

**3M** Science.  
Applied to Life.™

Solutions for Venous Leg Ulcer Care

**Getting your patients  
back on their feet.**







## What is a venous leg ulcer?

A venous leg ulcer (VLU) is an open skin lesion that usually occurs on the medial aspect of the lower leg between the ankle and the knee as a result of chronic venous insufficiency (CVI) or ambulatory venous hypertension, and that shows little progress towards healing within 4-6 weeks of initial occurrence.<sup>1</sup>



**\$14.9B**  
in care costs

The annual cost to treat VLUs in the U.S. is estimated to be \$14.9 billion.<sup>5</sup>

## Impact of VLUs

VLUs are the most common type of lower extremity wound, afflicting approximately 1% of the western population during their lifetime. VLUs also represent a significant burden for patients and healthcare systems.<sup>2</sup>



**55%**  
recurrence

55% of healed VLUs reoccur within the first 12 months of closure.<sup>6</sup>

## Therapy goals for VLUs

Venous leg ulcer management includes a combination of best practice skin and wound care principles with a therapeutic goal of reducing chronic edema and promoting wound healing:<sup>1,3,4</sup>

- Periwound skin protection
- Identification and management of wound infection and suspected biofilm
- Exudate management
- Compression therapy



**28%**  
of patients

28% of patients experience >10 VLU episodes in their lifetime.<sup>7</sup>

## Compression therapy: The gold standard for VLU management

Compression therapy has been shown to increase the rate of healing compared to no compression.<sup>2</sup> Research indicates that a bandage or multi-layer compression system that is capable of creating an inelastic sleeve provides stiffness that effectively supports venous pump mechanisms.<sup>8,9</sup>

Additional hemodynamics effects of compression therapy include:<sup>10,11,12,13</sup>

- Reduced venous ambulatory hypertension and venous pooling
- Improved venous and lymphatic return
- Reduced chronic edema and inflammation
- Reduced leg pain

# Compression therapy

## 3M™ Coban™ 2 Two-Layer Compression System

The Coban™ 2 Two-Layer Compression System provides effective compression therapy, which has been shown to contribute to effective VLU management through edema reduction, decreased pain, and improvement in a patient's daily activities.<sup>14,15</sup> Coban™ 2 compression system is easy to apply and remove and is designed to stay in place,<sup>14,16</sup> increasing patient compliance and the potential for more effective treatment.<sup>14,17</sup>



**3M™ Coban™ 2 Two-Layer Compression System**

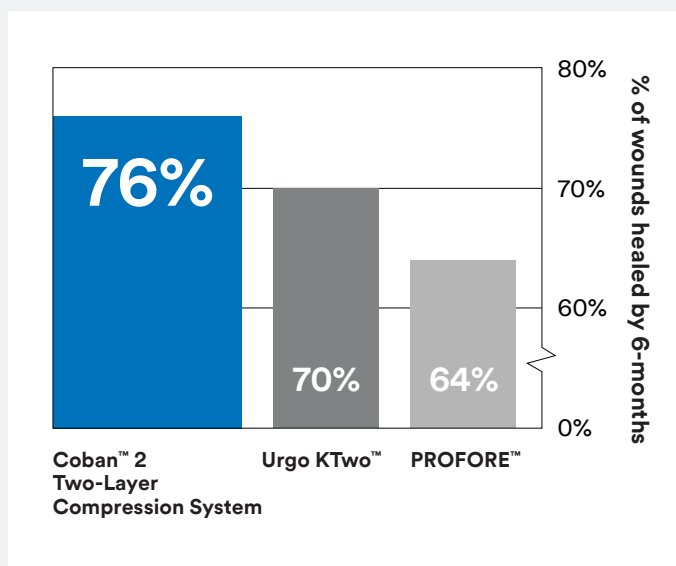


**3M™ Coban™ 2 Lite Two-Layer Compression System**



## VLU healing rate<sup>19,+</sup>

In two large, well-controlled, retrospective analyses comparing Coban™ 2 compression system to two other compression systems, Coban™ 2 compression system demonstrated increased healing rates with a reduction in patient management costs.<sup>18,19,+</sup>



