Some find that taking their finasteride 1mg or 1.25mg every second day or even twice a week, while a little less effective, gives an acceptable balance between side effects and therapeutic effect.
3. Some men cannot tolerate the side effects and need to stop. Because of it's short half life finasteride is cleared from the body in 2 or 3 days and the side effects subside.

PRODUCT INSERT Side Effects From Propecia Package Insert: "Like all prescription products, PROPECIA may cause side effects. In clinical studies, side effects from PROPECIA were uncommon and did not affect most men. A small number of men experienced certain sexual side effects. These men reported one or more of the following: less desire for sex; difficulty in achieving an erection; and, a decrease in the amount of semen. Each of these side effects occurred in less than 2% of men. These side effects went away in men who stopped taking PROPECIA. They also disappeared in most men who continued taking PROPECIA. In general use, the following have been reported: allergic reactions including rash, itching, hives and swelling of the lips and face; problems with ejaculation; breast tenderness and enlargement; and testicular pain. You should promptly report to your doctor any changes in your breasts such as lumps, pain or nipple discharge. Tell your doctor promptly about these or any other unusual side effects."

Breast issues are said to occur in 1 in 500 users with the first sign usually breast tenderness, progressing to growth of great tissue in one or both breasts. Some men are more prone to this side effect because of their high level of the enzyme aromatase which converts testosterone to oestrogen. In fact some men get this problem despite never taking any medication. If finasteride blocks the

conversion of testosterone to DHT then there is more available to convert to oestrogen. Stopping the drug quickly usually settles this side effect but an operation may be necessary.

In clinical studies the side effects from dutasteride have been slightly less common than with finasteride. However dutasteride stays in the system much longer than finasteride. Any sexual dysfunction will fade away after 3 days off finasteride but it can take six months for dutasteride to leave the body fully.

Long Term Side Effects

Finasteride has been in use since the early 1990s and has been used by some 30 million men and a much smaller number of women.

In that time there has been close monitoring looking for any long term side effects, in particular at risk of prostate cancer. Finasteride and dutasteride decrease the PSA blood test by 50%. This can make it harder to pick up prostate cancer which is usually discovered by an elevated PSA level.

Long term studies initially showed a reduction in the incidence of mild and moderate prostate cancer with the use of finasteride and dutasteride but a question was initially raised that the rate of severe prostate cancer may be increased. Follow up studies have shown that finasteride and dutasteride reduce the rate of all prostate cancer.

This is what you would expect for a cancer dependent on DHT. No other long term side effects have been found.

Finasteride decreases PSA blood levels by 50%.

You and your doctor need to be aware of this if you are having prostate cancer screening PSA blood tests.

Permanent Side Effects

In the USA some men have complained of permanent sexual side effects from finasteride. They responded to a request for respondents at the website www.propeciahelp.com. These men all report the onset of side effects after some time on finasteride which did not go away after stopping. As a result of these reports the US and Canadian package inserts for finasteride now state that "side effects include libido disorders, ejaculation disorders, and orgasm disorders that continued after discontinuation of the drug."

The general medical consensus is that these men do indeed have sexual dysfunction but that finasteride is not the cause. The reasons are:

1. The only data on these men is questionnaires. They have not seen a doctor or been checked out for other causes of sexual dysfunction. In particular smoking, depression, genetic and hormonal issues, vascular disease or diabetes.
2. Over 10 million men have taken finasteride, often for many years, since the early 1990s. Reports of sexual dysfunction have been reported in around 200 men since about 2009.

3. Sexual dysfunction is not uncommon in men. It is well known that 40% of 40 year olds and 80% of 80 year olds have some degree of sexual dysfunction. What is less well known is that it occurs in 10% of 20 year olds. As men go through their 20s and 30s many will develop sexual dysfunction, usually because of lifestyle. Some of those men will happen to be taking finasteride.

The danger to the reader who happens to be on finasteride is psychological. We can all have a bad day or night from time to time with regards to sexual function. You could then develop a concern over finasteride and the next time you are performing the anxiety of the situation can mean a repeat of poor performance and now you do have a problem.

Use of finasteride when trying to conceive or during a pregnancy.

It is known that the hormone DHT is necessary for normal male sexual development before birth. In Guatemala there is a family who genetically lack the 5AR enzyme and do not produce DHT. They all have great hair but every male is born with part male/part female genitals.

The question is whether or not this can happen with finasteride or dutasteride. As you can imagine men have conceived while taking finasteride and there have been no problems. However finasteride taken by pregnant women or absorbed through the skin of pregnant women (if they touch broken tablets) would cause birth defects. Is it possible to transmit this from father to mother? Limited studies have been done and the results suggest that the dose in semen or saliva is too low to cause any abnormalities. It has been calculated that the volume of semen required to deliver a dangerous dose of finasteride from male to female during pregnancy would be three litres a day.

