

# *Trans-femoral Information*

**Patient Care Manual**





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*Dear Patient,*

We want you to feel completely confident on the understanding of your prosthetic care. We have provided this information to help answer some of the questions you may have during and after the fitting process.

If at any time during the rehabilitation process you have a question or do not understand a procedure, you should talk to your prosthetist immediately. If any of this information does not agree with what your physician has told you , you should follow his instructions.

Thank you for choosing us for your prosthetic care. We're excited to serve you.

*Sincerely,*

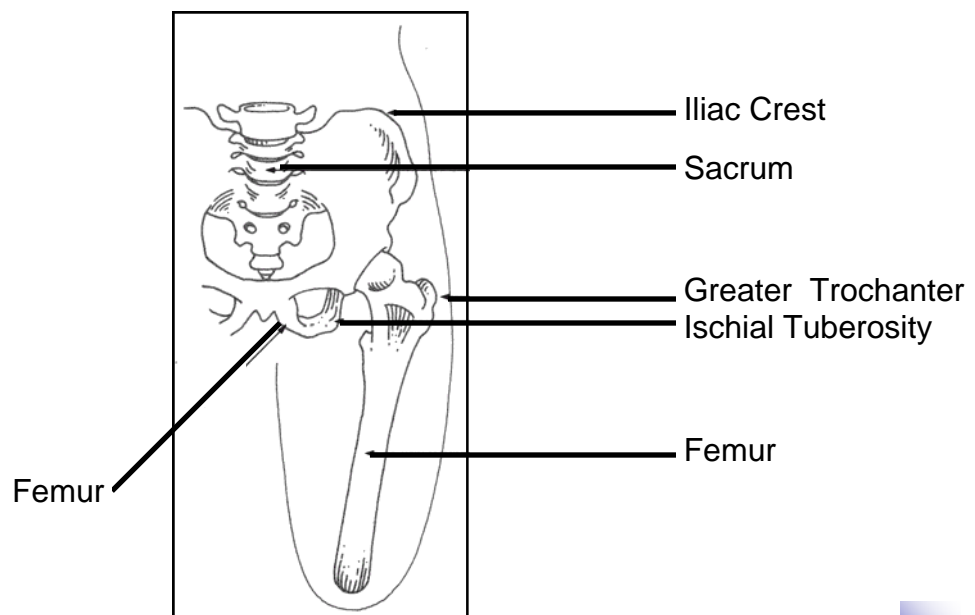


# Introduction

Losing a limb is not only a tremendous physical loss, it can also be emotionally devastating. Your team of professional practitioners, which includes your physician, prosthetist, physical therapist, nurse and occupational therapist can offer valuable support to help you adjust to your amputation and resume a healthy, active lifestyle.

## Basic Anatomy

A trans-femoral amputation is the removal of the leg above the knee. The portion of the leg which remains is commonly referred to as the stump or residual limb. The prosthesis is designed to fit comfortably around the bones and soft tissue of the remaining upper leg. This diagram shows areas frequently referred to when fitting a prosthesis.





## *Who will provide my prosthetic care?*

As you begin your rehabilitation, you will primarily be dealing with a prosthetist who is trained in the design, fabrication and fitting of artificial limbs (prostheses). Your prosthetist has training, skills and experience that will be important in the success of your rehabilitation. You will be involved with him/her on an on-going basis for routine maintenance, expected adjustments, and future prostheses that will be required.

Most prosthetist are certified. A prosthetist who uses the designation of CP (Certified Prosthetist) or CPO (Certified Prosthetist and Orthotist) has successfully completed years of specialized training to qualify for and pass a thorough examination administered by the American Board for Certification on Orthotics and Prosthetics (ABC).

Other members of your rehabilitation team include your physician, who will monitor your health, and your physical therapist, who will teach you how to use your prosthesis.

