

# Pre-amputation: the first step in amputee rehabilitation

Jennifer Fulton

Major limb amputation produces significant changes in the body structure and function in the immediate and long term. For the individual who will be living with limb loss the journey should begin with a pre-amputation consultation with a specialist rehabilitation team. The BRSM guidelines<sup>1</sup> recommend that “a pre-amputation consultation with an appropriate member of the amputee rehabilitation team should be arranged where amputation is a treatment option”.



**Jennifer Fulton** is a clinical specialist Physiotherapist at the Royal National Orthopaedic Hospital. She is passionate about rehabilitation for patients with amputations and optimising functional outcomes with a particular interest in amputation due to sarcoma.

**T**he purpose of the pre-amputation consultation is to provide the patient with relevant information related to the rehabilitation pathway, including challenges and benefits to allow them to make an informed decision about surgery and their future health and wellbeing.

## Clinical assessment

The clinical assessment (see Box 1) informs the discussion and education elements of the pre-amputation consultation. To be effective and informative these need to be personalised to the relevant needs and concerns for each patient and their unique situation.

Clinical Assessment during pre-amputation consultation:

- Current health status including pre-existing medical conditions.
- Social history and support network.
- Neuromusculoskeletal assessment:
  - Peripheral nerves for any neuropathy or hypersensitivity.
  - Joints: range of motion and stability of joints proximal to proposed level of amputation.
  - Muscles: Length - key groups for flexion and abduction contractures at the hip and flexion contracture at the knee. Strength.
  - Circulation / skin.
  - Pain.
- Level of fitness.
- Current functional mobility and ability in relation to Personal and Domestic activities of daily living.

Box 1.

## Clinical discussion

A key aspect of a pre-amputation consultation is to establish an individuals' expectations of amputation surgery and the functional goals they wish to achieve, management of these from an early stage is key to achieving a successful outcome. Figure 1 demonstrates the complex range of factors that contribute to achieving a successful outcome following amputation surgery and a few of the key areas are discussed further.

## Patient expectations

The majority of patients having lower limb amputation expect to walk again and to use a prosthesis to return to function and quality of life.

Management of expectations can be done by focussing on the issues and challenges they can expect to meet at each stage of the rehabilitation pathway and highlighting the short-term goals or milestones that need to be achieved before moving to the next stage. It is important to introduce the idea that use of a prosthesis is not the only way to achieve goals or improve quality of life. Activities that rank high on quality of life measures

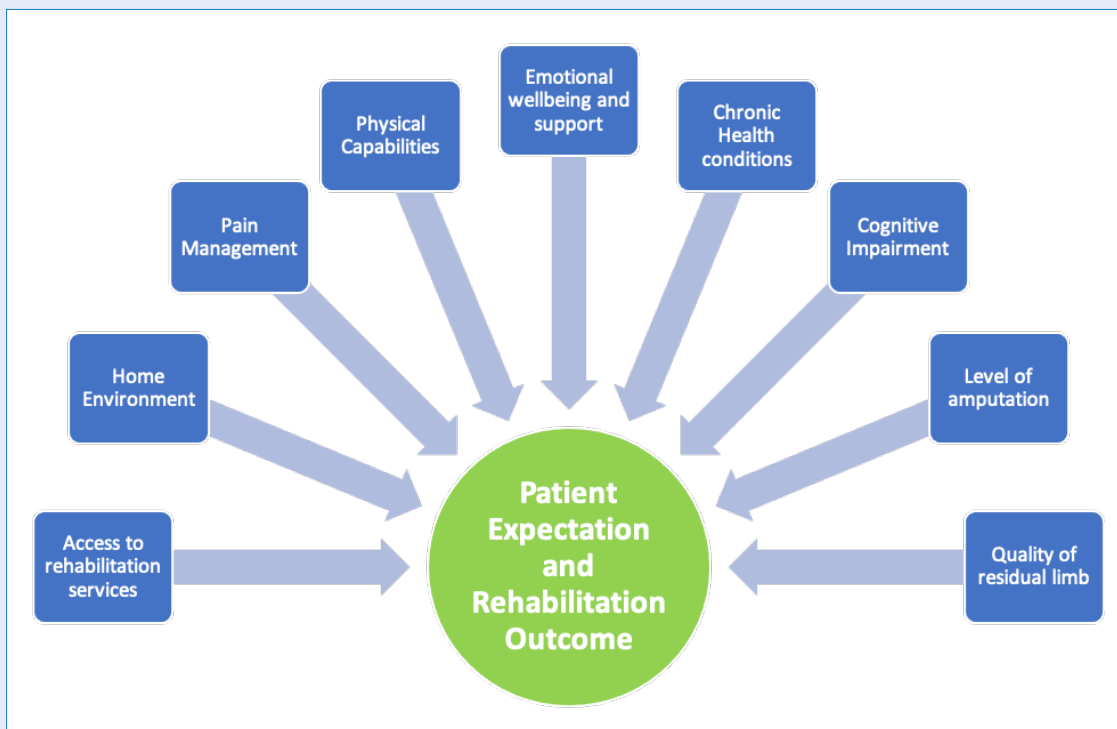


Figure 1: Factors that contribute to achieving a successful outcome following amputation surgery.

