

Original article:  
[http://www.webmd.com/hw/hair\\_loss/aa81648.asp](http://www.webmd.com/hw/hair_loss/aa81648.asp)

## A-Z Health Guide from WebMD: Medical Tests

### Hair Analysis



#### Test Overview



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Hair analysis uses samples of hair for [DNA](#) analysis or to detect illegal drug use (such as the use of cocaine). Hair samples are tested using various chemicals and analyzed under a microscope. DNA analysis may help determine whether two people are likely to be blood relatives (such as in a paternity case). Forensic hair analysis can be done to help identify a criminal by evaluating hair structure and DNA.

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Hair is a protein that grows out of hair follicles in the skin. A hair follicle produces a hair for a period of time. The hair then stops growing and falls out, and a new hair grows. A hair typically grows for many months before it falls out. It takes weeks for a hair sample to reflect what has occurred in the body, because hair grows slowly. Hair samples do not show recent changes in the body, such as drug use within the past few days.

Common uses of hair analysis include diagnosis of certain skin diseases. Less common and controversial uses of hair analysis include detecting heavy metals (such as lead, mercury, or arsenic), mineral deficiencies, or illegal drugs in the body.

#### Why It Is Done

Hair analysis is used to provide DNA evidence for criminal and paternity cases. For DNA testing, the root of one hair is needed to analyze DNA and to establish a person's genetic makeup.

Hair analysis is less commonly used to:

- Test for illegal drug use, such as the use of cocaine or marijuana.
- Test for the presence of heavy metals in the body, such as lead, mercury, and arsenic.
- Screen for nutritional deficiencies in the body. Hair analysis cannot reliably determine the need for vitamin and mineral supplements.
- Screen for undiagnosed diseases, such as cancer or kidney failure.

#### How To Prepare

If you have a hair analysis done, the laboratory will give you specific instructions on how to prepare your hair. Hair preparation and the part of your body from which the hair is taken varies. Generally, your hair should be washed and free of any hair care products.

If hair samples are being obtained to detect illegal drug use, you should be prepared to list all medications (both prescription and nonprescription), herbal supplements, vitamins, and any other substances you are taking, because they may interfere with testing.

You may need to sign a form (consent form) that says you understand the risks of the test and agree to have it done. Talk to your health professional about any concerns you have regarding the need for the test, its risks, how it will be done, or what the results will indicate. To help you understand the importance of this test, fill out

the [medical test information form](#) (What is a [PDF](#) document?).

## How It Is Done

Hair analysis is done by collecting a hair sample and sending it to a laboratory:

Hair samples are taken from a specific part of the body, such as from the back of the scalp by the neck or from the pubic area. Hair samples are generally collected from the section of the hair closest to the skin. Hair close to the skin or scalp includes the most recent growth, which provides the most accurate information about what has occurred recently in the body.

Hair samples are washed in special chemicals before testing.

## For health conditions

If you are collecting your own hair sample:

- Clean the infected area of the skin with rubbing alcohol (70% alcohol) to remove bacteria.
- Clip hair samples from the infected area on the scalp or beard.
- Pluck out hair stubs with tweezers. Fungus, if present, is usually found at the base of a hair shaft.
- Place the samples in a sterile container that you get from the laboratory or your health professional.

## DNA profiles

Hair samples for DNA analysis will be gathered by laboratory personnel or law enforcement officials or a [forensic examiner](#). For DNA testing, the hair must include the root. This requires that the hair be plucked, not cut.

## Drug use

Samples of hair used for drug testing will probably be obtained by laboratory personnel. Getting a good sample from the right part of the body is essential to obtain accurate results.

## Heavy metal or nutritional analysis

If you are collecting your own hair sample, follow the instructions given to you by the laboratory. Generally you will be asked to:

- Clip a small sample of your hair (usually about a spoonful) from the nape of your neck. The sample should be 1 in.(2.5 cm) to 1.5 in.(3.8 cm) long and should include the new growth closest to the scalp.
- Put the clippings in a plastic bag and seal it.
- Send the samples to the laboratory along with information about the type of hair treatments you have used, including shampoos, conditioners, colorings, bleaches, and permanents. Information about your age, height, weight, sex, and whether you smoke may also be requested by the laboratory.

## How It Feels

There is generally no pain or discomfort associated with this test. However, if you have to pluck a hair for a DNA test, this may cause some minor discomfort.

## Risks

Hair analysis itself has no risks or complications.

## Results

Hair analysis uses samples of hair for [DNA](#) analysis or to detect illegal drug use (such as the use of cocaine).

## Skin diseases

Examination of hair samples under a microscope can reveal the presence of fungal organisms that cause skin diseases.

## Drug use

The results of a drug test will be returned to your health professional. Several factors need to be considered when looking at the results of the hair analysis for illegal drugs.

- Hair analysis does not tell how much of an illegal drug a person used.
- Hair analysis cannot tell how long ago the drugs were used. Results are affected by the rate of hair growth, what stage in the phases of growth the sample hairs came from, and how the hairs were cut for the sample.
- The test results can be positive (indicating drug use) when no drugs have been taken. This is called a [false-positive test result](#). A hair sample touched by someone or something that contains a drug may produce a false-positive test result. In addition, a false-positive test result can occur in a person who inhaled the secondhand smoke of a person who smoked marijuana or crack cocaine.

## Heavy metal or nutritional analysis

The results of hair analysis are usually complete within 3 weeks. You or your health professional will receive a report listing the levels of minerals and heavy metals in your hair. Several factors need to be considered before testing for heavy metal exposure or your nutritional state.

There is no standard procedure for cutting, washing, and analyzing hair. Different labs may report different results from the same hair sample. In fact, the same lab may report different results for separate hairs from a common sample. Standards for testing do not exist. Any hair analysis to detect the presence or absence of minerals, nutrients, or toxic metals in the body should be confirmed by testing blood and urine samples.

What the hair sample contains is determined not only by nutrition and internal metabolism but also by external substances. Air pollution, mineral content of the water supply, exposure to industrial waste, shampoos, hair dyes, hair sprays, permanents, and bleaches may raise or lower the levels of certain minerals in the hair. In addition, the use of medications such as birth control pills can change the mineral concentration of hair.

## What Affects the Test

Factors that can interfere with your test and the accuracy of the results include:

- The area of the body from which the hair sample was taken.
- Your age.
- Your hair color.
- Your race.
- The rate of your hair growth.
- Your use of hair products, such as hair colors and sprays.
- External environmental factors, such as where you live and work.

## What To Think About

- Some natural health and homeopathic companies offer hair analysis by mail order. The reports are mailed to you along with recommendations for taking various vitamin and mineral supplements.

Sometimes these same companies sell vitamin and mineral supplements. The test results may be accurate. However, you need to evaluate the results of the tests the same as you would for any health procedure. If you have any questions, talk with your health professional.

- The significance of most of the findings from hair analysis is unclear. It is difficult to interpret a hair analysis for the presence of heavy metals or nutritional deficiencies. For most trace minerals, what really constitutes normal or significant deviations from normal is not known. Most health professionals believe that hair analysis to detect heavy metals and nutrients is unreliable.
- Although hair analysis is being done more frequently to test for illegal drug use (such as the use of cocaine or marijuana), it is not widely available. Drug screening is more commonly done on blood or urine samples. For more information, see the medical test [Toxicology Screen](#).

## Credits

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<b>Last Updated</b>	July 13, 2004

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*Last updated: July 13, 2004*

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