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## *What is going to happen?*

1. You will meet with your prosthetist so that your history and lifestyle can be discussed. This information will be used to design your prosthesis and choose the individual parts which will be best suited for you.
2. As soon as possible after surgery, you will be cast and measured for a temporary prosthesis which you will wear until your limb has reached a stable size and shape.
3. Your temporary, preparatory prosthesis, which will be custom-designed, will then be made, or fabricated, using materials most appropriate for your needs.
4. The prosthetist will fit and carefully align your prosthesis for you when it is ready.
5. With your preparatory prosthesis in place, you will learn how to walk efficiently and comfortably through special gait training.
6. You will learn how to use your prosthesis through training which will be coordinated by your physician, prosthetist, and physical therapist. Depending on your abilities, you will learn how to resume all types of physical activities such as walking up and down stairs, driving and your favorite sports and recreational pastimes.
7. You will be instructed in the proper care of your limb through bandaging techniques and the wearing of special prosthetic socks. You will also learn how to put your prosthesis on properly, for maximum fit and comfort.
8. Once your limb has reached a stable size and shape, you will be fitted with what is called a definitive prosthesis. This will be your permanent prosthesis which will cosmetically resemble your other leg.
9. Your prosthetist will pay close attention to your follow-up care, making adjustments, refittings and replacements whenever you need them.

## *The First Visit*

On your first visit to the prosthetic facility, your prosthetist will take your complete history including such things as:

- Your current health and physical condition
- Your activity level and recreational interests
- Your expectations and goals
- Your occupation and career
- Your hobbies and interests

The type of design and components that are used for your prosthesis are determined by these factors.

When you meet with your prosthetist, you should ask questions and express any concerns you may have. Basically, this is a time when both of you will discuss what you can expect to happen from that day forward.

## *The Preparatory Prosthesis*

In order to reduce the chance of edema, which is swelling of the tissues in the residual limb, and to get you moving again, you will be fitted as soon as possible after your surgery. A preparatory, or temporary, prosthesis is frequently used until the limb has stabilized and a long-term prosthesis can be fitted.

The first step in the fitting of your preparatory prosthesis involves a series of measurements that your prosthetist will take. These are done to ensure a comfortable fit of the socket, which will be customized just for you. The socket is the hollow part of the top of the prosthesis into which the residual limb is placed; the socket provides the interface between the limb and prosthesis.

## *Construction of your Prosthesis*

Following the series of measurements, your prosthetist will take care to design a prosthesis that is customized to you. To begin the process, he will take a plaster impression (cast) of the residual limb which models the exact size and shape of your limb.

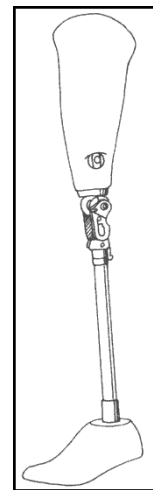
Using the cast, a plaster mold which is an exact duplicate of your limb is made. From this mold, your prosthetist will create the initial socket.

The socket is made of a lightweight plastic, constructed to suit your individual needs. For instance, it may be made of a hard plastic or a softer, flexible material depending on the condition of your limb or your physical activities. It covers the entire residual limb, and it is designed and fitted in such a way that specific areas of the limb bear more pressure than others.

You will have several follow-up appointments for fitting and adjusting the socket.

Once this socket is fitted perfectly to you, it will be attached to a lightweight structural tube called a pylon. An artificial foot is attached to the pylon. The pylon is designed in such a way that changes can easily be made when necessary.

The prosthetist will then begin a procedure known as dynamic alignment which allows him to align the various parts of your prosthesis in the manner that makes it easiest for you to walk.

