

# ORTHOTIC TREATMENT: THE DIABETIC FOOT



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## Size and cost of the problem

An estimated 3.8 million people in the UK are affected by type 1 or 2 diabetes<sup>1</sup>. The cost of diabetes during 2010/2011 was estimated at £23.7 billion, about 10% of total NHS expenditure<sup>1</sup> or £27 million a day<sup>2</sup>. Of this £23.7 billion, £985.6 million were costs associated with foot ulcers and amputations<sup>1</sup>. In this context orthotic treatment is crucial given that for every £1 spent on orthotics the NHS could save up to £4. More recently it has been estimated that, once established, improved integration of orthotics within diabetic foot care could result in annual savings of 50%<sup>4</sup>. To do this, orthotic services need improved resources in line with national recommendations<sup>3,5,6</sup>.



## Orthotists: core members of the specialist foot care team

Orthotists are allied health professionals (AHPs) specialising in the assessment of patients requiring treatment for any part of their body using orthoses. Orthotists are part of the core specialist foot care team<sup>7,8</sup> and prescribe and design orthoses for the treatment of diabetes, including foot orthoses and footwear, based on consideration of tissue mechanics and biomechanical principles<sup>9,10</sup>.

## Common orthotic treatment in diabetes

Factors including nerve damage and foot deformity increase the risk of mechanical trauma to the diabetic foot, while vascular disease and high blood sugar levels reduce the tissue's ability to heal. By altering pressures applied to the foot, foot orthoses, therapeutic footwear and other orthotic devices protect at-risk feet and facilitate healing<sup>11-15</sup>. The National Institute for Health and Care Excellence (NICE) state that any person with two risk factors for ulceration (high risk), or who has previously had a foot ulcer, should be assessed for treatment with foot orthoses and therapeutic footwear to reduce their risk of ulcerating, or re-ulcerating<sup>7</sup>. One study showed this to reduce re-ulceration rates from 79% to 15% and amputation rates from 54% to 6%<sup>12</sup>. In terms of monitoring and education, orthotists offer regular reviews where education and foot care advice is provided and referral to the high risk foot clinic is facilitated if necessary<sup>10,16</sup>.



*Therapeutic footwear with a forefoot rocker sole.*



*Custom foot orthoses during construction stage showing variable densities of material.*

## TERMINOLOGY

- Orthosis / orthotic device (plural orthoses): externally applied device used to modify the structural or functional characteristics of the neuro-muscular and skeletal systems<sup>17</sup>
- Orthotics: the science and art involved in treating patients by the use of orthoses<sup>17</sup>

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People with complications such as partial foot amputations, or Charcot arthropathy may require more extensive orthotic intervention to aid healing, prevent further tissue and joint damage and to improve walking ability. This could include custom Charcot Restraint Orthotic Walkers (CROWs – below left) or partial foot orthoses/prostheses (below centre and right). High level partial foot amputations may also be managed by a prosthetist. Extended scope of practice (ESP) orthotists also provide other treatment modalities such as total contact casting (TCC)<sup>10</sup>.



## REFERENCES

1. Hex, N., Bartlett, C., Wright, D., Taylor, M., and Varley, D., 2012. Estimating the current and future costs of Type 1 and Type 2 diabetes in the UK, including direct health costs and indirect societal and productivity costs. *Diabetic Medicine*. 29:7, pp.855-62.
2. Diabetes UK, 2012. *Diabetes in the UK 2012. Key statistics on diabetes*. Diabetes UK, London.
3. Boxer, P. and Flynn, T., 2004. *Orthotic Pathfinder: A patient focused strategy and proven implementation plan to improve and expand access to orthotic care services and transform the quality of care delivered*. Business Solutions, London
4. Centre for Economics and Business Research Ltd, 2011. *The economic impact of improved orthotic services provision*. Centre for Economics and Business Research Ltd, London.
5. Hutton, J. and Hurry, M., 2009. *Orthotic Service in the NHS: Improving Service Provision*. York health economics consortium, York.
6. British association of prosthetists and orthotists, 2013. *Standards for best practice*. Paisley.
7. National Institute for Health and Care Excellence, 2004. *Type 2 diabetes: prevention and management of foot problems*. NICE clinical guideline 10). Available from [www.nice.org.uk/CG10](http://www.nice.org.uk/CG10)
8. Health and Social Care Information Centre, 2013. *National Diabetes Inpatient Audit 2012*. Health and Social Care Information Centre, Leeds.
9. Health and Care Professions Council, 2013. *Standards of proficiency – Prosthetists / orthotists*. Health and Care Professions Council, London.
10. Faulker, S., Munro, N., Munro, W., and Rowley, L., 2011. *The orthotics competency framework for the prevention, treatment and management of diabetic foot disease*.
11. Spencer, S., 2000. *Pressure relieving interventions for preventing and treating diabetic foot ulcers*. The Cochrane database of systematic reviews.
12. Fernandez, M., Lazano, R., Diaz, M., Jurado, M., Hernandez, D., and Montesinos, J., 2013. *How effective is orthotic treatment in patients with recurrent diabetic foot ulcers?* *Journal of the American Podiatric Medical Association*. 103:4, pp.281-90.
13. Brown, D., Wertsch, J., Harris, G., Klein, J., and Janisse, D., 2004. *Effect of rocker soles on plantar pressures*. *Archives of Physical Medicine and Rehabilitation*. 85:1, pp.81–86.
14. Armstrong, D., Lavery, L., Wu, S., and Boulton, A., 2005. *Evaluation of Removable and Irremovable Cast Walkers in the Healing of Diabetic Foot Wounds. A randomized controlled trial*. *Diabetes Care*. 28:3, pp.551-554.
15. Praet, S., and Lowerens, J., 2003. *The Influence of Shoe Design on Plantar Pressures in Neuropathic Feet*. *Diabetes Care*. 26:2, pp.441-445.
16. NHS London, 2012. *Allied Health Professions Diabetes toolkit*. NHS London, London.
17. International Organization for Standardization, 1989. *ISO 8549-1:1989: Prosthetics and orthotics -- Vocabulary -- Part 1: General terms for external limb prostheses and external orthoses*.

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