

Yuri K. Shestopaloff

Curing Fungus Infection of Nails



Getting Rid of Nail
Fungus Problem

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This book tells about the method of how to get rid of both fingernail and toenail fungus infection. The cost depends on how many nails are affected by fungus. For 2-3 nails, the price could be few tens of dollars (roughly \$23 for antifungal cream and \$8 for the adhesive tape). The idea of the method is first to remove parts of nails damaged by the fungus infection, destroy fungus by antifungal cream and then guard nails from reoccurrence of infection until they completely grow up. The following accessories are used: adhesive tape, scissors (for cutting adhesive tape), manicure cutters for cutting nails, and, in some rare cases, iodine. Treatment takes about the same time which is required for nails to grow. It is not completely pain and blood free, although the pain is rather minimal and actually can be largely eliminated using procedures and precautions discussed in this book. The method worked well for the author, but people are different, so that the author cannot guarantee that it will work for others as good, especially given the fact that method's effectiveness directly depends on the accuracy and regularity of discussed procedures. The book presents 19 colour photos, illustrating the method, and detailed explanations of required procedures.

“The greatest wealth is health.”

Virgil

“Most people realize the value of health only when they are getting problems with it”.

Yuri Shestopaloff

Be careful about reading health books. You may die of a misprint.

Mark Twain

The part can never be well unless the whole is well.

Plato

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About the author

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Yuri K. Shestopaloff does consulting and research on mathematical methods and computational algorithms in various fields of science and technology, including medicine, biology and biotechnology. Yuri published twelve professional books and about one hundred academic articles. The results of his research received awards.

Introduction

This book talks about my own method of how to get rid of both fingernail and toenail fungus. I am not a medical professional. However, I do research in biology, mostly in the areas of replication and growth of living organisms, and publish books and articles in professional journals on this subject. So, I have certain knowledge of what's going on in living organisms and how organisms' biological and biochemical "machinery" functions.

The main idea of the method is first to remove infection, and then guard nails from reoccurrence of infection until nails *completely* grow back. This is it. I had to come up with this method because I did not want to go with a doctor's prescription, when I read that it can cause liver dysfunction. Besides, it was ridiculously expensive. Actually, the price was not really a decisive factor, but it could be for some people and thus worth mentioning.

Many advertisements and remedies promise easy and quick removal of fungus infection. From my experience, I got an impression that it is

difficult to eliminate fungus, so that personally I doubt that there are easy and quick remedies against this disease. Let me warn you at the outset that my method *is not easy*, neither it is quick. However, it worked for me.

I probably went the whole way many people go when they attempt to get rid of this disease, including (to my credit, very brief) account of suspicious remedies many charlatans offer in order to make a sure and quick buck on people's sufferings and hopes. As I said, the concept of the method is simple. The method is also cheap and, in my case, turned out to be effective. I used anti-fungus cream (*terbinafine hydrochloride* 1% cream; terbinafine belongs to the class of medications called *antifungals*, for example Lamisil cream), two types of adhesive tape, scissors (for cutting adhesive tape), manicure cutters for cutting nails, and, in some rare cases, iodine. *Persistence* is a prerequisite too, since treatment takes about the same time that is required for nails to grow, which can be a slow process for toe nails. The treatment is not

completely pain and blood free, which to me was not a big deal, although it could be for other people. At the end, I managed to do all required things practically without pain and blood, but it took some time and practice to find this balance of effectiveness, on one side, and comfort on the other. In the book, detailed explanations are provided, for how the pain can be minimized and mostly eliminated.

On some occasions, when I did not do things accurately enough or damaged nails during long country ski and outdoor trips, which I do often, the fungus infection could reoccur, and I had to repeat the treatment again. It happened two times, before it finally occurred to me that I just forgot to disinfect my ski shoes, since I disinfected all my shoes in summer, and forgot about the ski season and ski boots.