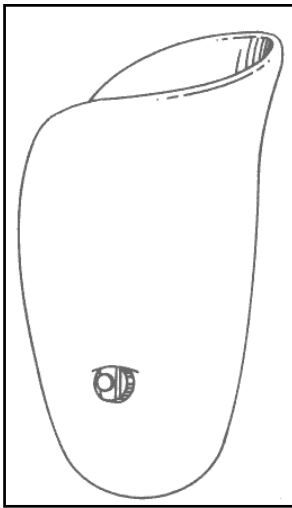


## How the Prosthesis is held to the Limb

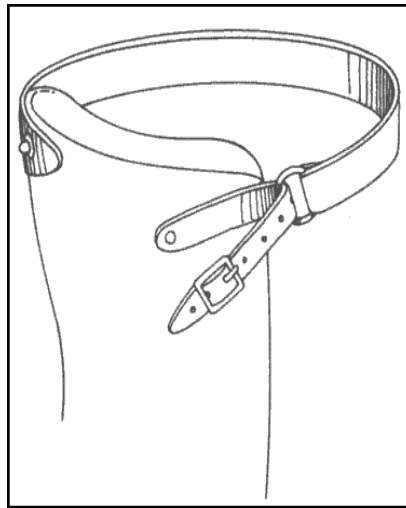
The above knee prosthesis can be suspended from or held onto the residual limb in a variety of ways. Your prosthetist will determine which suspension technique is most appropriate for you.

One of the most common ways is suction suspension. Other types of suspension which are normally worn in conjunction with socks, include the silesian bandage and the hip joint with pelvic belt.

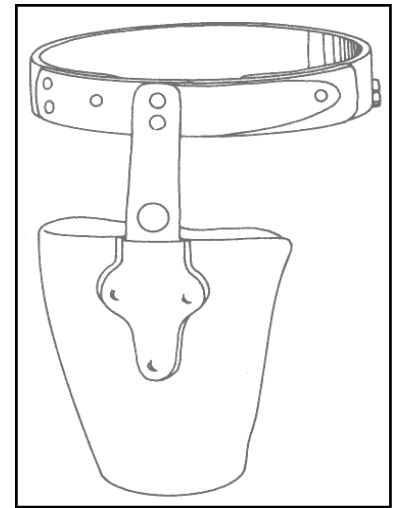
Suction Valve



Silesian Bandage



Pelvic Belt



## Learning how to use your new Prosthesis

In order to obtain the maximum benefits from your prosthesis, it is important that you receive proper training which can be coordinated by your physician and your prosthetist. Your prosthetist will give you early training during the fitting; additional training will be provided by a physical or occupational therapist.

Your physical therapist will help you learn to walk as efficiently as possible through a process called gait training. He will also instruct you in other activities such as walking up and down steps, driving etc. Your prosthetist and physical therapist will give you a schedule for wearing your prosthesis and increasing your activity.

As you learn to walk with your prosthesis, it will be important to wear it and practice for a portion of time every day. You may use a walker or cane at first while you are adjusting to walking again. At the beginning, you may wear your prosthesis for just short periods, gradually increasing the amount of time as you become comfortable and build up endurance.

## Changes in your Limb

One of the biggest roadblocks to a comfortable fit and good performance of your prosthesis is variation in your body weight. Weight changes affect the size and shape of your limb which can result in loss of fit. As a result, it is often necessary to modify or change the socket. The temporary prosthesis allows the socket to be changed easily. However, there is very little that can be done on the case of weight gain because if the limb increases in size, a new socket is required.

Your prosthetist and therapist will recommend that you follow a reasonable exercise program and a well-balanced diet to maintain good health and the proper weight.

## The Definitive Prosthesis

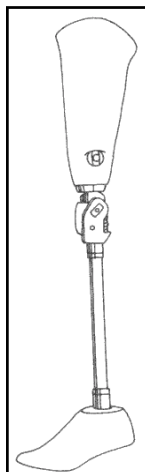
Within several months after your residual limb has reached its stable size and shape, you will be evaluated for a definitive (or long-term) prosthesis which will closely resemble your leg cosmetically. Making and fitting this prosthesis will require numerous visits and will take a few weeks. Because you will wear the prosthesis for a long time, your prosthetist goes to great lengths to ensure proper fit and comfort.

