

Risks to the Contra-lateral Foot of Unilateral Lower Limb Amputees: A Therapist's Guide to Identification and Management.

Authors:
 Fiona Brett
 Clare Burton
 Maria Brown
 Karen Clark
 Mary Duguid
 Tim Randell
 Dianne Thomas

Introduction:

In the UK 4957 amputees were referred to prosthetic services in the year ending March 2007.³¹ After 1-5 years it is reported that 26-53% of the dysvascular amputee population require a second amputation.^{29, 30,32} Amputees who have or develop cardiovascular problems and/or diabetes are at increased risk of amputation of their contra-lateral foot.^{1, 7, 20} For people with bilateral amputations the literature reports high rates of disability, depression and mortality with a lower rate of prosthetic use.^{32, 33} It is therefore important that therapists are aware of the risk factors associated with contra-lateral amputation, and work with podiatrists and the MDT to minimise the risk.

Scope of the guideline:

BACPAR recommend that care of the remaining/ contra-lateral limb is included in therapeutic practice.²⁸ These guidelines are intended to be a practical resource for therapists working with lower limb amputees and should be used alongside other current published guidelines.^{17,21,22,28}

Generic risk factors which can affect the contra-lateral foot:

Additional risk factors which should be considered in the holistic management of the amputee – these are not fully covered in this guideline.

- Cardiovascular risk factors^{5,22}
 - Hyperlipidaemia²²
 - Hypertension²²
- Diabetes mellitus^{5,10,17,18,22}
 - Duration of diabetes²¹
 - Poor glycaemic control²¹
- Obesity^{7,22}
- Previous ulceration/amputation^{5,6,7,8,14,18,20,25}
- Smoking^{5,22}

Areas for further research:

- To investigate the impact of minor trauma caused by home environmental incidents on ulceration/amputation rates to the contra-lateral foot of unilateral amputees.
- To establish the influence of patient foot care education on the ulceration/ bilateral amputation rates found within the unilateral amputee population.
- To establish current effectiveness of unilateral amputee's self monitoring regimes of their contra-lateral foot.
- To ascertain the most effective adult educational strategies for unilateral amputees to enable efficient self monitoring & foot care regimes to be established.
- To determine the pathophysiological impact of pivot transfers and hopping on the 'at risk' contra-lateral foot to help guide selection of therapeutic mobility techniques.

Risk factors addressed by the guideline

Intrinsic risk factors Does the patient present with:	Action
Diabetes with additional risk factor ^{1,5,6,7,17} ⓑ	<ul style="list-style-type: none"> ▪ Ensure patient is under the review of the appropriate diabetic specialist^{7,14,17,20,21} ⓑ ▪ If possible minimize all modifiable risk factors^{5,7,10,14,17,18,20,21} ⓑ
PAD ^{3,6,8,14,17,18,25} ⓑ	<ul style="list-style-type: none"> ▪ Assess PAD status^{3,4,5,8,17,18,21,25} ⓑ ▪ Ensure patient under care of vascular specialist^{8,17,22} ⓑ
Callus ^{6,8,17} ⓑ Foot deformity ^{6,8,11,17,18,20,25,27} ⓑ Sensory peripheral neuropathy ^{1,2,4,5,6,7,8,11,16,17,18,19,25,27} ⓑ Ulceration ^{1,6,7,8,11,12,18,25} Ⓒ Minor foot trauma ^{4,5,6,8,18,19,25} Ⓓ	<ul style="list-style-type: none"> ▪ Educate patient regarding risk factors and foot care^{8,15,17,21,25,26} ⓑ ▪ Ensure patient under care of appropriate multidisciplinary team foot care specialist^{4,7,8,11,12,13,17,25} ⓑ ▪ Refer to specialist service to assess footwear needs^{5,4,8,11,12,14,17,19,21,25} ⓑ ▪ Visual and sensory assessment of foot^{2,4,6,7,8,12,14,16,17,18,20,21,25,27} ⓑ
Limited mobility of foot and ankle joints ^{6,8,12} Ⓓ	<ul style="list-style-type: none"> ▪ Ensure patient under care of appropriate multidisciplinary team foot care specialist^{4,7,8,11,12,13,17,25} ⓑ ▪ Refer to specialist service to assess footwear needs^{5,4,8,11,12,14,17,19,21,25} ⓑ ▪ Assess active and passive range of movement of foot and ankle and treat accordingly^{6,8} Ⓓ

Extrinsic risk factors Does the patient present with:	Action
Inadequate footwear ^{4,5,6,8,11,12,14,17,18,19,25} ⓑ	<ul style="list-style-type: none"> ▪ Ensure patient under care of appropriate multidisciplinary team foot care specialist^{4,7,8,11,12,13,17,25} ⓑ ▪ Refer to specialist service to assess footwear needs^{5,4,8,11,12,14,17,19,21,25} ⓑ
Abnormal loading of limb during mobility and activity ^{6,8,9,11,12,18,24} Ⓓ	<ul style="list-style-type: none"> ▪ Assess mobility and activity and adapt accordingly^{2,6,18,24} Ⓓ ▪ Optimise prosthetic stability and gait^{9,11} Ⓓ
Inability to complete self care, including: social behaviour, cognition, vision ^{6,7,8,18,19,25} Ⓓ	<ul style="list-style-type: none"> ▪ Assess and address ability to self-care <input checked="" type="checkbox"/>
Minor foot trauma and environmental hazards ^{19,23} Ⓓ	<ul style="list-style-type: none"> ▪ Assess and minimise environmental hazards <input checked="" type="checkbox"/>

Literature search (Evidence limited by availability of good quality articles.)

Databases searched

- CINAHL 1983 to 2008
- Medline 1966 to 2008
- PEDro
- Cochrane
- OT seeker
- Amed 1985 to 2008
- Hand search of relevant literature reference lists

Key words

- Lower limb amput*
- Diabetes (and/or)
- Vascular (and/or)
- Risk factors (and/or)

Studies

- Any experimental study, systematic review or narrative review

Inclusion criteria

- Adults aged 18 & over
- Male & female
- All levels of lower limb amputation
- Articles written in english language

Exclusion criteria

- Upper limb amputations
- Children aged under 18 years

Levels of evidence :³⁴

- 1++ High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
- 1+ Well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
- 1- Meta-analyses, systematic reviews, or RCTs with a high risk of bias
- 2++ High quality systematic reviews of case control or cohort studies
High quality case-control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal
- 2+ Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
- 2- Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
- 3 Non-analytic studies, e.g. case reports, case series
- 4 Expert opinion

Level of evidence awarded to each paper on basis of critical review by two group members.

Grades of recommendation :³⁴

This relates to the strength of the evidence on which the recommendation is based, It does not reflect the clinical importance of the recommendation.

- A** At least one meta analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
- B** A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 1++ or 1+
- C** A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 2++
- D** Evidence level 3 or 4; or extrapolated evidence from studies rated as 2+

Grades of recommendation awarded following group discussion on evidence available.

Good practice point:

Recommended best practice based on the clinical experience of the guideline group in the absence of supporting evidence.

Abbreviations list

BACPAR	British Association of Chartered Physiotherapists in Amputee Rehabilitation
MDT	Multi-Disciplinary Team
PAD	Peripheral Arterial Disease
RCT	Randomised Control Trial

Reference list – articles included in the formation of the clinical guideline and level of evidence awarded:

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J.F Bromley
Lecturer, Division of Rehabilitation Studies,
Bradford University.

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