

CDO Real-World Clinical-Effectiveness Study Summary

Below are a few of the highlights extracted from the clinical-effectiveness paper by Drs. Mercurio, Lavery, Agarwal and Oropallo. This study analyzed clinical data from a prospective patient database (PPD) of 764 wounds treated with Continuous Diffusion of Oxygen (CDO). It also compares the real-world data from the PPD to published clinical trial results for CDO & NPWT.

Key points and conclusions from the paper include:

- **Clinical efficacy is equivalent across all wound types studied**, which includes wounds ranging from chronic ulcers of all types to acute burns and surgical incisions.
- **Clinical efficacy is equivalent in various anatomical locations** ranging from toe to head.
- **Medicare age population has similar efficacy** to the general population, with the efficacy slightly higher in the Medicare population for pressure ulcers.
- **Statistically Robust:** Kaplan-Meier analysis, combined with proportional hazards test and analysis, shows that CDO therapy is not only efficacious, yet the data is also statistically robust across sexes, wound types and anatomical locations.
- **Improved Efficacy vs NPWT:** CDO therapy is shown to have a higher efficacy in both real-world application and in clinical trial settings compared to NPWT. Kaplan-Meier analysis shows that CDO use in clinical practice (PPD) has 79.2% closure in 112 days as compared to 43.2% for NPWT. The Kaplan-Meier median estimate for time to 100% closure with CDO was 58 days versus 96 days for NPWT: a 66% faster healing rate. Wound sizes and severity were comparable between the data sets (11.7 & 13.5 cm² for CDO & NPWT, respectively).
- **Broad Support for Standard of Care:** The evidence provided here further supports the high efficacy of CDO therapy in a wide variety of applications and bolsters the evidence cited by the numerous recommendations as a standard of care from organizations such as the American Diabetes Association, the Wound Healing Society, Health Canada and the International Working Group for the Diabetic Foot, among others.
- **Cost Savings:** Given the significant cost to the US Healthcare system for these types of wounds, particularly diabetic wounds, the savings to Medicare/Medicaid could be significant if CDO were to be removed from the national non-coverage list by CMS and granted reimbursement similar to that already available to Veterans and Native Americans through the Federal Supply Schedule, as well as those who have Cigna commercial insurance or are on qualified New York Managed Medicaid plans.

The vast majority of the wounds treated with CDO in the PPD were chronic wounds that had failed other standard treatments. For example, the surgical wounds category consists almost exclusively of wounds that had dehisced or experienced other post-surgical complications, as evidenced by a wound size that is larger than that for DFUs on average. The severity of wounds treated successfully with CDO ranged from stage 1 ulcerations to full-thickness wounds with exposed bone and cartilage and wounds as large as 283 cm².

Summary of Results from Prospective Patient Database

Parameters*	Total, All Wounds	Diabetic Ulcers	Venous Ulcers	Pressure Ulcers	Surgical Wounds	All Other
Number of Patients Treated (N)	764	200	111	145	145	163
Success Rate, Overall (%)	76.3%	75.5%	71.2%	71.7%	84.1%	77.9%
Success Rate, Medicare Age (%)	72.7%	73.2%	67.0%	73.4%	77.1%	73.3%
Patient Age, Years (avg ±SD)	66.1 ± 14.7	65.5 ± 13.2	70.8 ±14.9	68.8 ± 16.5	61.2 ± 14.6	65.3 ±13.1
Medicare Age (65+), %	49.1%	50.5%	65.7%	54.5%	38.6%	38.8%
Medicare Age, Years (avg ±SD)	78.0 ± 8.8	75.8 ± 8.4	79.8 ± 8.5	81.1 ± 8.4	75.0 ± 8.7	78.4 ± 8.7
Wound Age, Days (avg)	298.3	292.4	440.3	332.4	164.2	292.0
Wound Size, cm ² (avg ±SD)	11.7 ± 28.6	6.1 ± 9.0	20.5 ± 34.4	10.5 ± 20.4	7.1 ± 14.6	17.5 ± 43.9
Max. Patient Age Healed, Years	101	97	101	100	100	93
Max. Wound Size Healed, cm ²	283	56	224	85	122	283
CDO Therapy Days, avg	65.0	66.0	85.7	67.6	52.8	58.2

*Note that parameters such as patient age, wound age and wound size are at baseline prior to application of CDO. Wound age indicates how long the wound was noted to be open prior to application of CDO. Medicare Age refers to the portion of patients that were 65 years old or above at start of CDO therapy.



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The top right graph shows the simple Inverse Kaplan-Meier hazard curve for the CDO prospective database of patients (PPD), including the 95% confidence interval. Note that the inverted Kaplan-Meier graph shows the successes, i.e., those patients whose wounds were actually healed, as opposed to failures. This is for all wound types and locations. The tight confidence interval indicates robust clinical efficacy across all wound types and locations on the body.

The middle right graph shows the individual Inverse Kaplan-Meier curves for each of the five categories of wounds (including All Other Wound Types) on the PPD treated with CDO. Results indicate that there is no significant difference in clinical efficacy between wound types.

To test the robustness of the data, a proportional hazards analysis was performed. Under the proportional hazards (PH) assumption, the plotted curves should thus be parallel. The two charts below show these estimates for the discrete variables in the model. Surprisingly, it appears *strongly* to be the case that the PH assumption holds for these data. In fact, the authors can recall no other dataset which has been analyzed in any previous matter which produces such a robust result vis-à-vis the PH assumption. This data further supports that CDO is equally effective in all wound types and locations on the body.