There are two different ways your definitive prosthesis can be shaped and finished. The first way is the endoskeletal method, which results in a soft covered prosthesis. Here a pylon, or a lightweight structural tube, attaches the socket and knee unit to the foot and remains in the finished prosthesis allowing for additional support and alignment. The prosthesis is covered with soft foam for comfort and more cosmetic attractiveness. The foam is shaped to match your other leg.

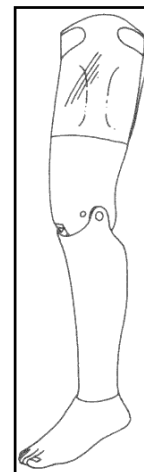
The second method is an exoskeletal finish. This finish is hard and is the same material that is used in the socket. First, the socket is correctly aligned, then the area between the socket and the foot is filled with a hard foam. The foam is shaped to look like your other leg. A hard-coated laminate is applied to the entire leg for added strength.

Your prosthetist will discuss with you which finish is best suited to your individual needs and lifestyle.

Endoskeletal Finish



Exoskeletal Finish



## *Caring for your skin*

Cleanliness is very important when you wear a prosthesis because it helps you to avoid skin irritation. When you perspire, dirt can collect in your skin's pores. This can lead to cysts, pressure sores, or pimples. By following these simple steps, you can help avoid these problems.

1. Wash your residual limb with lukewarm water and a mild bathing soap every day.
2. Rinse thoroughly. Be careful to remove all of the soap since soap deposits can cause skin irritation. Do not soak your limb for long periods of time because this may soften your skin and cause swelling.

## *Caring for your Limb*

As a general rule, after a recent amputation and before your first fitting, you should try to massage your limb several times a day. This will help decrease the skin's sensitivity. Never shave the residual limb area or apply lotions, creams or moisturizers unless prescribed by your doctor.

A common problem for persons with an amputation is edema. Edema usually occurs to a minor degree in all cases and can sometimes make the fitting of the prosthesis more difficult. However, there are certain things you and your prosthetist can do to help reduce the amount of edema.

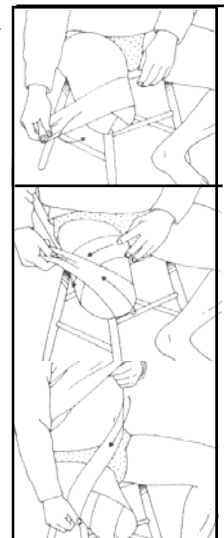
There are two methods of reducing swelling by either wearing an elastic bandage or a limb shrinker sock. Your prosthetist will instruct you as to which one to use.

### **Using An Elastic Bandage**

Wrapping with an elastic bandage not only helps reduce edema, it also helps prepare your limb for the prosthesis by shrinking and shaping it. The average person will require one or two elastic bandages that are approximately four to six inches wide. If you have edema, you should keep your limb bandaged whenever you are not wearing your prosthesis. However, the bandage should be changed every four to six hours.

You should use a dry, rolled bandage and your limb should be completely dry. When you wrap your limb, you should follow the following steps:

1. Starting in the groin area, roll the bandage toward the outside then behind and around the stump. Wrap the bandage around your limb on the diagonal. When you wrap the bandage, you should maintain tension about two-thirds the maximum stretch of the bandage.
2. Alternately cover the inside and outside of the end of the limb in successive turns. Continue making diagonal turns exerting firm pressure as you wrap. Bandage pressure should decrease as you move higher up the residual limb.
3. Bring the bandage up as high as possible on the thigh and up across the front and around the hip joint. Bring the bandage behind and around the waist. Cross over to the hip joint again.



Remember, change to a clean, fresh bandage regularly or whenever it becomes loose.

