The Cost-Effectiveness of Continuous Topical Oxygen Therapy in Treating Unhealed Diabetic Foot Ulcers within the NHS

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INTRODUCTION

Diabetic foot ulcers (DFUs) are a significant cause of preventable morbidity among adults diagnosed with diabetes. Complications include declining functional independence, severe infection, prolonged hospitalisation, lower-extremity amputation, and death.[1] DFUs impose both clinical and economic strain on healthcare systems, primarily due to their complex management requirements and slow healing rates.[2] Wound healing is oxygen-dependent, yet macrovascular and microvascular complications in patients with diabetes frequently induce local tissue hypoxia, halting the repair process.[3] As an adjunctive treatment, Continuous Topical Oxygen Therapy (cTOT)* can accelerate wound closure and improves clinical outcomes for hard to heal DFUs.[4]

The purpose of this model-based analysis was to estimate the cost and health impacts of using cTOT as an adjunct to Standard of Care (SoC) for treating people with DFUs in the NHS.

METHOD

The cost-effectiveness analysis used a Markov model developed by York Health Economics Consortium to estimate costs, resource use, and quality-of-life outcomes over a lifetime horizon.

The model incorporated clinical and economic data from published literature and NHS sources, focusing on adults with unhealed DFUs receiving SoC. Health benefits are measured in quality adjusted life years (QALYs), which account for differences in both the quality of life and length of life.

A complementary budget impact model (BIM) assessed potential savings at national and local levels over five years. Both costs and health benefits were captured.

RESULTS · PER PERSON, cTOT + SoC vs SoC ALONE

LIFETIME SAVING

£9,904

saved per person, while improving outcomes

DOMINANT

ICER at £20,000/QALY threshold

↓ Lower cost

↑ More QALYs

+0.37	+2 mo	£17,396	0.87
QALYs gained	extra life (0.17 life years)	net monetary benefit	net health benefit (QALYs)

TABLE 1 · LIFETIME COST PER PERSON

NATROX® O_2	£39,135
SoC alone	£49,039

	NATROX® O_2	SoC	INCREMENTAL
Total QALYs	**6.34**	5.96	+0.37
Total life years	**11.22**	11.06	+0.17

SENSITIVITY ANALYSIS



probability cTOT is cost-effective at **£20,000/QALY**

NHS IMPACT

£160M+

cumulative NHS savings over 5 years

5% YEAR 1 — 15% YEAR 5 projected cTOT adoption

Savings grow over time as fewer unhealed ulcers and amputations offset initial treatment cost.

DISCUSSION & CONCLUSION

This cost effectiveness analysis underscores both the severe nature of DFUs and the substantial clinical and economic value of innovative improvements in their treatment.

Continuous Topical Oxygen Therapy is a dominant strategy compared to SoC alone. Incorporation into DFU management pathways offers superior clinical outcomes while simultaneously reducing overall healthcare expenditures within the NHS.





*cTOT DEVICE

NATROX® O_2 is a wearable medical device designed to deliver Continuous Topical Oxygen Therapy (cTOT) directly to a wound to support improved healing. Patients can continue with their normal daily activities at home or in a clinical environment. The device is light, portable and discreet, supporting rehabilitation and independence.

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