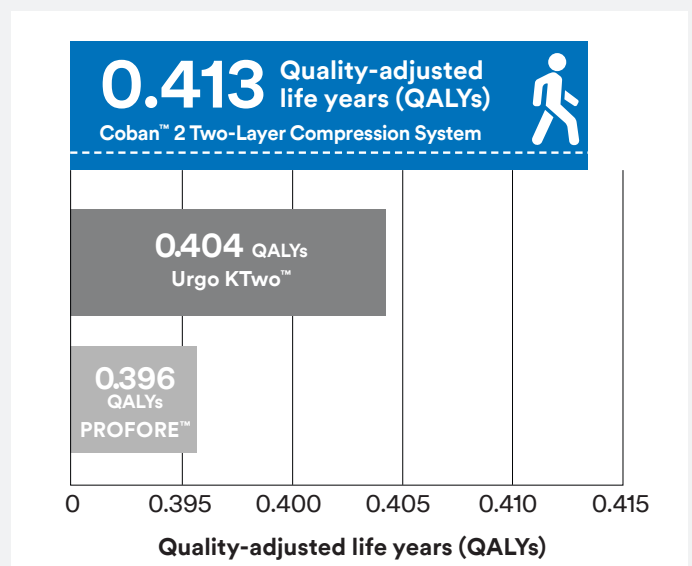
(p=0.006)

+ Refer to Instructions for Use

<sup>19</sup> Once compression has been initiated

## Quality of life

A retrospective analysis of 675 patient records who had a newly-diagnosed venous leg ulcers compared Coban™ 2 compression system to two other compression systems. Treatment with Coban™ 2 compression system demonstrated better health related quality of life.<sup>19,+</sup>



# Protect skin

Skin damage such as maceration, erythema and weeping are often associated with VLU. Research supports routine protection of periwound skin from excess exudate, mechanical trauma, and protection of at-risk, compromised skin as essential parts of wound management and wound bed preparation.<sup>20</sup>



## 3M™ Cavilon™ No Sting Barrier Film

A gentle, effective and CHG-compatible solution for routine skin protection.



## 3M™ Cavilon™ Advanced Skin Protectant

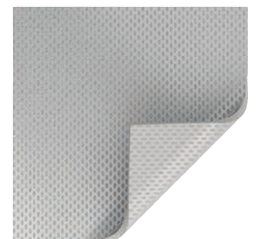
Creates a highly durable, ultra-thin barrier that attaches to wet, weepy skin<sup>21</sup> and lasts up to seven days<sup>22</sup> – providing long lasting skin protection.

# Prepare wound bed

Wound healing starts with addressing underlying issues such as bioburden and inflammation. Biofilm, present in greater than 70% of chronic wounds, causes persistent inflammation and poor wound healing.<sup>23,24</sup> Effective wound management strategies may include the use of topical advanced wound care products to help address the underlying issues of biofilm, bioburden and inflammation.

## 3M™ Silvercel™ Non-Adherent Hydro-Alginate Antimicrobial Dressing with Silver with Easylift™ Precision Film Technology

Silvercel Non-Adherent Dressing provides an easy and pain free removal<sup>25</sup> while protecting newly formed tissue<sup>26</sup>. The dressing is strong when wet, to ensure intact removal of the dressing.<sup>26</sup>

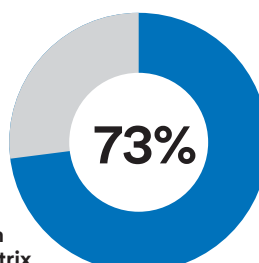


## 3M™ Promogran Prisma™ Wound Balancing Matrix

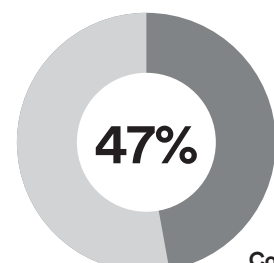
Promogran Prisma Matrix is comprised of a sterile, freeze-dried composite of 44% oxidized regenerated cellulose (ORC), 55% collagen and 1% silver-ORC. In the presence of exudate, it transforms into a soft, conformable, biodegradable gel, thus allowing contact with all areas of the wound. The dressing maintains an optimal healing environment that is conducive to granulation tissue formation, epithelialization and rapid wound healing.

