

# NHS Limb Service and Prosthetic Information





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## Introduction

This leaflet is part of a series produced by Blesma for your general information. It is designed to give the necessary information needed to understand what will happen when accessing the NHS Limb Service. There may be some regional differences, and Blesma can assist and advise on an individual basis as required.

## The First Visit

At the first appointment a patient will generally be seen by a specialist team of clinical staff that may include a prosthetist, physiotherapist, doctor, nurse and occupational therapist. Other health professionals and/or students may also be present. The team will discuss goals and devise a care plan to help the patient meet his or her targets.

Many factors affect whether a prosthesis will enhance independence. These include any heart or chest problems, as well as arthritis and neurological problems such as strokes. If an artificial limb is going to be fitted, the prosthetist will measure the residual limb, take other related measurements and often take a plaster cast at this stage. This may be delayed if there is still excessive swelling or unhealed areas of the stump, or if a specific interface component is required.

Different types of prostheses are available. Each prosthesis is custom built to suit an individual's needs.

# Fitting and Delivery of the Prosthesis

The next appointment will usually be to fit the prosthesis. It takes one to two weeks between appointments, although this may vary depending on the components selected for the limb and any interim stages required.

The patient will try on the limb and take some steps, using parallel bars for support, to check comfort and function. The local amputee physiotherapist may be involved at this stage. Once any adjustments have been made, the limb is returned to the workshop for the cosmetic finish to be added. At this trial stage, the structural components of the limb will still be visible, but the finished prosthetic will have a cover on it which makes it look more like a limb. At this time, the residual limb is still likely to be swollen, so the prosthesis also tends to be larger than the remaining limb.

We advise that the prosthesis is not taken home until after the following physiotherapy session. This is so amputees can learn to walk again in a safe environment (if they are lower limb amputees) and don't develop bad habits that could be hard to eradicate once learned.

A supply of stump socks will be provided, which should be laundered at home. A fresh sock should be used daily, or more frequently, depending on any unhealed wounds.

# Follow-up Appointments

During the first year following delivery of a prosthesis, regular appointments are given to review progress.

The residual limb will change shape and size during this time, so the socket fit will alter. Adjustments to the prosthesis may then be required. If any other problems develop that require check-ups between these dates, the Limb Centre should be contacted for an extra appointment. Additional socks, cosmetic coverings and other minor items can be sent as required.



# Meet the Healthcare Team



While each Limb Centre may operate in a slightly different way, most will provide treatment and rehabilitation to amputees via a full multi-disciplinary team consisting of various healthcare professionals. Everyone's experience is different, but most patients will undergo a similar rehabilitation process and therefore be assisted by most members of the team outlined below at some stage during their rehabilitation.

This is a general overview and not a complete list of everyone who could be of assistance, so please ask at the Limb Centre to find out who is available to help.

## The Consultant

The rehabilitation service is free to all NHS patients. The doctor in clinical charge will be a consultant in rehabilitation medicine and a specialist in upper and lower limb prosthetics. A multi-disciplinary team, lead by the consultant, provides a coordinated rehabilitation programme to meet the needs of the limbless person, and people with severe permanent mobility problems.