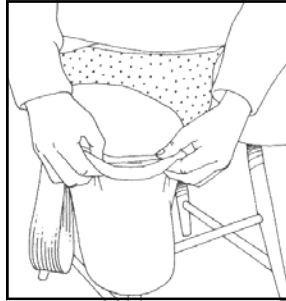
## Using a Limb Shrinker Sock

In some cases, an elastic shrinker sock will be used to control swelling.

The shrinker sock applies even pressure to your limb. You can put the shrinker sock directly on your limb, or for a better wrap, you can pull it over a bandage wrap or vice versa.

You should follow these steps when you apply the shrinker sock:

1. With the shrinker sock rolled up, place it over the end of your limb.



2. Roll it evenly up the length of your limb as far as it will go. Smooth out any wrinkles.



A garter belt should be attached to keep the shrinker sock pulled all the way up the groin. Shrinker socks that have a built-in waist suspension are available, so a garter belt is not needed.

You should remove and apply a clean shrinker sock at least daily.

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## Keeping Your Limb in Shape

Exercising is important to help prepare you for gait training. Your prosthetist and physical therapist will teach you the necessary exercises and will give you an exercise schedule.

To prevent muscle tightening, there are several things you should avoid. Do not:

- Rest residual limb on crutch handle
- Abduct residual limb
- Place pillow under hip
- Place pillow under back or spine
- Place pillow between thighs



## *Wearing Prosthetic Socks*

To maximize comfort and performance of the prosthesis, particularly after you have been fit with the temporary prosthesis, you will probably be required to wear a prosthetic sock. The residual limb can vary in shape and size due to fluid retention, heat and weight changes. After a period of time, as swelling subsides, you may have to wear additional socks to take up the space created in the sockets as your limb decreases in size.

Prosthetic socks come in a variety of sizes and they are given different grades depending on the thickness. You can combine various grades of socks to come up with the proper fit.

Your prosthetist will help you determine how many socks you should wear with your prosthesis. This number may vary at different times during the day, so you may always want to carry an extra pair of socks with you. Many people also wear a thin nylon sheath against the skin and under the socks for more comfort.

If too many socks are worn, the limb does not fit into the prosthesis completely. If you are experiencing pain, pressure or tightness, you can try removing socks or use a shrinker or a bandage wrap to reduce swelling.

If too few socks are worn, the limb will go into the prosthesis too far and will move in the socket as you walk. If this happens, additional socks should be worn.

Socks should always be pulled smoothly over the limb. Wrinkles can cause abrasions or skin irritations.

Your prosthetic socks should be kept clean by washing them daily in soap and cold water. Once socks become worn, they should be replaced rather than mended as pressure sores might develop at the mended site.



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## *Donning the Prosthesis*

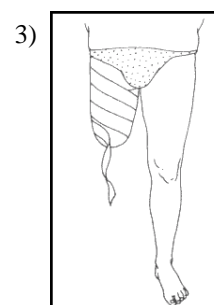
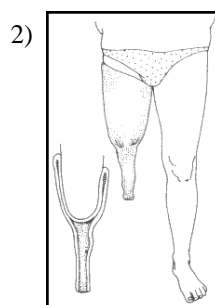
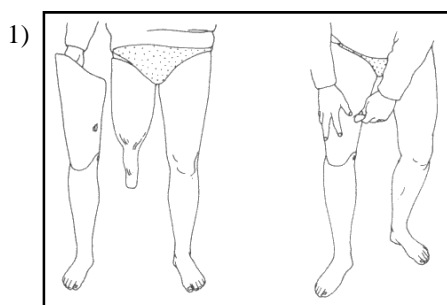
To put your prosthesis on, be seated and follow this procedure:

1. Put on the appropriate number of socks. Pull them smoothly over your limb avoiding wrinkles.
2. After the socks are in place, slowly push your limb into the socket. Be sure that your limb does not rotate or turn as it goes into the socket.
3. Attach the suspension device.