A book consists of photos and explanations. First, my idea was to provide more photos, but then I realized that supporting explanations are also required in order to successfully apply recommendations.

Where I started from and where I ended up

Fig. 1 shows an example of what was the condition of toe nails when I began treatment. I agree, it did not look nice at all.



Fig. 1. Beginning condition of toe nails on the left foot. As you can see, fungus affected all nails. The nail from the large toe finger was removed completely, since it was almost entirely destroyed by fungus.

Fig. 2 shows how the same nails, this time healthy ones, looked after the treatment. It took about seven months to cure all nails on both feet. However, one has to understand that during this time I did many things wrong, before I gradually

developed an understanding of what are the optimal approaches to curing my nails from fungus. As saying goes, the devil is in the details, and this is entirely applicable to my method. There is nothing complicated in it, but all phases should be done accurately and persistently. I think that if I do this now, given the acquired experience and knowledge, I would not spend more than four months for the same task.



Fig. 2. The same toe fingers with nails cured from fungus infection.

I was changing cream 2 times a day, rarely one time, starting from 9 toe fingers, which took about 4-5 minutes, after I used to quickly wrap fingers with an adhesive tape. Then, as more nails were

becoming healthy, less and less time was spent for “creaming” and wrapping toe fingers. I counted that it took less than 2 minutes, with all preparations, to put the terbinafine cream and wrap 3 toe fingers by an adhesive tape. So, it is not a time consuming procedure.

Maybe changing cream one time could be enough, but I preferred to remove all wrappings for the night, so that in the morning I had to wrap fingers again. Then I usually exercise, take shower, and put cream and wrap fingers one more time.

A disclaimer

The method worked for me, but people are different, so that I cannot guarantee that it will work for others just as well, especially given the fact that method’s effectiveness directly depends on the accuracy and regularity of discussed procedures – by all means, it is not a magic wand, and, frankly speaking, I do not think that such a magic wand exists at all.

Chapter 1. About fungus infection.

First successful fungus treatment

1.1. Disinfecting shoes

Unfortunately, fungus (fungal) microorganisms (spores) are not easy to destroy. ¹

There are sprays for shoe disinfection from fungus spores. Are they effective or not, I do not know. I used cheap turpentine, spraying shoes from inside and then drying them. One of the most important things is to keep nails from re-infection. Sweaty feet that are kept in warm shoes for a long time is the most conducive environment for fungus re-infection. So, disinfection is important.

¹ Fungus is susceptible to heat, and this is what the laser treatment does by heating nail bed. On the other hand, laser radiation is generally not exactly a harmless thing for cells' biomolecular machinery, and so it should be used with consideration, which is not necessarily always the case, especially when it comes to commercial applications. I am involved in some projects and publish articles on electromagnetic radiation subject in professional journals (such as "Applied Optics", "International Journal of Electronics", see, for example, <http://www.akvypress.com/Shestopaloff.html>).

1.2. Fungus infection. Example of treatment

It is not surprising that nail fungus is difficult to treat, because the infection resides at the base of the nail bed, under proximal fold (at the nail base), where it is difficult, if not impossible, to kill it by simple application of anti-fungus creams. There is lots of information about fungal infection of nails on the Internet. For instance, one can take a look at articles on Wikipedia, such as

http://en.wikipedia.org/wiki/Nail_fungus.

In medicine, this disease is called *Onychomycosis*. It has several forms, of which the so called Distal subungual onychomycosis is the most common form of nail fungus. It is caused by microorganism *Trichophyton rubrum*, which creeps into the nail bed and the underside of the nail plate. Fungus is a separate kingdom of living species, distinct from animals and plants. As it is said in the aforementioned Wikipedia article, “aging is the most common risk factor for onychomycosis due to diminished blood circulation, longer exposure to fungi, and nails

which grow more slowly and thicken, increasing susceptibility to infection. Nail fungus tends to affect men more often than women, and is associated with a family history of this infection”.