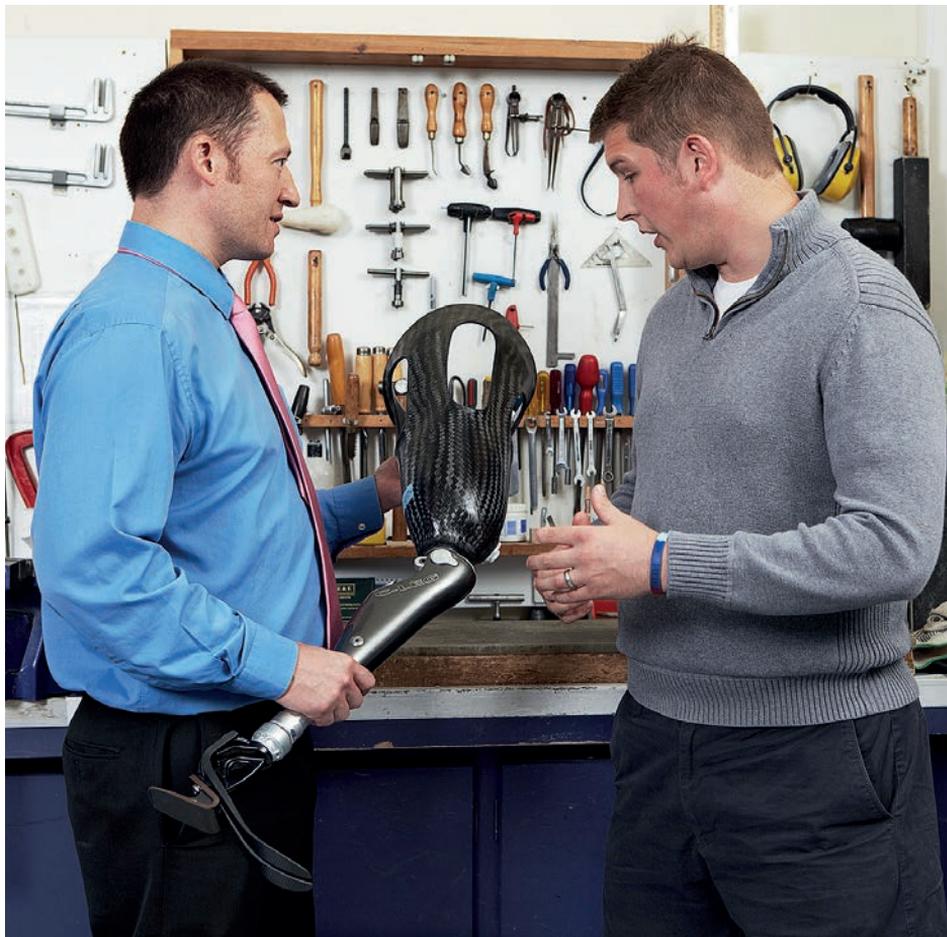
The patient, and his/her family and carers, are considered to be members of the team, and their views are taken into consideration. They are encouraged to participate in the treatment programme within the Centre and at home. The main responsibility of the doctor is the clinical care of patients referred to him/her for prosthetic management. The doctor maintains

an ongoing consultation with the surgeons who perform the amputation in the catchment area, advising on the optimum level of amputation and on prospects of prosthetic ambulation. The doctor may have visited the patient on the surgical ward prior to the amputation.

Upon arrival at the Centre, the doctor will carry out a full physical examination, paying particular attention to the residual limb, or stump. He/she will discuss the various factors on which successful rehabilitation depends with the patient and members of his/her family. These will include, for example, the patient's general condition, motivation, eyesight, amputation level, and the condition of the residual limb. Some amputees are not able to use prostheses but most are, and the patient will be advised of the choices available and procedures involved in the supply and after care of the prosthesis.

The type of prosthesis provided, and its various components, will depend on the patient's needs, and are unique to each individual. The multi-disciplinary team will work with the patient to provide the most appropriate prosthesis in terms of function and aesthetics, and the patient will be given details of the full programme of rehabilitation that must be undertaken to achieve self-sufficiency and a good gait.

If a patient lives a long way from a rehabilitation centre, many of the services required will be provided at their local hospital



and the doctor will keep their general practitioner informed of their progress. If necessary, he/she will arrange for the services of a physiotherapy department, social worker, counselling, hospital doctor etc to be made available locally.

The doctor, along with the team, will be able to provide a forecast (prognosis) of the rehabilitation potential and prospects of independence at home. He/she can also arrange for the patient to undertake employment assessments and have counselling and training to find a job. He/she can also refer the patient to a wheelchair service and for driving assessments. The aim is to achieve an optimal

level of holistic rehabilitation in terms of mobility, physical independence, driving, psychological adaptation and return to employment.

### **The Prosthetist**

A vital member of the rehabilitation team whose views and expectations are very important. He/she will discuss (along with other members of the rehabilitation team) a patient's past activities and future goals to give a realistic expectation of what the patient will be able to achieve with a prosthesis. In the case of young children, the parent/s or carer/s are active members of the rehabilitation team.

The team is mindful of the extra effort required to use a lower limb prosthesis and how some disease processes can affect the ability to use a prosthesis, and this will be one of the criteria that will be taken into consideration when prescribing a prosthesis.

Following initial examination of the residual limb (or stump) and discussions with members of the rehabilitation team, the prosthetist will formulate a prescription for the fabrication of a prosthesis. He/she will then take relevant measurements and a plaster cast of the residual limb so the 'socket' can be fabricated. The socket is the part of the prosthesis that fits onto the residual limb and, as such, needs to be an accurate fit. It is prudent to note that no matter how good a socket fits, it can in no way be called comfortable. The prosthetist will endeavour to make it tolerable. (Think of a bicycle saddle which, when used for the first few times, can be challenging to use for anything other than a short period but, with increased use, can become bearable).