BUT until finasteride has been taken by millions of fathers during pregnancy you cannot say that there is definitely no risk. All evidence suggests you should be fine but think about this - genital abnormalities can happen in any pregnancy. Would you blame yourself if your male child happened to be the one who got one, even if the finasteride had nothing to do with it? Would your partner? The answer to these questions will determine whether you are happy to go ahead with finasteride during conceiving or pregnancy. But from a medical point of view you are fine.

PRODUCT INSERT: "Exposure to finasteride: risk to male foetus:

There is a theoretical, although highly unlikely, risk for birth defects of a male fetus's sex organs if the couple has intercourse during the stage of pregnancy when the sex organs are developing (8 to 15 weeks of gestation). However, the amount of the drug found in the semen is very small and is not felt to be enough to harm a male baby." A small amount of finasteride, less than 0.001% of the 1 mg dose per ejaculation, has been detected in the seminal fluid of men taking 'Propecia'. Studies in Rhesus monkeys have indicated that this amount is unlikely to constitute a risk to the developing male foetus (see Section 5.3).

During continual collection of adverse experiences, post-marketing reports of exposure to finasteride during pregnancy via semen of men taking 1 mg or higher doses have been received for eight live

male births, and one retrospectively-reported case concerned an infant with simple hypospadias. Causality cannot be assessed on the basis of this single retrospective report and hypospadias is a relatively common congenital anomaly with an incidence ranging from 0.8 to 8 per 1000 live male births. In addition, a further nine live male births occurred during clinical trials following exposure to finasteride via semen, during pregnancy, and no congenital anomalies have been reported.

Crushed or broken tablets of 'Propecia' should not be handled by women when they are or may potentially be pregnant because of the possibility of absorption of finasteride and the subsequent potential risk to a male foetus. 'Propecia' tablets are coated to prevent contact with the active ingredient during normal handling, provided that the tablets are not broken or crushed."

Topical finasteride

It is possible for a pharmacist to make up a topical finasteride in 5% minoxidil solution for those who cannot tolerate the tablets. Side effects are still possible but less common and less severe with topical liquid. Studies are limited but topical finasteride is likely 75-90% as effective as tablets.

Until recently it was possible to import topical finasteride in an excellent formulation from the USA. The FDA has closed down the suppliers and in fact is prosecuting Dr Lee in Los Angeles. A drug company produced topical finasteride is due on the market soon.

3. USE TOPICAL MINOXIDIL

A Pharmacy Only lotion applied to the scalp twice a day.



The Simpsons episode where Homer uses "Dimoxinil"

Minoxidil. The bottom line - it's a hassle and it will take you a while to get the hang of applying an even layer over the MPHL area. And not only that, the results when used alone are not very startling. But, used in combination with finasteride it gives results better than either used alone⁽³⁾.

Finasteride and minoxidil are the only medically registered (and FDA approved) proven treatments for hair loss. Many doctors will simply recommend these two treatments and stop there.

First marketed as Rogaine and Regaine minoxidil comes in either as 2% standard solution or 5% extra strength. There is a new 5% foam formulation which is as effective as liquid when it is applied to the scalp but not as cosmetically awkward as the liquid. But, because it is easy to waste it on the hair rather than the scalp, it may not do as good a job.

HOW IT WORKS

Minoxidil works by reawakening dormant hair follicles and causing very fine pale hairs (vellus hairs) to thicken and darken into proper (terminal) scalp hairs. Studies show that hair weight and hair count increases by between 18-50% after six months of treatment with 5% minoxidil and then stabilise. These effects occur over 6-12 months and then stabilise.

Unfortunately the visible results are not as spectacular as these numbers suggest. The growing follicles are still subject to the miniaturising effects of the hormone DHT so the hair is often fine and light. Women tend to do better than men with minoxidil as they have lower levels of DHT in the scalp.

The combination of topical minoxidil to reactivate dormant follicles with finasteride to reactivate even more follicles and allow the follicles to expand by decreasing DHT levels is the most powerful medical duo.

DOES MINOXIDIL ONLY WORK ON THE CROWN?

There are two misconceptions about topical minoxidil. The first is that it only works on the crown. Minoxidil works wherever on the body it is applied. In the 1990s one New Zealand company exported a minoxidil product to Japan where it was used by some men to grow chest hair. What brought about this rumour was the FDA response to the first clinical trials of minoxidil (Rogaine).