In the article published in “Medical News Today”, we can find a list of additional risk factors (<http://www.medicalnewstoday.com/articles/151952.php>). It says the following: “Other risk factors include *perspiring heavily*, being in a *humid or moist environment*, *psoriasis*, *wearing socks and shoes that hinder ventilation and do not absorb perspiration*, *going barefoot* in damp public places such as swimming pools, gyms and shower rooms, ...*minor skin or nail injury, damaged nail*, or other infection, and having *diabetes, circulation problems*, which may also lead to *lower peripheral temperatures on hands and feet*, or a *weakened immune system*. ...Most commonly, a group of fungi called dermatophytes (such as *Candida*) is responsible for nail fungal infections. However, some yeasts and molds also cause these infections.”

So, it is not a single organism that causes

Onychomycosis. However, it seems that the method which I used is applicable to most types of fungal nail infections, although the antifungal cream could target a specific infection.

As you can see from the list of risk factors, blood circulation and healthy immune system are important, and this is what one can control and improve through social, physical and intellectual activity, healthy lifestyle, good and active mood and overall wellbeing, of which an active social and professional life and desire to always move forward are probably of the greatest importance. Of course, certain procedures such as massage of toes and fingers, contrasting water procedures for feet and the whole body help as well.

There is a good indicator if one has a slow blood circulation – slow growth of nails. So, natural factors contributing to accelerating growth of nails through improved circulation and thus a greater supply of nutrients to nails, also contribute better and faster curing of nails from a fungus infection. I am pretty sure about this recommendation, since this is what I study in my

biology related projects. One can take a look at my last articles, which can be downloaded either from my website (www.shestopaloff.ca) or journals' websites, for instance from the journal "*Biophysical Reviews and Letters*":

(<http://www.worldscientific.com/toc/brl/07/01n02> or <http://www.worldscientific.com/toc/brl/07/03n04>).

Real things are multifactor ones, as all things in Nature are. So, accumulating factor by factor, however little each of them contributes, we may eventually significantly improve our health and immune system in particular. The problem is that many people prefer to spend time looking for a single magic remedy, while, in fact, combining several favorable factors could do really marvelous things for us, not only with regard to health, but for any endeavor we are involved in.

The problem which first forced me to begin fighting the fungus infection of a nail was this. I cut a thumb nail on my left hand by a handsaw for metal, and the wound was infected by fungus. Once I discovered what kind of problem I obtained,

for four months, I was applying anti-fungus cream (terbinafine 1% cream, 30 gram tube), but it was to no avail. Eventually, the thumb nail was destroyed to the base. I think that a contributing factor to such nail destruction was that I often soaked my hands in water that time. However, I realized that just application of cream won't work, since the cream was either washed away, or quickly disappeared (you touched here, there, partly the cream absorbs, and soon it goes away completely), while possibility of infection was all over. For instance, when you lace your shoes, you almost surely get some fungus spores on your palms and fingers. On the other hand, it was quite obvious to me that in order to be effective, the cream had to be applied to the area where infection resided, and it certainly was not the nail surface, but at the base of the nail bed, that is inside.

So, I decided to use an adhesive tape to make sure that the cream remained on the damaged nail (or whatever was left from it). Thus, my thumb was always protected from reoccurrence of

infection. If I soaked the nail, I put new cream and a new adhesive tape again. After a month or maybe more, a new thumb nail grew up. It was uneven (wavy across), and at first I thought that the treatment did not work. However, the nail was pink, and except for the odd wavy shape, especially in the upper half of the nail, and its fringed edge, it looked more or less normal. I did not worry much about wavy shape, but the lacy nail fringe was of a concern, because I thought that this is where the fungus still remained. I trimmed this fringed end often and continued applying cream and wrapping an adhesive tape around the fingernail. In a couple of weeks, the fringe thickened, the wavy part of nail moved closer to the end, and the nail overall began to look more and more like a normal one.