After a patient has been cast and measured for a prosthesis, he/she will be given an appointment for a fitting approximately one week later. At the fitting stage, the prosthesis is constructed without a cosmetic covering. This enables the prosthetist to adjust the settings of the prosthesis to suit individual needs. It is at this stage that the patient will take their first steps. During this time, the prosthesis will need to be dynamically aligned and adjusted to the correct height, while the socket will be assessed for accuracy of fit.

Once the prosthetist is satisfied with all these parameters, the prosthesis may be finished there and then with soft foam or a temporary cosmesis (an aesthetic covering that makes the prosthesis look more natural), or the patient may be given a delivery appointment for approximately one week later. Once the prosthesis has been 'delivered', physiotherapy will be arranged for gait (walking) training.

During the first few weeks and months, the residual limb will be swollen. This will reduce over time, causing the socket to loosen, requiring adjustment. The patient may be taught how to

make up for volume loss by adding additional stump socks. During the first 12 to 18 months, the residual limb will change in shape and volume, which will require fairly regular adjustments by the prosthetist. If the change in volume/size is too great for adjustment, the patient may need to be recast for another prosthetic socket.

Modern prostheses are sophisticated devices that are constructed to exacting standards and, as such, need to be looked after. If the patient feels something has gone wrong with their prosthesis, or if it begins to feel uncomfortable, the rehabilitation centre should be contacted immediately and given as much detail as possible about the problem. This will enable the Centre staff to decide how urgently an appointment is needed and whether the referral needs to be with the prosthetist, nurse or doctor. It is very important that the patient does not attempt to alter, adjust or repair the prosthesis as this may leave it in a dangerous state. Any questions or problems should be directed to the Limb Centre.

## The Physiotherapist

The role of the physiotherapist in the rehabilitation of a patient following amputation is to help enable the individual to achieve his/her maximum independence and functional ability. This depends on a number of factors, including the patient's pre-amputation lifestyle, expectations and medical limitations.

The physiotherapist works closely with other members of the rehabilitation team to achieve the individual goals of the amputee. If the patient's condition will allow, the physiotherapist will see the patient before the amputation to explain their role and the proposed rehabilitation programme, and to answer any questions and queries the patient or his/her family may have. Often, it is not possible to see the patient before the operation, but physiotherapy begins very soon afterwards.

Treatment consists of advice and a carefully graded exercise programme to improve the patient's strength and general fitness. The patient will also be assessed for their potential to use a prosthesis, and will be given specific



exercises to prepare for prosthetic use. Some patients will stay in hospital until they can move independently with their prosthesis, but most patients are discharged as soon as they are able to manage a wheelchair safely at home.

In either case, physiotherapy continues (as an in-patient or an out-patient) using an Early Walking Aid (e.g. a PAM aid) to retrain walking until the individual is ready to use a prosthesis. This is when the post-operative swelling has reduced, the wound has healed and the patient has shown they will benefit from, and are able to manage, a prosthesis.

By this time, the physiotherapist will know the patient well and so will be able to advise the rehabilitation team and the patient, thereby contributing to the decision about prosthetic use and what type would suit the individual best.

Rehabilitation then continues with the physiotherapist teaching the amputee how to walk with the prosthesis and how to get the most out of it. Many Limb Centres offer a maintenance programme to make sure the user remains fit and able to use the prosthesis effectively. It is important to remember that an amputee's rate of progress, and their final functional outcome, will be determined by

their general state of health. Some amputees find that they can achieve more independence by using a wheelchair rather than a prosthesis, and therefore this is the right decision for them. The physiotherapist will support them in this decision. However, they will still need a physiotherapy exercise programme to enable them to stay as fit as possible.

## The Occupation Therapist (OT)

Occupational therapists (OTs) work closely with physiotherapists and specialise in helping patients tackle many aspects of independent living, some of which might initially be difficult or embarrassing, and which they may want to do on their own in the future.