### Significantly higher percentage of wounds healed

A 12-week randomized controlled trial involving VLU patients (n = 30) showed wounds dressed with Promogran Prisma Matrix healed at 12 weeks (p = 0.04).<sup>27</sup>



Promogran Prisma Matrix



Control



# Optimize wound environment

Selecting products that help optimize the wound environment is important to healing. Things to consider include: maintaining an optimal environment through exudate management, providing protection from outside contaminants, and enabling easy application and removal.



## Exudate management solutions



### 3M™ Kerramax Care™ Super-Absorbent Dressing

- Unique horizontal wicking layer draws up serous and viscous exudate, distributing it horizontally and vertically across the dressing, utilizing the full absorption capacity and preventing bulking.<sup>28,29</sup>
- Super-absorbent core locks in exudate, bacteria and MMPs<sup>30,31,32</sup> to reduce the risk of maceration<sup>33</sup> and infection transfer risk<sup>31</sup> even under compression.<sup>32</sup>
- Soft, non-woven material on both sides of the dressing allows either side to be placed on the wound and is comfortable for the patient,<sup>32</sup> helping support patient compliance.



### 3M™ Tegaderm™ Silicone Foam Dressings

- Offers a significantly longer wear time than the leading competitive silicone foam dressings<sup>35</sup> while being gentle to the skin.
- Unique multi-layer design absorbs and evaporates moisture away from the skin, helping reduce the potential for skin maceration and helping to promote an optimal healing environment.
- The unique patented delivery system enables easy application, even in challenging locations.



### 3M™ Tegaderm™ High Performance Foam Dressings

- Integrates innovative layer technology to absorb and evaporate moisture to help maintain an optimal wound healing environment.
- High absorbency and breathability helps reduce the risk of maceration.

# Optimize wound environment

## Negative pressure wound therapy

Negative pressure wound therapy (NPWT) is a method that applies sub-atmospheric pressure through a foam dressing to create an environment that promotes wound healing by drawing wound edges together, removing exudate and infectious material and reducing edema.<sup>34,37</sup>

Based on wound assessment and clinical judgment, NPWT may be appropriate for VLU management. Evidence supports positive effects with the use of NPWT for wound management in general.<sup>3</sup> NPWT is utilized across the continuum of care and has substantial amounts of clinical outcomes data demonstrating efficacy in creating an environment that promotes healing in a wide variety of wounds<sup>38</sup> whereas V.A.C.<sup>®</sup> Therapy remains the most published of all commercial systems<sup>39</sup>.

3M offers a portfolio of proven NPWT options that are indicated for the management of venous insufficiency ulcers. The ActiV.A.C.<sup>™</sup> Therapy System is a portable NPWT device for the mobile patient with SensaT.R.A.C.<sup>™</sup> Technology and Seal Check<sup>™</sup> Feature to help maintain pressure at the wound site and detect leaks. The Snap<sup>™</sup> Therapy System is a mechanically powered disposable NPWT system that's discreet, silent and lightweight – allowing patients to sleep with minimal interference and shower with the unit in place. The SNAP<sup>™</sup> Therapy System is particularly appropriate for ambulatory patients with lower extremity, shallow, small to medium DFUs and VLUs.<sup>40,41</sup>



**3M<sup>™</sup> ActiV.A.C.<sup>™</sup>  
Therapy System**



**3M<sup>™</sup> Snap<sup>™</sup>  
Therapy System**



# 3M solutions for VLU management

Your patients count on you to help reduce the pain and discomfort caused by VLUs. It's possible when you employ best practices in compression therapy, skin and wound care to aid in their healing process.

## Provide therapeutic compression

### 3M™ Coban™ 2 Two-Layer Compression System



### 3M™ Coban™ 2 Lite Two-Layer Compression System



## Protect skin

### Routine skin protection

#### 3M™ Cavilon™ No Sting Barrier Film



### At-risk or damaged skin protection

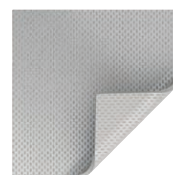
#### 3M™ Cavilon™ Advanced Skin Protectant



## Prepare wound bed

### Manage biofilm/bioburden

#### 3M™ Silvercel™ Non-Adherent Hydro-Alginate Antimicrobial Dressing with Silver with Easylift™ Precision Film Technology