Trials of 2% minoxidil and later 5% minoxidil were performed on men and the measurements and before and after photos were only performed on the crown for simplicity's sake. The Food and Drug Administration then decided to only allow Romaine and Regaine to be marketed as working on the crown. It works wherever it is applied. After using topical minoxidil be careful to wash your hands as it will promote hair growth on the back of the hands.

The second misconception is whether 5% minoxidil can be used on women. The answer is yes. The higher dose is more effective but there is also an increased incidence of the main side effect. In a small percentage of women, commonly South Asian, hair growth can occur on the side of the face or forehead, even with careful use⁽¹⁶⁾.

OTHER FORMS OF MINOXIDIL

It is possible to have a compounding pharmacist mix a 7%, 10% or 15% solution as well as combine minoxidil with retinoic or azelaic acid to make it more effective. These options can be quite pricey, \$150-\$200 a month compared to \$40-85 for 5% minoxidil alone. Ashley and Martin in particular supply the 7% minoxidil with retinoic acid. It is a point of difference which can be useful from a

www.hairdoctor.co.nz

marketing point of view but there is no medical evidence that it is any better than the 5%. My own preference is the addition of the DHT blocking compound azelaic acid to 5% minoxidil.

A few years ago it was possible to by 15% minoxidil with added finasteride from the USA but the FDA has shut down the doctors and pharmacists involved. The word is that a drug company has one on the way. Efforts to replicate the quality of 155 topical minoxidil with finasteride in NZ have been unsuccessful.

Another option to increase the efficacy of minoxidil is to use a needle roller just before application. Needle rollers can increase the absorption of minoxidil by about four times (ie 5% becomes the equivalent of about 20% minoxidil) and one roller will last at least six months.

SIDE EFFECTS

Side effects are related to either a skin reaction to the alcohol base of the liquid or to overdose of minoxidil. In tablet form minoxidil strongly lowers blood pressure so overdose can affect the heart. One guy successfully committed suicide by drinking a whole lot of minoxidil 5% and another was admitted to hospital with palpitations after using too much minoxidil on his body. Side effects are rare in men at standard doses but some people can get dizziness from low blood pressure or palpitations.

Do not let your cat lick minoxidil solution as minoxidil is toxic to cats.

4. USE 2% KETOCONAZOLE SHAMPOO as your daily shampoo.

Ketoconazole is the active ingredient in Nizoral and Sebizole shampoo. It is an antifungal and used to treat the Malassezia fungus which is the cause of dandruff. Studies have shown that it also grows hair because it just happens to block the DHT receptor in the hair follicle.

The same study that rated finasteride plus minoxidil as number one hair loss treatment had the following results⁽³⁾:

BEST	Finasteride + Minoxidil
2ND	Finasteride + Ketoconazole
3RD	Finasteride alone
4TH	Minoxidil + Ketoconazole
5TH	Minoxidil alone
6TH	Ketoconazole alone

The combination of finasteride, minoxidil and ketoconazole was not tested which is a shame but you can deduce from the above data that it would have had the best results.

The ketoconazole 2% strength available only at chemists is more effective than the 1% strength you can get at the supermarket. If you look at the bottle you will see that the dandruff dose is twice a week. For hair loss the ideal dose to use it every time you wash your hair, ideally every day.

Other antidandruff shampoos containing zinc pyrithione have also been shown to have slow hair loss but not as well as ketoconazole and only if you are not already on minoxidil. Zinc and minoxidil clump together and both treatments are inactivated. There has been no positive effect on hair loss shown from selenium sulphide containing shampoos such as Selsun.

5. CONSIDER HERBAL, MINERAL AND VITAMIN TREATMENTS

To be honest the science around this area is not as strong as it is with drug treatment but there is reasonable evidence to support the use of some supplements⁽¹²⁾. There are various blends available worldwide combining different supplements for which there is some evidence or theoretical chance of positive effect.

BENEFICIAL SUPPLEMENTS

The supplements I think provide useful benefit in MPHL and FPHL are:

- Herbal - Saw palmetto (at least 45% extract)
- Herbal - Beta sitosterol
- Herbal - Pygeum africanum
- Mineral - Zinc
- Mineral - Silica
- Mineral - Manganese
- Mineral - Iodine
- Vitamin - B6
- Vitamin - Biotin
- Vitamin - Niacin
- Vitamin - Pantothenic Acid
- Vitamin - B12
- Vitamin - Folate or folic acid
- Vitamin - PABA
- Vitamin - Tocotrienols
- Amino Acid - Cysteine
- Amino Acid - Taurine
- Fish protein and carbohydrate extract

Each of these ingredients has some modest degree of evidence to support it. By combining them it is possible to generate a noticeable change in the hair.⁽¹²⁾

AVOID SUPPLEMENTS WHICH HARM YOUR HAIR

Some supplements worsen MPHL. The most common is whey protein which causes insulin spikes (and therefore DHT spikes). If you want to take a protein supplement use pea protein.

