Using cTOT and leveraging a digital platform, changes how and where we deliver wound care while optimizing both clinical outcomes and limited resources.

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AIM:

Managing patients with chronic non-healing wounds is challenging particularly for those in rural communities.
This 12-week study aims to explore whether NATROX® Oxygen Wound Therapy (cTOT) in conjunction with an advanced digital platform with telehealth capabilities can offer clinical benefits while optimizing the limited clinical resources.

RATIONALE

There is a wealth of evidence to support the benefits of oxygen therapy on wound healing[1]. Oxygen is required for all major processes of wound healing and wound hypoxia is common. Yet, both wound perfusion and blood oxygen levels are frequently insufficient in patients with chronic wounds due to poor circulation, vascular disruption, and vasoconstriction, thereby reducing the wound's capacity to heal[2].

NATROX® O_2 system consists of 3 main components:

NATROX® Oxygen Generator (OG) (Fig 1)
No ON/OFF switch; activation occurs when a fully charged battery is fitted. Flashing green light indicates the device is working.

Fig 1

NATROX® Battery (Fig 2)
2 batteries supplied, one is fitted to the device while the other is left on continuous charge. One battery will power the device for a minimum of 24 hours.

Fig 2

NATROX® Oxygen Delivery System (ODS) (Fig 3)
Sterile and highly conformable the ODS works with all standard secondary dressings. The web-like design allows exudate to pass freely into the secondary dressing.

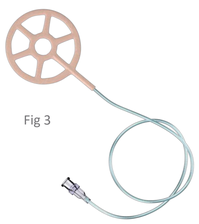
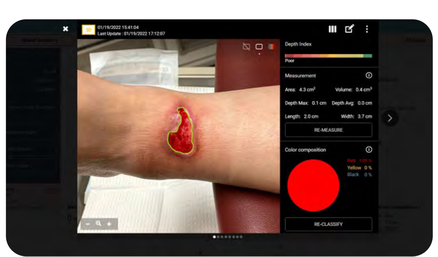


Fig 3

Digital Wound Platform

The VA's tactic to shift outpatient care to a "telehealth" mode, with phone, video and/or electronic communication to meet the needs of the ambulatory patient is difficult to achieve in wound care as clinicians rely heavily on the visual appearance of the wound to direct their therapy decisions. Thus, it is imperative to validate a remote monitoring tool that offers standard telehealth care as well as accurate, consistent, and simple wound measurement and imagery. Having the ability to manage complex wounds accurately and closely should enable quick identification of early warning signs that the wound is deteriorating. This should then facilitate appropriate triaging of patients that need urgent face to face medical review.



METHOD:

All patients had documentation that demonstrated no improvement for a minimum of 2 weeks despite good standard of care. On recruitment a full wound assessment was completed in the digital platform, for baseline data. Patients completed questionnaires on their health status and their thoughts on how easy and useful the platform and device would be. These questionnaires were repeated at the end of the study.

Participants were commenced on cTOT with an adhesive foam dressing as a secondary dressing, (frequency of dressing changes were dictated by exudate levels and clinical judgement). The patients were given a specially configured iPhone which included a Patient App and info library along with any relevant personalised instructions from the wound specialist.

First 4 weeks :

Wounds were monitored remotely by the wound specialist with a face to face clinical review every 2 weeks. Patients/caregivers were instructed to photograph their wound via the patient app at each dressing change (min once weekly) which was transmitted (via the secure app) to the wound specialist for review. Concurrently the patients were asked 3 questions relating directly to their wound and 2 relating to the device (all were yes or no answers). This helped identify early signs of wound deterioration, compliance issues or device problems.

Post 4 weeks of therapy:

Face to face clinical reviews were extended to every 4 weeks, based on clinical judgement with weekly remote reviews.

Questions:

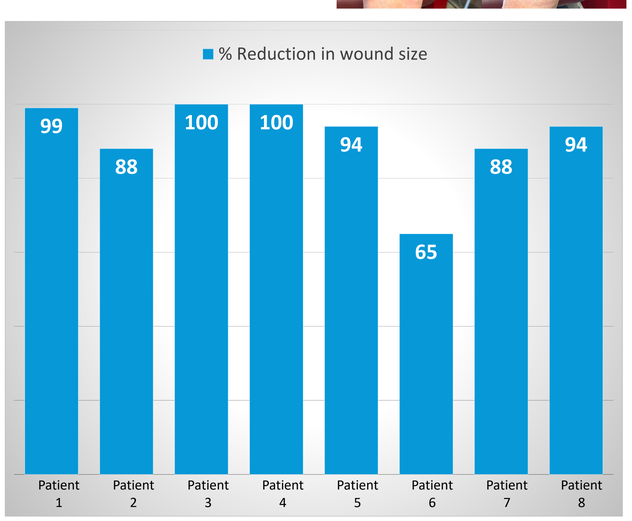
1. Do you have any new/increased drainage, odor, or redness around the wound?
2. Do you have new/increased wound pain?
3. Do you have a fever (temp above 100.4F/38C)?
4. Is the green light on the NATROX® device flashing?
5. Is the NATROX® device easy to manage at home?