it is a scarce resource in the NHS particularly on acute surgical wards in the post-operative phase. Reassurance can be given that nursing and allied health professionals have the ability to support in this early phase and can help with identifying strategies for adapting to change and ensuring social support on discharge. If there are particular concerns at the pre-amputation stage, it may be appropriate to refer to local mental health services via the GP for support closer to home.

Many prosthetic rehabilitation units have patient support groups with buddy systems. Patients can be signposted to these and some of the condition specific charities where they can benefit from peer support and lived experiences of others

relate more to living with less pain, being able to socialise, engage in meaningful pursuits and have a role within the family. Depending on individual circumstances a prosthesis may allow this and for others it may be achieved by using a wheelchair alone or a combination of both.

**Pain management**

Management of pain in the immediate post-operative phase is crucial for patient experience and to facilitate early mobilisation and engagement in rehabilitation. Many patients who are on high doses of opioids before surgery benefit from being referred to pain management services to work on medication reduction and to learn alternative strategies for pain management.

It is known that higher levels of pre-operative pain and particularly existing neuropathic pain symptoms predispose to greater experience of phantom limb pain in the first few months after amputation. Patient should be/are informed about phantom limb pain

(PLP) and the range of sensations both noxious and otherwise they may experience. While patients are reassured that there are medication options to assist with management of PLP

they also benefit from being informed about non-pharmacological treatment options such as acupuncture, TENS, relaxation and breathing and graded motor imagery, including mirror box therapy.

Surgical consideration should also be given to management of peripheral nerves during the operation to manage neuroma formation, reduce PLP and maximise future corticeneural/prosthetic interfaces.

**Emotional wellbeing and support**

Many patients are concerned about how they

will cope emotionally after amputation. There is often an expectation that if they are going through such a life changing event there will be psychological and counselling services to help them<sup>2</sup>. While many prosthetic rehabilitation centres do have counsellors or psychologists

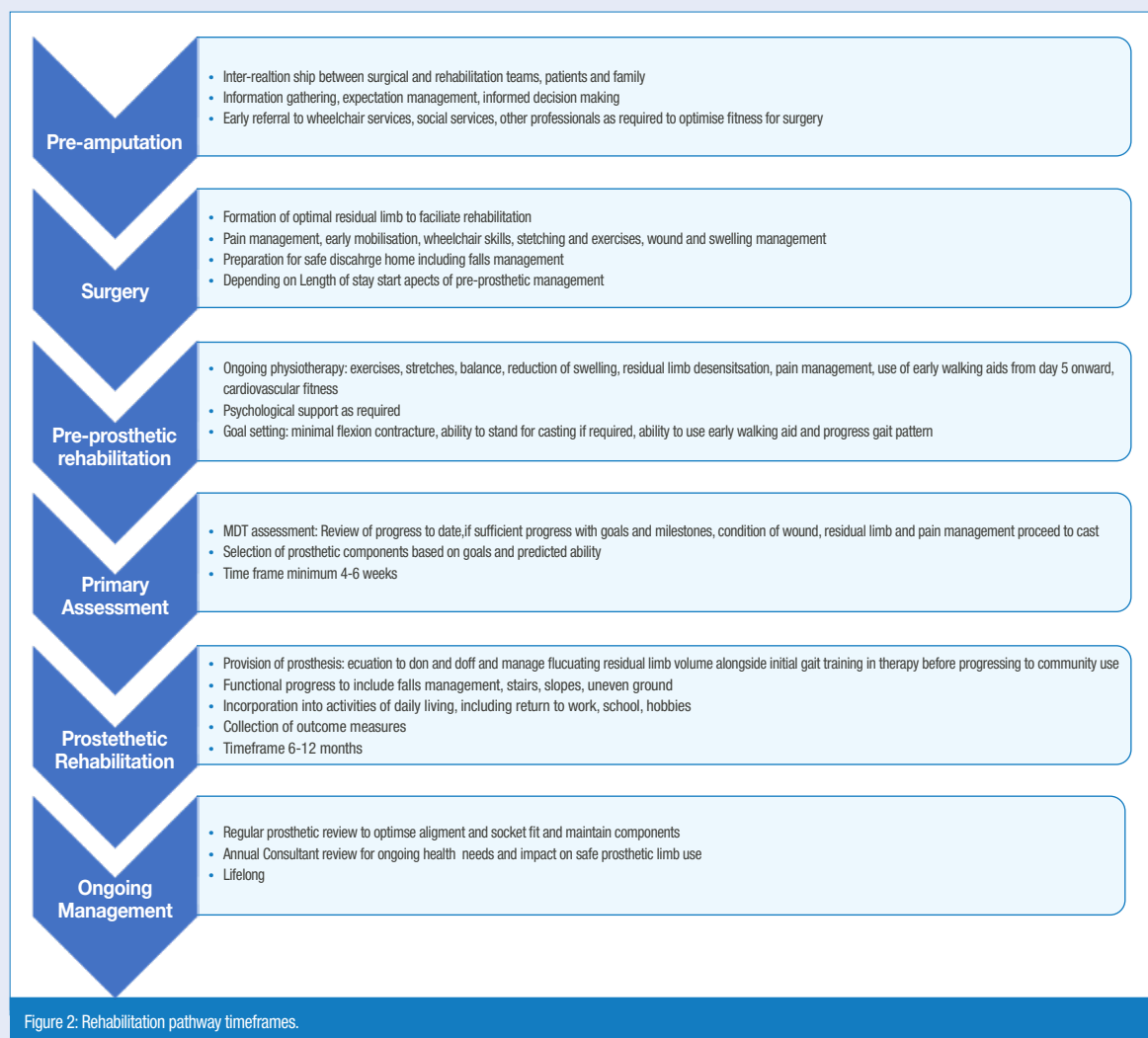
who have been through similar situations. There is much that still needs to be done in terms of patient support information in different formats to support the vast age range of patients who undergo amputation.

