Barriers Eliminated: An Advanced Digital Wound Platform† Combined with a Continuous Topical Oxygen Therapy System†† Improves Access, Saves Time, and Decreases Wound Size in Complex Diabetic Patients

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Introduction:

The annual incidence of diabetic foot ulcers (DFUs) is 6% in the Medicare population and 5% in U.S. Veterans.[1] Peripheral artery disease (PAD) is a major risk factor in DFU development. Diabetics tend to have distal PAD with medial artery calcification (MAC).[2] Due to reduced oxygen delivery capacity, these patients experience propensity toward poor healing outcomes and wound chronicity.[2,3] New evidence recommends that topical oxygen therapy should be incorporated as evidence-based practice in treating DFUs.[4]

The pandemic created barriers for patients and providers. Access, short staffing, and non-integrated wound specific software potentially leads to fragmented care and possible DFU complications, especially for diabetics with compromised perfusion.[5,6]

Telehealth flourished during the pandemic as an alternative care solution, yet most systems lacked wound specific technology.[5]

Method:

To address barriers, our VA Podiatry clinic conducted a 12 week eight-patient pilot study to validate a hybrid model approach with an integrated Advanced Digital Wound Care Platform-telehealth (ADWCPt) system coupled with a continuous topical oxygen therapy (cTOT) system to assess, monitor, and treat ambulatory patients.

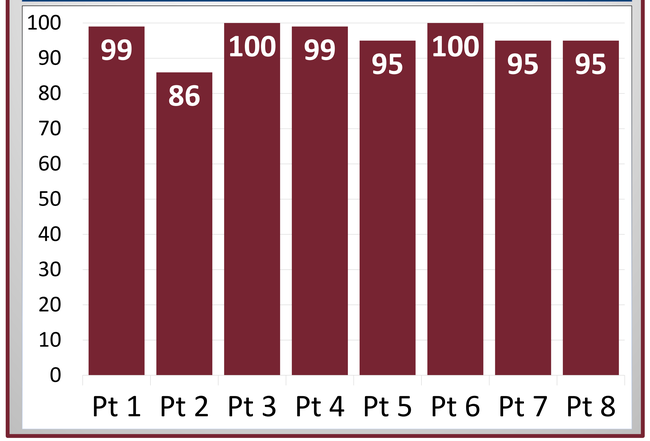
Patients enrolled failed to respond to prior treatment(s) for 4 weeks. Eight patients had chronic wounds, and perfusion status was assessed upon study enrollment via face-to-face visit.

Pt #	Hx Amputation	TCPO2 Below 40mm/Hg	MAC Score	MAC Disease
1	Y	N	Left 3	MODERATE
2	Y	Y	Left 0	NONE
3	N	N	Right 1	NONE
4	Y	Y	Left 4 (Right 4)	SEVERE
5	N	Y	Right 2 (Left 0)	MODERATE
6	Y	N	Left 0	NONE
7	N	Y	Left 2	MODERATE
8	N	N	Left 0	NONE

Medial Artery Calcification Disease (MAC) score
0-1 = no MAC
2-3 = moderate MAC
4-5 = severe MAC

MAC scoring system is based on radiographic imaging of length and location of vessel calcification
Ferraresi R et al (see reference #2 below)

% Wound Area Healed at 12 Weeks



Images Pre and Post Therapy With MAC Disease

Pt 1

Pt 4

Images Pre and Post Therapy Without MAC Disease

Pt 3

Pt 6

Results:

All eight patients had chronic wound with an average duration of >4 months. Initial vascular assessment revealed: 50% of patients had moderate to severe MAC disease and/or previous amputations and 50% had TCPO2 levels <40mm/Hg. At the conclusion of the study, we noted a 50% reduction in clinic visits and an average wound size reduction of 96%; two patients healed in <12-weeks. Unhealed patients continued on cTOT; five went on to heal over an average of 5.2 weeks and one patient expired.

Discussion:

Implementing an integrated hybrid telehealth model with ADWCPt coupled with an innovative cTOT system removed barriers. A decrease in face-to-face visits saved time and resources, addressed short-staffing issues and improved access to care during a time when many patients were fearful of attending appointments. Combining these innovative technologies provided a streamlined and comprehensive care model. We experienced zero complications with excellent healing outcomes, even in patients with vascular compromise.

References:

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