Creatinine was shown to raise blood DHT levels by 50% when tested on South African rugby players.

It should be obvious that testosterone boosters like tribulus or horny goat weed are to be avoided. And selenium overdose has caused hair loss in the USA.

Excessive selenium intake has led to hair loss in the USA. While not strictly a supplement mercury from deep sea predator fish like swordfish and tuna can lead to hair loss.

www.hairdoctor.co.nz

OTHER SUPPLEMENTS?

There are a large number of herbal remedies and plant and algae extracts that have been shown to have a n effect on the hair follicle either in the laboratory or clinically. Some have even been shown to be as effective as 2% minoxidil (the lowest bar of effectiveness).⁽¹³⁾ If you would like to try something else along these lines then try it. But don't give up on the proven remedies while you give an untested remedy a go. It is better to add in your new therapy as an extra than to try to regain the ground you have lost if the new therapy does not work very effectively.

6. CONTROL YOUR INSULIN LEVELS AND CONTROL DHT. EAT TO SAVE YOUR HAIR (and maybe your life).

There are three good reasons why you should take control of your diet:

- Controlling insulin levels through controlling the glycaemic index of your food will reduce DHT levels and therefore slow hair loss.
- A healthy diet low in processed carbohydrates and packed with fresh vegetables is good for all of us.
- Guys who lose their hair have more heart attacks and strokes than guys with a full head of hair. Their bodies are less able than others to take the strain of the modern diet with its abundance of processed carbs. The resulting high insulin levels cause hair loss, weight gain, gout, high blood pressure and an early death from a heart attack or stroke. Avoiding this sequence of events may save your life. My own best friend at school was one of those guys who lost his hair in his late teens (there was not much in the way of treatment in the 80s). He got fat, smoked and died of a heart attack at 36. Don't let it happen to you.

CONTROL DHT BY CONTROLLING GI

You must eat to keep blood glucose levels stable. No blood glucose surge means no insulin spike and no DHT spike (see page one of this report). The measure of how quickly different foods raise blood glucose levels is the Glycaemic Index (GI). Avoid high GI foods. So what foods to avoid? Basically processed carbohydrates. Follow this advice:

- don't overeat. An intake of too many calories raises insulin levels.
- avoid sugar obviously as well as honey, molasses, golden syrup, coconut sugar
- avoid all potatoes and kumara. Maori potatoes (those little purple ones) are OK
- avoid corn, sweetcorn, parsnips and beetroot
- avoid all bread except for wholegrain bread such as Vogels
- avoid all rice and rice flour products except for brown rice
- avoid snack treats like potato chips, corn chips, popcorn and pretzels

- avoid modern, high sugar and low fibre fruit varieties like navel oranges, seedless grapes, modern apples varieties like Gala, Jazz and Pink Lady as well as ripe bananas, pineapples and raisins
- avoid most breakfast cereals (especially Weet Bix). It is OK to eat Special K, bran, porridge and most muesli (but watch the sugar content).

So what can you eat?

- good carbohydrate choices are brown rice, quinoa and amaranth
- eat more salads and any fruit and vegetables that are not listed above
- fish, some meat, egg and cheese

Making this change is hard. Our planet is not geared up to provide everyone with this diet and it is hard to find this food easily in our shops.

Those that have the most success in making the change are those that decide to go low carb. Some people go Paleo. However you decide to implement the changes good luck

7. YOUR ABDOMEN IS ACCELERATING YOUR HAIR LOSS

That fat bald guy is a stereotype. This guy's biochemistry has been ravaged by the modern food industry in three ways:

1. He has elevated insulin levels from processed carbs. This directly elevates his DHT levels and he loses his hair.
2. Too much insulin forces his abdominal fat cells to suck in nutrients and expand. As they get bigger they interfere with normal insulin function, a situation known as insulin resistance. His pancreas then has to crank out more insulin in order to bring down glucose levels. More insulin means more DHT and less hair.
3. Those chronically high insulin levels cause a myriad of damage through the body, most seriously to the heart.

That fat bald guy is at high risk of dropping dead of a heart attack, maybe as young as his thirties.

8. RED LIGHT THERAPY

Red light therapy and Skin Needling are the two treatment modalities which have advanced from haphazard therapy with variable success to proven medical therapy since the year 2000. The rise of Chinese manufacturing has led to the availability of cheap quality materials. This has meant the ready availability of devices with which to advance medical science.