The OT will initially work with a patient on the ward (they usually wear dark green trousers and a white tunic) and then in the Occupational Therapy Department within the hospital or Limb Centre, where patients can practice everyday activities with a view to being discharged. The aim is to encourage personal independence, with and without prosthetics, and activities might include:

- **Dressing practice:** If a patient has trouble balancing, it might be difficult for them to get dressed. The OT will show them how to get dressed safely and advise on suitable clothing
- **Personal care:** This includes regaining independence when washing, getting in and out of the bath, and on and off the toilet
- **Kitchen practice:** If necessary, the OT will help to develop or regain independence, and make sure a patient can cope in the kitchen, starting with making a hot drink and progressing to preparing a meal
- **Upper limb strength:** The OT may carry out specific activities to strengthen the arms/upper limbs, to make manoeuvring a wheelchair and wheelchair transfers easier
- **Wheelchair use (lower limb amputees):** If appropriate, the OT will order a suitable wheelchair and cushion. This is normally ordered as early as possible to allow a degree of personal independence in mobility soon after the operation

- **Home visit assessment:** To help with any practical problems a patient may have when returning home, a home visit may be arranged in advance of discharge. The OT will note logistical and structural issues, and will work out practical solutions with the patient such as installing ramps and rails, or widening doors for wheelchair access. An assessment will be made for the provision of equipment (e.g. for bathroom or kitchen use) which could be introduced into the home to make life easier
- **Upper limb use:** Occupational therapists also work with arm amputees. In hospital, they help patients regain their independence and solve practical problems, and provide them with exercises to increase the dexterity of the remaining hand, especially if the dominant hand has been lost. The patient may be advised on aids to help them. Before discharge, a home visit may be carried out to ensure the patient will be able to manage safely and independently
- **General rehabilitation:** The OT from the hospital, Limb Centre or community may continue the patient's rehab as an out-patient after their discharge from hospital to help them plan for the future. This could take the form of further help to develop independence, giving advice on driving, resuming and developing hobbies/interests, and helping to 'live with' (increasing tolerance to and use of) the prosthesis. At the Limb Centre, it is usually the OT who will teach the patient how to use the prosthesis. Occupational therapists also work in Social Services and specialise in the home environment. They will oversee any required housing adaptations. If circumstances change at home it may be these OTs who help to find solutions

## The Specialist Nurse

The specialist nurse works closely with consultant surgeons, the ward staff and the multi-disciplinary healthcare team involved in the care of amputees. They also liaise with the limb fitting clinic, GPs and the community teams. This central role allows them to provide

information and support for amputees and their families throughout their treatment and rehabilitation, to help to coordinate and streamline the amputee's care.

Patients and their relatives often find it useful to use the specialist nurse as a 'link'. Primary (new) amputees have a range of emotions to deal with. When faced with the need for amputation, patients understandably experience shock and upset, as well as fear and uncertainty for their future. Some find it hard to cope with changes in body image and worry about how others will view them. Some may feel a sense of bereavement, anger or bitterness. Others may blame themselves. There are concerns about practical issues and most people worry about how they will manage physically.

The specialist nurse is available to discuss these emotions and to answer any questions people may have, particularly regarding surgery, treatment and rehabilitation. Just knowing exactly what is going on and what to expect may help patients to feel less anxious and more able to cope.

This is also a time of confusion and concern for families. The specialist nurse is available to offer support and provide information to them as well. Patients are usually confronted with a bewildering array of doctors, nurses and other medical staff. It isn't always obvious who does what. The specialist nurse can explain which professionals will be present and what each of their roles is. Every healthcare professional, while being an expert in their own field, is also genuinely interested in the patient as a person, as well as in their welfare and progress. Hospital staff do not mind patients asking questions – in fact, they should encourage amputees to do just that – to help them feel confident about their rehabilitation. The specialist nurse can help them to understand their rehabilitation pathway so that they aspire to attainable goals.

The nurse also informs amputees as to those services, organisations and literature that are available and useful. New amputees often find it helpful to meet a rehabilitated

amputee. This can be arranged through a Blesma Support Officer or a specialist nurse, who can put patients in touch with a local support network.