Actually, it was. Once the fringe grew up and was gradually cut off by manicure scissors, I stopped applying cream and forgot that once this nail was a cause of my moral and physical sufferings. (I did not hear of people complaining about pain caused by fungus, but in my case, I

don't know why, I periodically experienced pain at the thumb base. It was tolerable, but it was painful anyway.)

Unfortunately, I did not make any photos of the progress that time, so that I can only provide a verbal description. However, when I came to toe nails, I began taking photos. I did not think that I would ever write a book about fungus treatment, otherwise photos would have been taken more regularly. However, when I eventually realized how many people suffer from this disease, I decided to share my positive experience.

Chapter 2. Preparation for cream application

In this chapter, we consider procedures for removing the source of fungus infection. It can be done in several ways:

- (a) at once by using manicure cutters;
- (b) in several stages using manicure cutters, anti-fungus cream and wrapping by an adhesive tape;
- (c) in several phases using iodine.

2.1. Initial conditions

Encouraged by success with curing a thumb nail from fungus, I directed my attention to the toenails. Here, I had more problems than just one finger. The thing is that I go on country ski trips and walking tours. In these trips, I often damage toenails, especially in country ski trips, maybe because of inconvenient ski boots. It happened that a long time ago I tore down a small toenail completely and then it was infected by fungus. Since then, I lived this way. However, gradually, because of the systematically damaged toenail,

other fingers became infected too. In Fig. 1 (shown in the Introduction section) and Fig. 3, you can see what awful condition my toe fingers were in when I started treatment.



Fig. 3. Beginning condition of infected toe nails.

2.2. Removing infected nails at once

You can also see that the nail on the large toe finger in Fig. 1 was nearly completely removed. Yes, this is what I did the first time. It was not as painful as it might look on the photo, because the nail was already largely destroyed. What is important in such a procedure is to remove as much of the infected nail as close to its bed as possible, in order that the anti-fungus cream could destroy the fungus where it resides – in the nail bed.

In Fig. 4 and Fig. 5, you can see how the nail affected by fungus on a small toe finger is cut off by manicure cutters. The procedure looks like one “peels” the defective nail from the finger, piece by piece. The idea is to remove *all* defective parts of nail, so that no infected parts will be left. Sometimes, the healthy part can be near the nail bed, so that the nail has to be cut to that healthy part, which can be painful if not done accurately. And still, some pain may occur. Sometimes, the whole nail is already destroyed by fungus, so that cutting the whole nail up to the nail bed is

relatively painless. I could cut accidentally underneath and blood appeared, but to me, this was not a big deal. Since I apply anti-fungus or antimicrobial cream anyway, such cuts were healed quickly, and never caused problems.



a)



b)

Fig. 4. Cutting the nail affected by fungus infection using manicure cutters.



Fig. 5. Cutting the nail affected by fungus using manicure cutters.

2.3. Removing infected nails in phases

The process of nail removal at once can be painful. In some cases, I removed infected nails in several phases. First, I removed that part of nail for which it was easy and painless to do so. Once the procedure became painful, I stopped, applied anti-fungus cream, and continued the procedure either in several hours, or the next day. During this time, the nail softens due to cream application, and cream penetrates where it could as well, so that now it becomes easier to remove another part of a defective nail.

I repeat this procedure until the whole defective part of nail is completely removed. Otherwise, it will remain infected, and cream application will be of no use, since fungus will survive under the damaged nail. The goal is to expose fungus to cream. Only in this case the cream works. Nail surface, even if it is defective, is an excellent protector of fungus from cream action and, at the same time, a safe refuge for the fungus. Fig. 6 shows applied anti-fungus cream and adhesive tape wrapping the nails.



Fig. 6. Applying cream and clear adhesive tape for removal of a defective nail in several phases.

So, in a course of several days, I could almost painlessly remove any damaged nail. After nail is softened by cream, the feeling is that it was like soaked in water for some time; it becomes more flexible and can be relatively easily detached from the nail bed.