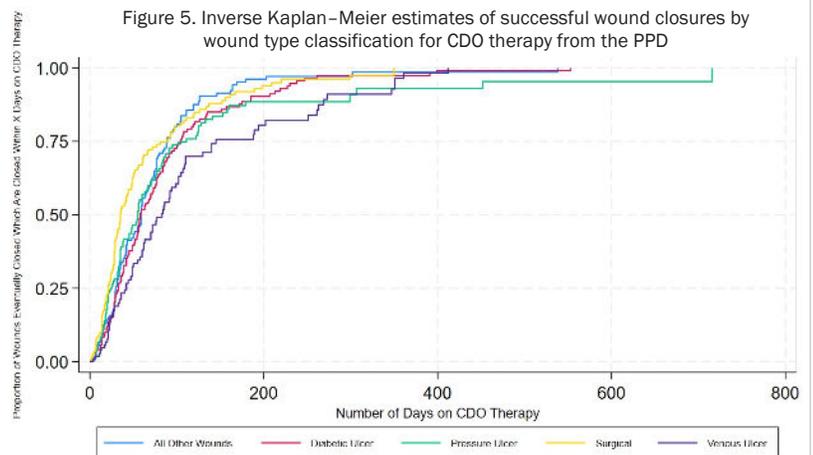
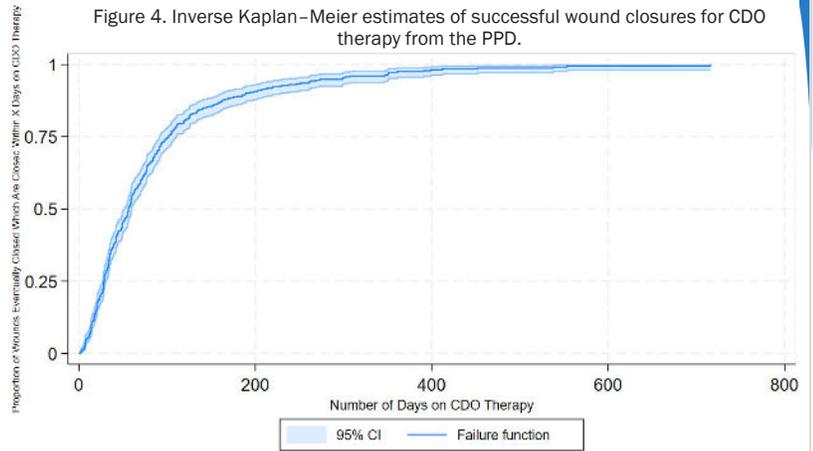


Figure 6. Test of the proportional hazards assumption by wound location for CDO therapy from the PPD.

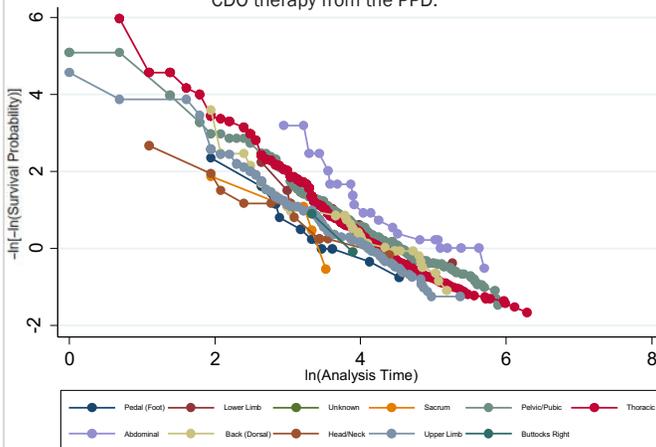
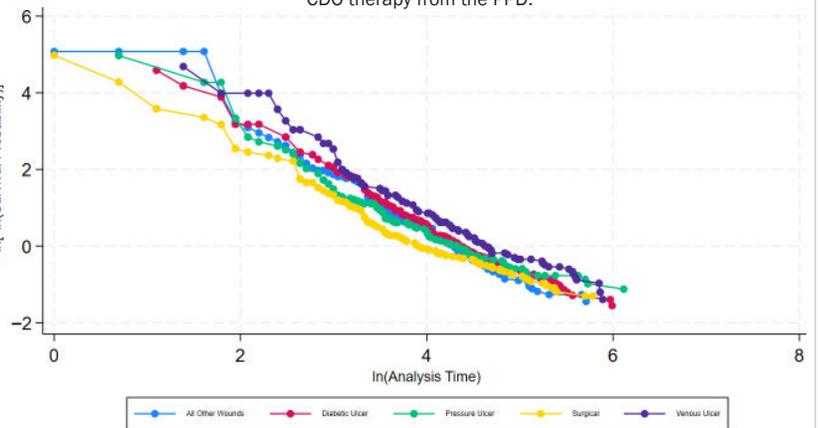


Figure 7. Test of the proportional hazards assumption by wound type classification for CDO therapy from the PPD.



Reference

Mercurio M, Lavery LA, Agarwal A, Oropallo A. Clinical Efficacy of Continuously Diffused Oxygen (CDO) Therapy and Cohort Comparison to Negative Pressure Wound Therapy (NPWT). *Oxygen* 2025, 5(4), 26; <https://doi.org/10.3390/oxygen5040026>.

Note that references for recommendations as standard of care in various publications and by professional organizations such as the American Diabetes Association, the Wound Healing Society, Health Canada and the International Working Group for the Diabetic Foot are available in the latest version of the EO2 Publication Summary, CDO Recommendations & Reviews. Available upon request.