### Provide collagen

#### 3M™ Promogran Prisma™ Wound Balancing Matrix



## Optimize wound environment

### Manage exudate

#### 3M™ Kerramax Care™ Super-Absorbent Dressing



#### 3M™ Tegaderm™ Silicone Foam Dressings



#### 3M™ Tegaderm™ High Performance Foam Dressings



#### 3M™ Snap™ Therapy System



### Supports granulation

#### 3M™ ActiV.A.C.™ Therapy System





1. Harding K. et al. Simplifying venous leg ulcer management. Consensus recommendations. Wounds International. 2015;10-11.
2. O'Meara S, Cullum N, Nelson EA, & Dumville, JC. Compression for venous leg ulcers. Cochrane Database of Systematic Reviews. 2012; (11).
3. O'Donnell TF, Passman MA, Marston EA, et. al. Management of venous leg ulcers: Clinical practice guidelines of the Society for Vascular Surgery® and the American Venous Forum. Journal of Vascular Surgery. 2014; 60(2), 3S-59S.
4. Wound, Ostomy, and Continence Nurses Society. (2019). Guideline for management of wounds in patients with lower-extremity venous disease. Mt. Laurel, NJ: Author.
5. Rice JB, Desai U, Cummings AKG, et al. Burden of venous leg ulcers in the United States. Journal of Medical Economics. 2014; 17(5), 347-356.
6. Finlayson K et al. Predicting the likelihood of venous leg recurrence: The diagnostic accuracy of a newly developed risk assessment tool. Int Wound. 2018; 1-9.
7. Weller C, Buchbinder R, Johnston R. Interventions for helping people adhere to compression treatments for venous leg ulceration (Review). Cochrane Database Syst Rev. 2013;9.
8. Mosti G, Partsch H. Measuring venous pumping function by strain-gauge plethysmography. International Angiology. 2010; 29 (5):421-425.
9. Partsch H. The Static Stiffness Index: A Simple Method to Assess the Elastic Property of Compression Material In Vivo. Dermatol Surg. 2005; 31:625-630.
10. Partsch H, and Mortimer P. Compression for leg wounds. British Journal of Dermatology. 2015 (173): 359-369.
11. Partsch H, Moffatt C. An overview of the science behind compression bandaging for lymphoedema and chronic oedema. Compression Therapy: A Position Document on Compression Bandaging. International Lymphoedema Framework in Association with the World Alliance for Wound and Lymphoedema Care. 2012; 12-22.
12. Moffatt C, Partsch H, Schuren J, et al. Compression Therapy. A position document on compression bandaging. The International Lymphoedema Framework. 2012.
13. Mosti G. Venous ulcer treatment requires inelastic compression. Phlebologie 2018. 47(01): 7-12.
14. Mosti G, Crespi A, Mattaliano V. Comparison Between a New, Two-component Compression System with Zinc Paste Bandages for Leg Ulcers Healing: A Prospective, Multicenter, Randomized, Controlled Trial Monitoring Sub-bandage Pressures. Wounds. 2011;23(5):126-134.
15. Moffatt C, Edwards L, Collier M, et al. A randomized controlled 8-week crossover clinical evaluation of the 3M™ Coban™ 2 Layer Compression System versus Profore™ to evaluate product performance in patients with venous leg ulcers. Int Wound J. 2008;5(2):267-279.
16. Tucker J, Peterson L, Rauch D, Walters SA. Pressure and slippage during 48 hours of compression therapy: a study on healthy volunteers. Poster presented at SAWC; April 25, 2018; Charlotte, USA.
17. Schnobrich E, Solfest S, Bernatchez S, Zehrer C, Tucker J, Walters SA. 7-Day, In-use Assessment of a Unique, Innovative Compression System. Data on file at 3M. Poster presented at SAWC; April 30, 2006; San Antonio, USA.
18. Guest JF, Gerrish A, Ayoub N, Vowden K, Vowden P. Clinical outcomes and cost-effectiveness of three alternative compression management systems used in the management of venous leg ulcers. Journal of Wound Care. 2015;24(7):300-310.
19. Guest JF, Fuller GW, Vowden P. Clinical outcomes and cost-effectiveness of three different compression systems in newly diagnosed venous leg ulcers in the UK. Journal of Wound Care. 2017;26(5):244-254.
20. Bryant R. Types of Skin Damage and Differential Diagnosis. In: Bryant BA, Nix DP. In: Acute & Chronic Wounds; Current Management Concepts, 5th ED. St. Louis, MO: Elsevier Mosby; 2016:82-108.