Red light therapy, whether delivered by laser or LED is no longer alternative but mainstream. However medical science has shown that not just any red light is beneficial. The wavelength needs to be somewhere in the range of

www.hairdoctor.co.nz

630-680 nanometers and the dose of red light needs to be in the correct range. Both too much and too little red light will give poor results.

There have been proper peer reviewed randomised, placebo controlled trials on only three devices for hair growth:

1. HairMax Laser Comb - 128 men, 148 women. Placebo group grew 3% more hair, treatment group grew 13% more hair.
2. Oaze Laser/LED Helmet - 26 men 14 women. Placebo group lost 2% hair, treatment group grew 17% more hair.
3. iGrow Laser/LED Helmet. 41 men in male study. Placebo group grew 32% more hair, treatment group grew 67% more hair (39% more than placebo). 42 women in female study. Placebo group grew 11% more hair, treatment group grew 48% more hair (37% more than placebo).

The results support the use of the iGrow helmet. The cost is \$NZ850 or \$US700. The time investment is 25 minutes every second day. The above results were seen after four months.

Some people feel some itch or headache when they start using red light therapy but no other side effects have been noted. Light therapy is a legitimate drug free option for those who cannot or choose not to take drugs.

9. SKIN NEEDLING

The second modality perfected since 2000 is skin needling. The basic idea is that a group of needles will create tiny wounds in the skin. The growth factors and other messenger molecules the damaged skin secretes as part of wound healing cause dormant hair follicles to reawaken and follicles producing thin hairs to grow thicker hair.

This concept has been in use for hundreds, possibly thousands of years by practitioners of acupuncture. The cherry blossom hammer is a small hammer with acupuncture needles used to produce multiple small puncture wounds in the scalp. This level of technology (needles too thick, not enough holes) gave weak and inconsistent results but, like light therapy, had enough success to keep people trying.

Once again the rise of Chinese manufacturing has rejuvenated this field. Cheap needle roller devices and motorised Dermapen technology has enabled practitioners to be able to treat scalp (and skin) with very large numbers of very thin needle holes very effectively. As a result the wounds are much thinner than in the past and the amount of growth factors produced is well in excess of what is necessary to heal the tiny wound. That excess is available to stimulate hair growth (and improve facial and body skin).

Current state of the art is the Dermapen. 11 needles are inserted at a rate of 7 times a second, similar to a tattoo

gun. Needle depth can be adjusted in order to balance the beneficial effects of deeper needling against the increased side effects of pinpoint bleeding, redness, swelling and fluid ooze after more heavy procedures. This is an in clinic procedure.

More convenient is a home needle roller. The current best model is the 1.5mm depth 540 titanium needle roller with tapered needles. If you choose to purchase a needle roller make sure that this is the model you buy.

And results? As well as the anecdotal results there has been one very good study out of Mumbai in India⁽¹¹⁾. 100 men with MPHL were started on twice daily minoxidil and half were asked to attend the clinic once a week for the nurse to administer their needle roller treatment.

At the end of three months the minoxidil only group had 18% more hair while the minoxidil plus weekly skin needle treatment had 90% more hair. After the trial was completed those men were transferred to oral dutasteride. At the end of 2 years all but one of the men had maintained their new growth. Everyone should consider this treatment.

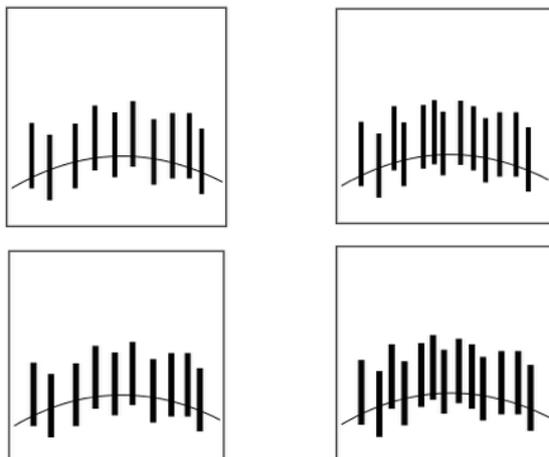
10. COSMETIC OPTIONS

These options include:

1. Thickening keratin fibres from wool like SureThik, Nanogen and Toppik or messy cotton ones like Caboki.
2. Paint the scalp products like Dermatch. Used a lot in TV studios.
3. Thickening conditioners, hairsprays and other products .
4. Hair Extensions.
5. Hairpieces like Martin Crowe.
6. Wigs. A subsidy is available from WINZ with a letter from your doctor.

Cosmetic products can give the appearance of thicker hair and do a lot to enhance the confidence of thousands of NZers and you would never know.