Fig. 7 and Fig. 8 show such nail removal in several stages.



Fig. 7. Damaged large toe nail which was removed in several phases.



Fig. 8. Damaged nails were removed in several phases.

Fig. 9 shows the final result for a toe nail. You can see how deeply the nail resided on the sides of the

toe nail. It is important to reach fungus infection in such spots, and removal of infected nail in several steps helps a lot with doing such a thorough removal of affected parts of nail. The picture does not look pleasant of course, and one could assume that it was awfully painful to remove the infected nail. In fact, it was not as bad and the whole procedure went relatively painlessly, much due to a “multiphase approach”.



Fig. 9. Damaged toenail was removed in several phases. Pay attention to deep spots on the nail sides.

The most important thing to consider when removing nails affected by fungus is to do this persistently and accurately, so that no reoccurrence could happen. One has to be certain

that no portions of the nail affected by fungus where the cream could not reach the fungus are left, otherwise the fungus can safely survive treatment. It happened to me several times that I was creaming and wrapping nails which actually were still infected, in order to discover one day that fungus was still there. So, I had to remove already largely grown nail and to start from the beginning.

What else could I do? In fact, I did some things in order to maximize the probability of removing fungus at the first attempt. The next section will tell you more about this.

2.4. Removing infected nails in phases with the help of iodine

Using iodine has two advantages. One is that the fungus can be removed more reliably, especially when the boundary between the healthy part of a nail and the infected one is very uneven – see Fig. 10.

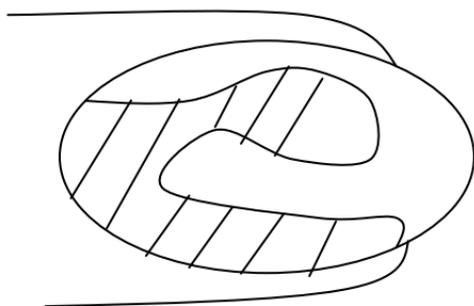


Fig. 10. Fungus (white part of nail) penetrated into different parts of nail, so that the boundary between the healthy part of nail and the infected one is very uneven.

The other advantage of iodine application is that using iodine is practically painless. What I did first is I soaked a piece of cotton wool wrapped on a toothpick in a solution of iodine, and applied it to

nail trying to leave as much iodine under the nail as I could. Then I noticed that iodine dries too quickly, so that I started soaking a piece of cotton wool in iodine, then applied it along the fringe of a nail (usually already cut by a manicure cutter), and then wrapped this piece of cotton wool soaked in iodine by an adhesive tape in the same way as it was described for fingers with applied anti-fungus cream. This way, iodine did not dry quickly and worked for a much longer time. In fact, this method of iodine application detaches from the nail bed not only an infected part of nail, but also a healthy one, so that in a course of several days of application of pieces of cotton wool that are soaked in iodine, pretty much the whole nail may be detached from the nail bed. Once iodine detaches the next part of nail from the nail bed, I use manicure cutters to remove these already detached parts. Once the infected part of nail is *completely* removed, the goal is achieved, and I start regular application of anti-fungus cream.

2.5. Wrapping nails

In fact, the photo in Fig. 6 reflects my search for which tape to use. This clear tape, which was used at the beginning, was not a good choice, because of its rigidity and, which was the worst thing for my purposes, it could easily slip when walking or running, thus making possible an easy reoccurrence of infection. We will discuss in a separate section, which adhesive tape should be used. For now, I would emphasize that its main quality should be that it must not slip during working, walking or running, and it should be soft in order not to damage neighbouring fingers. Cheap soft adhesive tapes that are used for wounds is the best choice from this perspective – they are thin (and consequently soft), and due to their softness they stick well to the skin and do not slip during work or hard walking tours or ski trips. Fig. 11 and Fig. 12 illustrate the point.