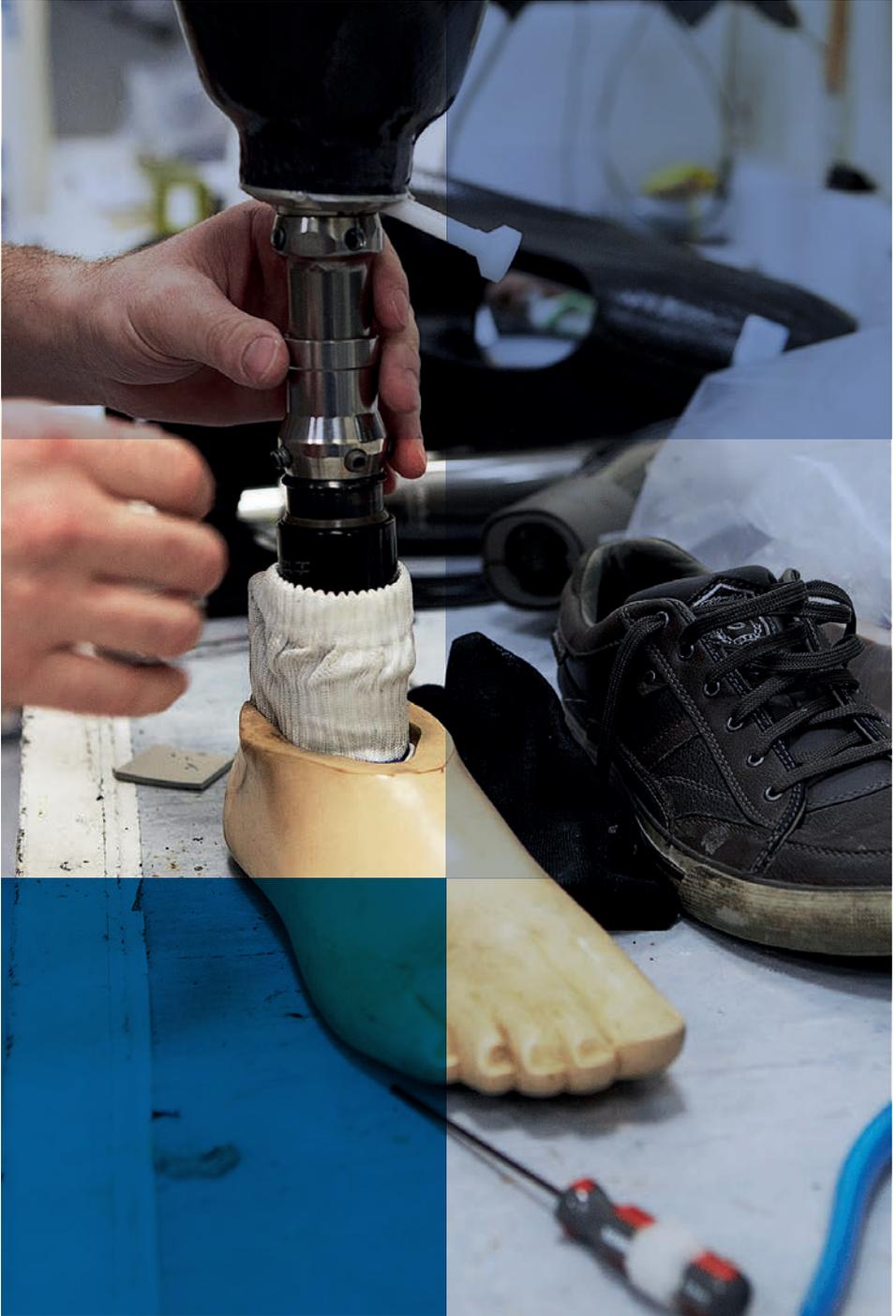
On the practical side, the specialist nurse can give advice and help with wound care and dressing issues. If applicable, they can counsel patients regarding recommended lifestyle changes – for example, smoking cessation – and they will promote the health of remaining limbs by giving foot and skin care advice. All patients are individuals, but what they go through, while difficult, is not unique. Those involved in their care understand that they can be emotionally fragile and confused. Allowances are made for this. There is always someone to talk to, who will listen to patient concerns or frustrations.

The specialist nurse is probably the one team member who is accessible to amputees throughout the full length of their hospital stay and subsequent rehabilitation. In fact, they often have contact long after amputees have left hospital. Many patients become a valuable asset to the amputee support network in the months and years after discharge from hospital.

## **How Blesma Can Help**

Blesma's staff and network of dedicated Support Officers are readily available to offer advice and information on all manner of subjects. From prosthetics issues to questions on Membership Services, Blesma's team of experts will make sure people get the help and guidance they need, whatever the issue. Blesma can be contacted by using the details on the back cover of this leaflet.