RESULTS:

Healing:

In previously non healing wounds, we achieved an average reduction in wound size of just over 90%. 2 patients healed completely during the study with a further 5 healing within weeks of the study completing.

Pre and Post Therapy Images



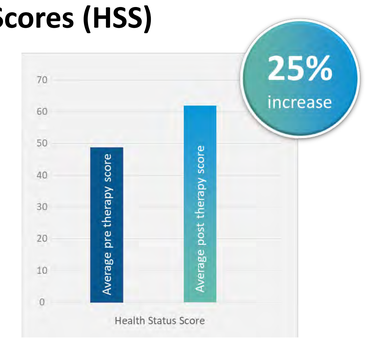
Patient Feedback:

The NATROX® O_2 system was easy to manage at home with charging and changing the battery deemed extremely easy. Mobility was not negatively impacted; in fact, most patients reported an increase in their mobility.

Health Status Scores (HSS)

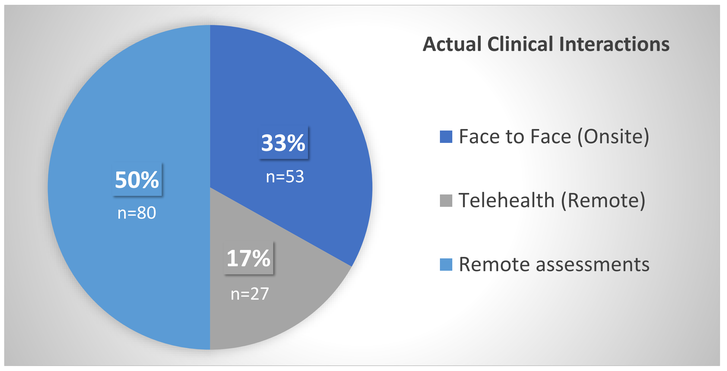
Prior to intervention:
HSS ranged between 28-80 out of 100 with an average score of 49

On completion of study:
HSS had improved in all cases and now ranged between 35-90 with an average of 61.



Clinical interactions:

Normally, 8 patients over a 12-week study would require 104 face to face interactions equating to approximately 70 hours of clinical time.



However, during this study clinical interactions were increased by a massive 54% but clinical time taken was reduced by 25%. In fact, this study freed up nearly 18 hours of clinical time and over 50 clinic appointments. Documentation was quicker and more consistent on the digital platform and the ability to assess wounds at arms length allowed the team to focus on those that required greater clinical input.

DISCUSSION / CONCLUSION:

This study demonstrated that there are ways to deliver clinical excellence without jeopardizing or compromising care. By changing how we interacted with our patients, leveraging both a digital platform and cTOT we accomplished superior healing outcomes and greater flexibility in how individuals were managed. Furthermore, by enhancing patient autonomy and engagement, compliance was increased, and patients reported feeling a greater sense of connection to their doctor.
Telehealth expands patient access to specialist services and allows for the influx of an aging population without the normal increase in associated costs. This is only possible when coupled with a highly effective therapy such as NATROX® O_2. Staff burnout is being reported at unprecedented levels, utilizing this unique combination can offer improved resource allocation and balance for the team. Delivering exceptional care for our patients requires adoption of innovative and effective therapies that can seamlessly integrate into our care pathways.

WOUND CARE WITHOUT COMPROMISE OR WALLS

VA | U.S. Department of Veterans Affairs
Veterans Health Administration
Salem VA Medical Center

References

1. Castilla DM, Liu Z-J, Velazquez OC (2012) Oxygen: implications for healing. Adv Wound Care 1(6): 225-30
2. Armstrong DG, Cohen K, Courric S et al (2011) Diabetic foot ulcers and vascular insufficiency: our population has changed but our methods have not. J Diabetes Sci Technol 5(6): 1591-5