Consider the following illustrations as to why this can help. The first is a representation of an area of scalp and ten hairs. The second photo has is 30% more hair (13) of the same thickness. This is the sort of result someone might get from topical minoxidil.



The third photo is 10 hairs but each is 30% thicker, the sort of result you might get from an effective thickening treatment. The last is 13 hairs which are 30% thicker i.e. the best of both therapies and the sort of result a man who responds very well to finasteride might get.

What they show is hair thickness and hair number are both important and anything we can do to improve both will help frame the face.

SMALL KERATIN FIBRES

At \$49 for a 3-4 month supply they can be a good camouflage option. You sprinkle the fibres from the little shaker and the static cling means they form tiny branches on the hair follicles and help to fill the gaps.

THICKENING GELS

The best is Pantene Age Defy. It is applied after washing and before drying the hair. A series of drops are applied to the scalp (five drops in each of five parts) and then spread with the fingers out onto the hair. It may be a bit too thick for shorter hair. A better option in this situation is SureThik Thickening Mist.

These products slowly coat the hair and make it look like your hair is thicker.

11. BOTOX AND PLATELET RICH PLASMA

These are emerging therapies. Botox has been shown to increase the amount of hair by more than 25%. The problem is that the necessary dose is 150 units (at a cost of \$1700-2000) very 3-6 months. I have been undertaking trials into lower doses of Botox for the past two years. Watch this space.

PRP is an exciting new development but still a little experimental. The concentrated platelets in PRP produce high levels of growth factors, the little messengers that tell the healing cells to do their thing. Together with stem cells, growth factors are the great new frontier of medical treatment.

In clinical trials some men and women have achieved amazing results (up to 120% more hair) but the results vary a lot from person to person and from clinic to clinic. I have had some excellent results but also some mediocre ones and it is impossible to know who will get which result beforehand.

12. MINIMISE STRESS AND CONTROL CORTISOL LEVELS

Stress aggravates hair loss. Stress has multiple hormonal effects on the body but the big one is an increase in levels of the stress hormone cortisol.

Cortisol leads to an increase in substance P levels around the hair follicles of the scalp. Together cortisol and substance P act to:

- slow the rate of hair growth
- switch follicles from the growing anagen phase to the dormant telogen phase
- lead to the release of free radicals which damage hair follicles as well as the pigment producing cells (this is how stress turns hair grey).

It's hard to reduce stress levels when a major cause of stress is your hair loss! Some helpful ways:

- Get more sleep. Make sure of this. After a healthy diet this is the number one lifestyle factor that will improve your hair.
- Exercise.
- Listen to music.
- Spend time with your family and pets.
- Try meditation.
- Socialise and spend time with your extended family.
- Breathe properly. Breathing through the diaphragm rather than the chest wall muscles calms cortisol. While seeing a respiratory physio or taking a yoga class help the most some manage with a book or internet search of hyperventilation. Some get enough help from this exercise. First slowly breathe in through your nose for a count of five. Hold your breathe for a count of five. Then open your mouth and let all that air out.
- Try yoga.
- Eat chilli which helps block substance P.
- Give of your time and money.
- Reduce your commitments. Don't spread yourself too thin.

13. CULTIVATE A POSITIVE ATTITUDE

It can seem hard to remain positive when life has dealt you the MPHL card. Even more so now that you've been told that your hair loss is a sign of increased risk of diabetes and heart disease.

But we've only got one life and each day that you spend isolating yourself from life is a day you'll never get back. So make a decision as to whether you want to start treatment or not and get going with your life. Its shorter than you think.

You are not just your hair:

- Hit the gym, lift heavy and develop your physique. People's eyes get drawn away from your hairline to your shoulders and pecs.
- Focus on your career. Be a big shot.
- Develop your relationships. An emotionally rich home life and close friendships will give you more satisfaction than your hair ever will.
- Travel.

Studies show that people with a more positive attitude live longer, healthier, happier, richer lives than those who don't. Studies even show that people with a negative attitude tend to have a more accurate, objective view of reality than people with a positive attitude. It does not do them any

good though, they still are less happy, less healthy and have fewer friends than their positive peers.

Where to look? There are many people who can help. Tony Robbins or Eric Barker are a good start.

14. COMBINATION TREATMENT IS THE WAY TO GO

Studies show that combination treatments are always more effective than the same treatments used alone⁽¹⁵⁾. An organised programme, followed consistently and for long enough, will always work better than experimenting with treatment in a haphazard manner.