# Prosthetics Information

## Prosthetics

After the amputation, it may be possible to fit a prosthetic (artificial) limb onto the remaining stump. Prosthetic limbs have become increasingly sophisticated and can reproduce many functions of the hands, arms and legs.

For example, many people who have had the foot and lower section of the leg from beneath the knee removed (transtibial amputation) can walk or ride a bike using a prosthetic limb.

However, adjusting to life with a prosthetic limb requires an extensive course of physiotherapy and rehabilitation. It also takes a lot more energy to use a prosthetic limb as the body has to compensate for the missing muscle and bone. This is why a prosthetic limb may not be suitable for frail people, or for those with a serious health condition such as heart disease.

## Fitting the prosthetic

A prosthetic limb, especially a lower prosthetic limb, is not suitable for everyone. Using a prosthetic limb takes a considerable amount of energy because the body must compensate for the loss of muscle and bone in the amputated limb.

A person fitted with a prosthetic limb after a transfemoral (above-knee) amputation, for example, uses 80 per cent more energy than a person with two legs when walking. So if

it is thought a patient's body would not withstand the strain of using a prosthetic limb – if they have a heart condition, for example – then a purely cosmetic limb (one that looks like a real limb but cannot be used) may be recommended instead.

Suitable candidates for a prosthetic limb begin a programme of activities while still in hospital to prepare for the prosthetic. Before a prosthetic is fitted, the skin covering the stump may be made less sensitive (known as desensitisation). This will make the prosthetic more comfortable to wear.

### **Skin desensitisation consists of the following steps:**

- gently tapping the skin with a face cloth
- using compression bandages to help reduce swelling and prevent a build-up of fluid inside and around the stump
- rubbing and pulling the skin around the bone to prevent excessive scarring

A physiotherapist will teach a range of exercises designed to strengthen muscles in the remainder of the limb while also improving general energy levels, to cope better with the demands of an artificial limb.

# Lower and Upper Limb Prosthetics



## Lower Limb Prosthetics

There is an extensive range of lower limb prosthetics. Most consist of the following components:

- **The socket** is the interface between the prosthetic limb and the remainder of the real limb. The most common type of socket used in lower limb prosthetics is known as a patellar tendon-bearing socket, which is a plaster mould designed to fit around the knee joint
- **A suspension system** keeps the prosthetic limb in place. Examples of suspension systems include strapping systems and suction cups
- **Artificial joints** are a type of metal hinge designed to replicate the function and range of movement of real joints, such as the knee or ankle joints
- **A pylon** is a metal rod designed to replicate the function of the main bones of the leg
- **A prosthetic foot** is made from metal, plastic or a combination of both and is designed to replicate the main functions of the real foot, such as bearing the weight of the limb and aiding balance and stability

## Upper Limb Prosthetics

Again, there is an extensive range of upper limb prosthetics, which generally consist of the following components:

- **The socket** is usually made from lightweight plastic or graphite (a lightweight mineral) and is designed to fit around the remaining limb which, in most cases, is a section of the arm just below the elbow joint
- **A suspension system**, either a strapping or suction system, keeps the limb in place
- **A control mechanism** is designed to replicate the movements of the arm and hand. One commonly used control system involves attaching cables to muscles in other parts of the body, such as the shoulder or upper arm. A range of movements must be learned to control the prosthetic limb. Alternatively, the control mechanism can be electronic, controlled by electrodes implanted in the arm, which respond to the electrical activity generated by certain muscles
- **A terminal device** serves as the 'hand' of the prosthetic limb. Terminal devices tend to be either physically realistic and cosmetically pleasing with little practical function, or look very artificial (such as a hook or a claw) but with a wide range of potential functions. More sophisticated terminal devices are now being developed that are both cosmetically pleasing and functional



This is the third in a series of six leaflets about the British Limbless Ex-Service Men's Association, or Blesma, The Limbless Veterans as it is normally known. The other leaflets in the series are:

- 1 Introduction and General Information
- 2 Amputation Explained
- 3 **NHS Limb Service and Prosthetic Information**
- 4 Phantom Limb Pain
- 5 Stump Care
- 6 Wellbeing

All these leaflets can be downloaded from [www.blesma.org/leaflets](http://www.blesma.org/leaflets)  
If you prefer, you can receive hard copies by calling **020 8590 1124**  
or by emailing [chadwellheath@blesma.org](mailto:chadwellheath@blesma.org)

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