

ORIGINAL ARTICLE

An economic evaluation examining the cost-effectiveness of continuous diffusion of oxygen therapy for individuals with diabetic foot ulcers

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Abstract

Continuous delivery of oxygen therapy has been observed to improve healing for individuals with an advanced diabetic foot ulcer (DFU). However, this intervention requires the purchasing of an oxygen delivery device and moist dressings. It is unknown whether this upfront financial investment represents good value for money. Thus the aim of this project is to evaluate the cost-effectiveness of treating advanced DFU using continuous delivery of oxygen compared with negative pressure wound therapy from the perspective of the public health care payer in Ontario, Canada. A microsimulation model was constructed with inputs from peer-reviewed journal publications and publicly available reports. The 5-year costs and quality-adjusted life-years were compared between treatment and comparator. Sensitivity analyses were conducted to evaluate the robustness of results. The model predicted that continuous delivery of oxygen would cost \$4800 less compared with negative pressure wound therapy and increased quality-adjusted life years by 0.025. Lower cost and improved outcomes were observed in most scenario analyses. The results of this economic evaluation suggest that CDO therapy may reduce health care economic burden with a modest increase in quality of life outcomes. Health care decision-makers should consider the inclusion of CDO for the treatment of DFU.

KEYWORDS

cost-benefit analysis, diabetic foot

1 | INTRODUCTION

Diabetic foot ulcers (DFU) are a significant health burden for individuals with diabetes and the health care system. This condition is found in approximately 8% of all individuals with diabetes and increases to 19% for individuals with concurrent peripheral artery disease.¹ Globally,

DFU impacts approximately 18.6 million (95% CI, 15.0-22.9) individuals, translating to a prevalence of approximately 270 per 100 000 individuals.² Individuals with diabetes experiencing a foot ulcer are also at a higher risk for mortality compared with individuals without ulcer.³ More than half of foot ulcers will be infected,⁴ placing the individual at risk for ischaemic tissue

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