I see a lot of people with hair loss. After a clinical assessment and a discussion I find people fall into a few groups:

1. One group is sure there is some other underlying cause of their hair loss. They have seen multiple people about their hair loss and often spent thousands. They may or may not try a limited range of treatment options for a short period of time. They then visit the next person on their list and I do not see them again. I always hope things have worked out for the best with them but suspect they are continuing a frustrating expensive journey.
2. A big group give effective treatment a go for a while but lose the motivation to continue with treatment. Hair loss treatment is one of those areas of life where you have to just slog your way through it over a long period of time. Sometimes guys sheepishly get back in touch and admit they have fallen off the wagon. I suspect this is the same group who join a gym with high hopes but soon stop going.
3. Some guys waste their time trying one single treatment for a short time then another, before giving it all up as a waste of time. Which it was because they never did follow best practice. In no area of life can you expect success if approach problems or opportunities in this way. You might be lucky but chances are you will fail to save or regrow any hair.
4. Then there is the group who choose a programme and stick to it, year in and year out. This is the group that get the results.

Other points to note;

1. Give treatments a long enough chance before you decide whether they work or not. Hair grows at about one centimetre a month. It can take a while for treatment to reverse your hair loss 6-12 months to be sure you are responding.
2. Be sure you can tell whether treatment is working or not. It can be hard to tell if there is any improvement as our memories are not 100%. Make sure you take good photos. Over the years I have had guys swear black and blue that they have had no improvement after a year but when we look at their before and after photos the improvement is obvious.
3. Start now. Combination treatment is excellent at preserving hair and slow and weak at regrowing it - so don't leave it too long.

You now know what to do to save and increase your hair but there is time, money and hassle involved. Results are slow to show up and the road to results has its ups and downs - bad hair days from humidity and scalp oil changes, shedding after illness and with the seasons all can make you downhearted.

And if you do give up at the first obstacle or stop treatment because you run out and are too busy to replenish your supplies don't say the treatment did not work. Admit that you gave up.

OK NOW GET ON WITH YOUR LIFE!

That's my spiel. You now know what you can do about your hair loss so decide to own the problem, choose a regimen and stick to it.

And don't just focus on your hair. Grow in other ways, hit the gym, learn new skills, get rich, travel, cultivate a fascinating personality and make the most of this one life we seem to have been given.

Or do nothing. Accept your hair loss issue and move on. At the end of the day the only one who really cares which option you choose is you. Others will accept and love you as you are.

What you must not do is endlessly ruminate over what you should do but never take action. Either choose something and do it or choose not to act and move on. Don't get stuck procrastinating over your hair while life passes you by.

And if you do decide to take action **STICK TO IT**. Results, like hair loss itself, take time. Commit for at least six months and then reassess. Accept that you will have good and bad days, and good and bad weeks and good and bad months but that you are doing the best that can be done. And that is winning.

The guys I see with the best results are those who just grind out their treatment every day year after year. Their photos after 5 years of treatment look better than their photos before treatment started.

The saddest cases I see are those guys who were getting good results but, for one reason or another, stopped. After a year or so they come back and sure enough their hair has declined markedly. It is almost impossible with current technology to get them back to where they were when they were taking effective treatment.

WHAT ABOUT OTHER TREATMENTS?

The above treatments are the most effective, proven treatments. Other treatments fall into two categories, less effective and no effect at all. The treatments that do nothing at all are too numerous to list here (I'll only mention www.hairdoctor.co.nz

one - Nioxin), just be careful about what you buy. My website has links to information about scam artists.

There are also many hundreds of treatments with some evidence of a small benefit to hair. By all means give these treatments a go if you like but use them in addition to the proven therapies not as an alternative.

Think about it like your stereo. A science based hair programme is like a good amp and speakers. You can get a good amp and speakers for a reasonable price. Any extra benefit you may get from these other treatments would be like buying those \$400 cables for your stereo. You may notice a bit of difference but it's a lot of money to spend for a small benefit.

AND THE FUTURE?

Hair cloning and stem cell treatment is progressing. The Japanese seem the most advanced in this area.

Next level growth factors (after PRP) are in development. Prostaglandins are another promising area after the effect of latanoprost and bimatoprost on eyelashes has been noted.

But if you are reading this you need to make a decision about treatment now. You can wait for these better treatments if you like but it may take 10 years for something really good to arrive.

YOU'VE READ ABOUT THE SCIENCE BEHIND THE TREATMENTS - WHAT NOW?

You've just learned a little about what scientific hair loss treatment is all about. This is the best and most up to date summary I can give you. If you want to have a browse on the internet remember to be a little skeptical. There have been more scams in the field of hair loss than any other branch of medicine. Don't be another victim. Check their references (and check mine - I give them to you).