## Donning the Suction Socket Prosthesis

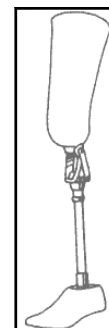
There are several different ways you can put on, or don, your suction socket. Try the different ways and determine which is the easiest and most comfortable for you. The three most popular methods are:

1. Use of nylon stocking or a single layer of tubular stockinette over the residual limb and removing it through the valve hole as the residual limb is "pumped" into the socket.
2. Use of a tubular stockinette that has been doubled over the residual limb and removing the stockinette by pulling the end of the outer layer through the valve hole as the residual limb is "pumped" into the socket.
3. Use of an elastic bandage that has been wrapped tightly around the upper half of the residual limb and then pulled through the valve hole as the residual limb is "pumped" into the socket.



## Knee Disarticulation Prosthesis

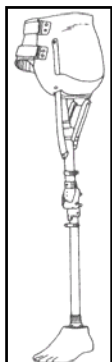
A knee disarticulation is an amputation on which the lower leg is removed at or just above the knee. The knee disarticulation prosthesis has a similar construction to the above knee prosthesis, except for the lower part of the socket and the knee mechanism. This prosthesis can be suspended by means of a leather socket or by a plastic socket. Leather sockets are held in place by lacing. Plastic sockets usually have a foam liner in the lower part of the socket for the bulbous end of the stump to slip by.



## Hip Disarticulation and Hemipelvectomy Prosthesis

This prosthesis is used when the amputee has lost the function of the hip due to amputation just below that hip joint or at the hip joint (which is called a hip disarticulation) or when half of the pelvis has been removed (which is called hemipelvectomy).

The socket for this prosthesis is made of either a laminated plastic or a thermoplastic which are both light-weight. The prosthesis includes a hip joint, pylon, knee joint and foot. Patients wearing these types of prostheses should follow the same instructions that are given for the above knee prosthesis.



## Shoes worn with the Prosthesis

Something that surprises most patients is that you are not as limited in your selection of shoes as you might expect. Great care and thought, however, should be taken in your selection of a pair of shoes and you should discuss this with your prosthetist.

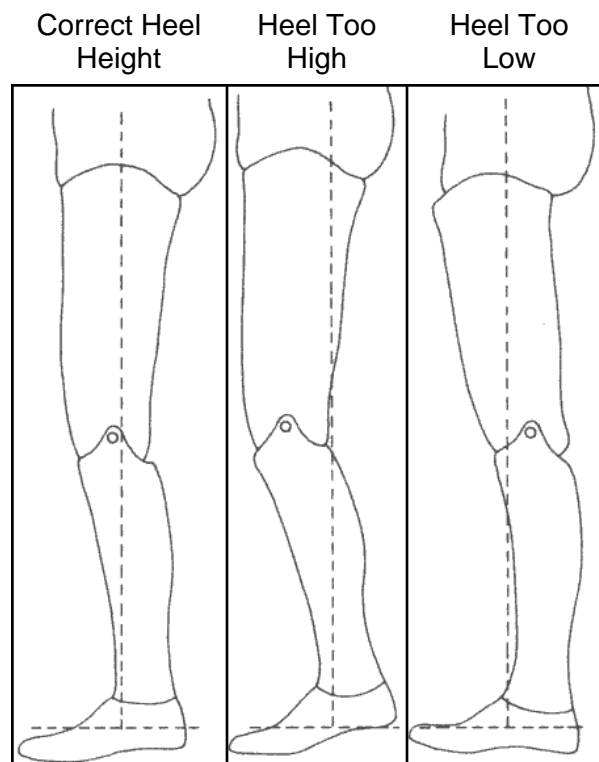
Your shoe is the foundation of your prosthesis. Therefore, solid and well-made shoes are vitally important. A low heeled shoe will provide for more stability and balance, although most heel heights can be worn with a prosthesis.