It is important that someone considering amputation identify one or two key people who can support then through the process including attending appointments such as the pre-amputation consultation, when a lot of information will be provided.

**Home environment**

The majority of houses in the United Kingdom are not wheelchair accessible or friendly. This can result in many patients being discharged home to live in microenvironments while awaiting home modifications / adaptations or considering rehousing all of which can take many months. Involvement of an experience Occupational Therapist is key in the pre-surgery and acute post-operative stage to set these processes in motion, to manage expectations and to find workable/acceptable solutions for patients and families that maximise a patient’s independence and quality of life. Simple activities such as decluttering can improve circulation space, prepping and freezing meals before surgical admission, that can be reheated in a microwave to provide healthy nutritious food afterwards and provision of key pieces of basic equipment can often make a difference to someone being >>

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arm strength and cardiovascular fitness. They can benefit from referral to dietician to optimise weight and nutritional intake, and smoking cessation services if appropriate.

Use of a prosthesis will require lifelong access to limb fitting services, with a minimum of an annual check-up but frequently more regular attendance is needed for the refitting of sockets or changes to components such as when prosthetic feet and knee joints are trialled. While there are prosthetic rehabilitation units located throughout the country this still requires long journeys for many.

## Conclusion

The need for limb amputation is often seen as a failure by surgical teams. It is important to reframe this surgery as the key first step of an integrated pathway between surgical and rehabilitation teams.

dependant on others or managing safely and independently. It is important that patients understand even with a prosthesis there will be times they may require a wheelchair and that this will become more frequent as they age. Timely referral to the local wheelchair service for provision of a suitable wheelchair is advisable for all patients proceeding to amputation.

### Access to rehabilitation services

It is important for patients to understand the rehabilitation pathway and the stages and time frames involved in this (see Figure 2). Progression from each stage usually requires certain goals or milestones to be met.

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**“Amputee rehabilitation is physically demanding. It requires the patient to commit to daily stretching, exercising, desensitisation work on the residual limb, managing pain, managing their thoughts and mood, practicing balance and walking with a prosthesis.”**

balance and walking with a prosthesis. It can take many months to achieve a basic level of walking with aids before progression to more advanced function and previous activities.

Where appropriate patients can be referred to physiotherapy to start a targeted exercise programme before surgery to stretch tight muscles and joints, improve

By referring patients for a pre-amputation consultation, it places the person the centre of care and allows informed decision making and optimal outcomes. ■

## References

1. British Society of Rehabilitation Medicine. Amputee and Prosthetic Rehabilitation – Standards and Guidelines, 3rd Edition; Report of the Working Party (Co-Chairs: Hanspal RS, Sedki I). British Society of Rehabilitation Medicine, London 2018.
2. Furtado S, Briggs T, Fulton J, Russell L, Grimer R, Wren V, Cool P, Grant K, Gerrand C. Patient experience after lower extremity amputation for sarcoma in England: a national survey. *Disabil Rehabil.* 2017;39(12):1171-90.