If you decide you want to prevent and reverse hair loss and want to organise your own treatment you can get finasteride from your own doctor, minoxidil and ketoconazole from a pharmacy and the other treatments are each individually available

The third option is to see me. It'll cost you \$100 but you'll get \$50 of that back off the cost of any treatment you purchase. You will also get:

1. A sympathetic ear, an assessment and an accurate diagnosis. I take hair loss seriously. Doctors in general have been a little uninterested and unsympathetic with hair loss and have left a gap of care which overpriced Hair Clinics have been happy to fill.
2. A choice of personalised treatment programmes and prices. My treatment options are of an international

standard. Chances are that if you have heard about it overseas then you can get it from me.

3. The opportunity to enrol in our haircare programme. We organise your treatment as well as unlimited free phone, email and face to face support. We sort out prescriptions, sourcing treatment and courier it to you. No need to visit chemists or health shops to pick up treatment (or risk them being out of stock) and our prices are the same or a little cheaper than elsewhere.

Interested? See me, Dr Paul Nola at my office in Ponsonby.

Ponsonby Cosmetic Medical Clinic
Level 1 63 Ponsonby Rd Ponsonby Auckland
P. 3604078

And Good Luck whatever you decide to do.

References.

1. Lotufo PA et al. Male pattern baldness and coronary heart disease. *Archives of Internal Medicine* 2000;160:165–71.
2. Kaufman KD. Long term(5 year) multinational experience with finasteride 1 mg in the treatment of men with androgenetic alopecia. *European Journal of Dermatology* 2002;12:38-49.
3. Khandpur S, Suman M, Reddy BS. Comparative efficacy of various treatment regimens for androgenetic alopecia in men. *J Dermatol.* 2002 Aug;29(8):489-98.
4. Berger RS, Fu JL, Smiles KA, Turner CB, Schnell BM, Werchowski KM, Lammers KM. The effects of minoxidil, 1% pyrithione zinc and a combination of both on hair density: a randomized controlled trial. *Br J Dermatol.* 2003 Aug;149(2):354-62.
5. Ilian Bandaranayake, BA; Paradi Mirmirani MD. Hair Loss Remedies—Separating Fact From Fiction. *Cutis.* 2004;73:107-114.
6. Wolf R, Matz H, Zalish M, Pollack A, Orion E. Prostaglandin analogs for hair growth: great expectations. *Dermatol Online J.* 2003 Aug;9(3):7.
7. Price VH, Menefee E, Strauss PC. Changes in hair weight and hair count in men with androgenetic alopecia, after application of 5% and 2% topical minoxidil, placebo, or no treatment. *J Am Acad Dermatol.* 1999;41(5 Pt 1): 717-21.
8. Clark RV, Hermann DJ, Cunningham GR, Wilson TH, Morrill BT, Hobbs S. Marked Suppression of Dihydrotestosterone in Men with Benign Prostatic Hyperplasia by Dutasteride, a Dual 5-Reductase Inhibitor. *The Journal of Clinical Endocrinology & Metabolism* 89(5): 2179 –2184.
9. Olsen EA, Hordinsky M, Whiting D. The importance of dual 5alpha-reductase inhibition in the treatment of male pattern hair loss: results of a randomized placebo-controlled study of dutasteride versus finasteride. *J Am Acad Dermatol.* 2006 Dec;55(6):1014-23.
11. Dhurat R, Sukesh M, Avhad G, Dandale A, Pal A, Pund P. A randomized evaluator blinded study of effect of microneedling in androgenetic alopecia: a pilot study. *Int J Trichology.* 2013 Jan;5(1):6-11
12. Famenini S, Goh C. Evidence for supplemental treatments in androgenetic alopecia. *J Drugs Dermatol.* 2014 Jul;13(7):809-12.
13. Lourith N, Kanlayavattanukul M. Hair loss and herbs for treatment. *J Cosmet Dermatol.* 2013 Sep;12(3):210-22.
14. Melnik B. Dietary intervention in acne: Attenuation of increased mTORC1 signaling promoted by Western diet. *Dermatoendocrinol.* 2012 Jan 1;4(1):20-32.
15. 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. Evidence-based (S3) guideline for the treatment of androgenetic alopecia in women and in men. *J Dtsch Dermatol Ges.* 2011 Oct;9 Suppl 6:S1-57.
16. Blume-Peytavi U1, Hillmann K, Dietz E, Canfield D, Garcia Bartels N. A randomized, single-blind trial of 5% minoxidil foam once daily versus 2% minoxidil solution twice daily in the treatment of androgenetic alopecia in women. *J Am Acad Dermatol.* 2011 Dec;65(6):1126-1134