On one of your first appointments, you will be asked to bring a shoe that you have selected to wear with your prosthesis so that your prosthetist can select and fit the appropriate prosthetic foot. Bear in mind that once a heel height is selected, it cannot be changed without affecting the alignment and the feeling of the prosthesis, as well as the way you walk.

An easy way to check that a heel is the proper height is to put the shoe on the prosthesis and place it on a level surface. If the knee is thrown excessively forward or backward, the heel height is too high or too low.

A prosthesis should never be worn without a shoe because this puts extra burden on the foot which can cause breakage. It also may strain your limb or knee.

Keep your shoes in good condition, and check heels regularly to ensure they are not worn. If a heel needs to be replaced, do not wear the shoe with your prosthesis because this may cause alignment problems.





## *Safety and Maintenance*

Keeping your socket clean is extremely important. The inside portion of the plastic socket should be cleansed daily with a sudsy solution of non-detergent soap and hot water, rinsed thoroughly and dried. The leather parts of the prosthesis should be wiped with a damp sponge and immediately dried with a soft cloth.

You should constantly be alert to any looseness or play in mechanical parts that could develop in your prosthesis. This is an indication that some attachment point has become loose. If this should occur, you should contact your prosthetist immediately. You should pay equally close attention to the prosthesis in general and be aware of any areas that seem abnormal in any way.

You should never oil, grease or introduce any foreign substances to any mechanical part of your prosthesis. You should also never make any adjustments to your prosthesis or any mechanical part of your prosthesis. Once again, if you have any problems that require adjustments, you should contact your prosthetist.

Try to avoid getting your prosthesis wet. Most prostheses are water resistant, but not waterproof. Therefore if the foot becomes wet, remove your shoe and allow the foot to dry completely. If you desire to shower with your prosthesis or you enjoy swimming with your leg, special waterproof, swim and shower legs are available.

Finally, remember for optimum fit and safety, routine prosthetic check-ups with your prosthetist are necessary..

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## *When is it time to get a Replacement?*

The time to replace your prosthesis depends on many individual factors, the primary one being the fit and comfort of the socket which can be affected by changes in the limb. These changes occur for a number of reasons. For instance, in children, changes will take place regularly as the child grows. If the growth stabilizes for a period of time, normal wear and tear usually dictate the need for replacement.

The most significant reason for replacement is general shrinkage or atrophy of the limb. As this occurs, the socket fit will become less intimate. Often, the addition of one or more prosthetic socks will be sufficient to restore the fit.

However, if the change in your limb is too great, you will require a new socket to regain the intimate fit required for a comfortable and functional prosthesis.



## *Costs of Prosthetic Care*

The detailed and specific costs of your on-going prosthetic care cannot be covered completely in this booklet since there are too many variations that will influence the cost of your prosthetic services.

A major cost will be the professional time involved in providing specialized services to you. Your prosthesis is a custom-made device that takes time and skill to design and can only be fitted by highly trained prosthetist. Fees will also be charged for modification and adjustments that will be necessary as your limb changes shape and size.

Your prosthetist care is covered under most health insurance plans once deductibles and co-payments are met.

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## *Conclusion*

There are a few important points you should remember:

- Schedule regular check-ups with your prosthetist to have your prosthesis checked for wear, damage and fit. The check-ups also allow you to be updated in the new technologies that are constantly being developed in the prosthetic field. These may be of great benefit to you.
- Never try to make an adjustment to your own prosthesis. If you ever have any problems, call your prosthetist.
- Take care of your prosthesis by keeping it clean and well maintained.

We hope your questions regarding care have been answered in this booklet. If there are any questions you have on any subject or area that we have not covered, please feel free to discuss these with your prosthetist. You will find that your prosthetist is genuinely interested in you and your care. Our goal is to ensure your well-being and to help you regain a normal and active lifestyle.