21. Brennan MR, Milne CT, Agrell-Kann M, Ekholm BP. Clinical Evaluation of a Skin Protectant for the Management of Incontinence Associated Dermatitis: An Open-Label, Non-randomized, Prospective Study. J of Wound, Ostomy & Continence Nursing. 2017;44(2):172-180.
22. Bernatchez S, Mathisen M, Grove G, Houser T. Durability of an Advanced Skin Protectant Compared with Other Commercially Available Products in Healthy Human Volunteers. Wounds. 2018; 30(9):269-274.
23. Malone M, Bjarnsholt T, McBain AJ, et al. The prevalence of biofilms in chronic wounds: A systematic review and meta-analysis of published data. J. Wound Care. 2017; 26, 20-25.
24. World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Management of Biofilm. Wounds International 2016.
25. Clark R et al. Simulated in use tests to evaluate a Non-Adherent Antimicrobial silver alginate dressing. Poster presented at: CAWC; October 29-November 1, 2009; Quebec City, Canada.
26. International case series. Using SILVERCEL Non-Adherent: Case Studies. London: Wounds International. 2012.
27. Lanzara S, Zamboni P. A pilot randomized trial to determine the effects of a new active dressing on wound healing of venous leg ulcers. Poster presented at European Wound Management Association (EWMA); May 14-16, 2008; Lisbon, PT.
28. Cotton S. The management of a chronic leg ulcer using KERRAMAX CARE™ Super-Absorbent Dressing under compression. Poster presented at Wounds UK; November 2015; Harrogate, UK.
29. Rose R. A large clinical evaluation assessing the tolerance & effectiveness of super-absorbent dressing, KERRAMAX CARE™. Poster presented at Wounds UK; November 2015; Harrogate, UK.
30. Cooper R. An investigation into the ability of KERRAMAX CARE™ and KERRAFOAM™ to bind bacteria. Cardiff Metropolitan University. September 2013.
31. Thomas H, Westgate SJ. An in vitro comparison of MRSA and P. aeruginosa sequestration by five super-absorbent wound dressings. Poster presented at EWMA; 11- 13 May 2016; Bremen, Germany.
32. 3M. Determination of free swell absorption and fluid retention, and absorption capacity under pressure of KerraMax Care. Internal report CHCR596. 2017.
33. Hughes M. A large-scale evaluation of managing moderate and highly exuding wounds in the community. Wounds UK. 2017;13(3):78-85.
34. Morykwas MJ, Simpson J, Pungert K, Argenta A, Kremers L, Argenta J. Vacuum-assisted closure: state of basic research and physiologic foundation. Plastic Reconstructive Surgery. 2006; 117:121S-126S.
35. 3M data on file. LAB-05-385368. Median wear times. 4x4 and 6x6 dressings, based on *in vivo* studies EM-13977 and EM-13978.
36. Jackson S, Warde D. Determination of free swell absorption and fluid retention, and absorption capacity under pressure of KERRAMAX CARE™. Crawford Healthcare Ltd. CHC R596. Knutsford, UK: 2017.
37. Orgill DP, Bayer LR. Negative pressure wound therapy: past, present and future. International Wound Journal. 2013; 10:15-19.
38. KCI. Cumulative NPWT Wounds. 2018
39. KCI. Percentage of V.A.C. Therapy Articles vs. Comp Articles. May 7, 2020.
40. Armstrong DG, Marston WA, Reyzelman AM, Kirsner RS. Comparative effectiveness of mechanically and electrically powered negative pressure wound therapy devices: a multicenter randomized controlled trial. Wound Rep Reg 2012; 20(3):332-341.
41. Marston WA, Armstrong DG, Reyzelman AM, Kirsner RS. A Multicenter Randomized Controlled Trial Comparing Treatment of Venous Leg Ulcers Using Mechanically Versus Electrically Powered Negative Pressure Wound Therapy. Advances in Wound Care. 2015;4(2):75-82. doi:10.1089/wound. 2014.0575.

**NOTE: Specific indications, contraindications, warnings, precautions and safety information exist for these products and therapies. Please consult a clinician and product instructions for use prior to application. This material is intended for healthcare professionals.**

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