

Compression Selection: What Would You do? (WWYD)



Suzie Ehmann, PT, DPT, CWS, CLT-LANA
Atrium Health Stanly



Faculty Disclosures

Suzie Ehmann, DPT, CWS, CLT-LANA: Consultant — 3M +KCI, Compression dynamics, Essity, Milliken, URGO
Speakers Bureau — 3M+KCI, Compression Dynamics, Essity, L&R, Milliken, URGO
Grant/Research Support- Essity
Advisory Board — URGO



Disclosure

- The faculty have been informed of their responsibility to disclose to the audience if they will be discussing off-label or investigational use(s) of drugs, products, and/or devices (any use not approved by the U.S. Food and Drug Administration).
 - Applicable CME staff have no relationships to disclosure relating to the subject matter of this activity
 - This activity has been independently reviewed for balance.



Compression Selection

What would YOU DO?



Compression Disclaimer #1

- **Compression (of any form) are medical devices!! (even elastic stockinette or rolled gauze)**

- Potential to help
- Potential to harm

- **Know your products**

- Products are NOT interchangeable
- If one doesn't work.... try another

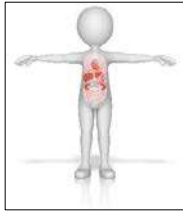
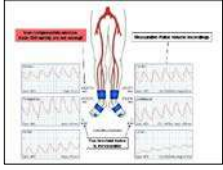
- **Know your skills**

- Not all product applications are the same
- Value of additional 'hands-on' training
 - Continuity of care
 - Demonstrate efficacy of care



Compression Disclaimer #2

- I am **NOT** prescribing any treatment intervention... I am sharing examples to challenge you to learn more about smart compression utilization
- Know **your patient**
 - Vascular status
 - Medical status
 - Social status



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Compression Disclaimer #2a

- Ankle Brachial Index (ABI) Guidance
 - ☐ > 1.40: Falsely elevated
 - ☐ 1 to 1.40: Normal — safe to use all levels of compression (15-20, 20-30, 30-40, 40-50 mmHg)
 - ☐ 0.91 to 0.99: Borderline PAD — safe to use all levels compression (15-20, 20-30, 30-40, 40-50 mmHg)
 - ☐ 0.8 to 0.90: Mild PAD — apply compression with caution (15-20, 20-30, 30-40 mmHg)



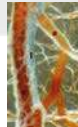
DISCLAIMER: This is a GUIDE ONLY and cannot replace clinical judgment. Each clinician is responsible for comprehensive evaluation and plan of care appropriate to individual patient needs.

Bjork R, Ehmman S. J Wound Care. 2019 Jun 1;28(Suppl):1-44.

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Compression — What and Why

- **What is compression?** Application of a bandage/compression garment /device creates **pressure** on the limb that is **transmitted to the tissue and all internal structures**
- **Why do we use it?**
 1. Enhance circulation
 - a) Venous return enhanced, which decreases capillary filtration
 - b) Lymphatic improves "lymph-motricity," enhanced resorption into lymphatics
 - c) Arterial flow positively impacted with evidence of vasodilation
 2. Trophic changes
 - a) Wounds heal
 - b) Reduced stasis
 - c) Reduced lipodermatosclerosis tissue changes



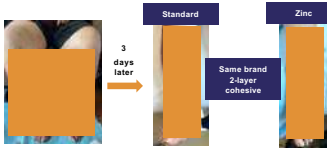
Chenagaga F, et al. J Vasc Med Biol. 2017;29(5):291-298. Chenagaga F, et al. Adv Wound Care. 2015;4(11):297-307. Clark W, et al. Lymphedema Framework: Template for Practice Compression History for Lymphedema. Wound Care. 2008;8(4):24-30. Smetana EA, et al. J Clin Oncol. 2009;27(11):1515-1518. Miller G, et al. J Clin Oncol. 2009;27(11):1515-1518. Rahn E, et al. Adv Wound Care. 2015;4(11):297-307. Farnock H, et al. J Clin Oncol. 2015;33(21):2653-2659. Mott G, et al. J Clin Oncol. 2015;33(21):2653-2659. Bancher C, et al. J Wound Care. 2011;20(Suppl):21-26-32.

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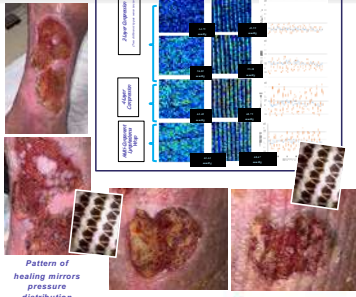
Compression = Positive Pressure Wound Therapy (PPWT®)

More than edema reduction...

- Compression textile can impact trophic changes



- Impact on wound healing patterns
 - Mechanical deformation of tissue/cells
 - Biophysical response



Elmann S, et al. *Wounds*. 2020 Dec;32(12):353-363. Epub 2020 Aug 17.

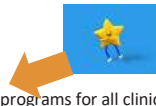


Evidence-Based Compression Utilization



What to do we know...

- Some is better than none
- Multilayer is better than single layer
- Ideal compression is STIFF (low resting, high working) NOT tight
- HOWEVER... evidence underpinning wound care and compression utilization**
 - Limitations in the evidence base pertaining to wound care, including the domination of studies published for corporate interest
 - Poorly developed links between evidence and wound care in practice
 - Recognition of insufficient wound care knowledge among providers
 - Frequency of ritualistic and historic practice
 - Recognition of need for more structured wound care education programs for all clinical staff involved in wound care (MD, PA, RN, MSN, LBP, NP, WOCN, CWS, WCC, PT, OT)



O'Meara S, et al. *Cochrane Database Syst Rev*. 2012;11(11):CD009265. Mosti G, et al. *Eur J Vasc Endovasc Surg*. 2015;50(3):368-374. De Carvalho MR, et al. *J Vasc Nurs*. 2016;34(2):45-53. Ruzickley CV, et al. *Phlebology*. 2003;18(3):120-126. Hessel M, et al. *Phlebology*. 2012;27(2):92-98. Hansen R, et al. *Br J Nurs*. 2008;17(20):616-624. Daley J, et al. *Eur J Vasc Endovasc Surg*. 2004;27(1):94-99. Mosti G. *Phlebology*. 2018;47(1):7-12. Partsch H, et al. *Br J Dermatol*. 2015;173(2):359-366. Weisk L. Wound care evidence, knowledge and education amongst nurses: a semi-systematic literature review. *Int Wound J*. 2018 Feb;19(1):53-61. doi: 10.1111/inj.12522. Epub 2017 Oct 17. PMID: 29045064.



Good Compression Is an ART!!!



“We all need to learn to ‘paint’ a better picture.”

Marta Osler, PT, CWS, CCS, DAPWCA



Let's use compression science to problem-solve compression selection

Adapting compression applications to patient presentation

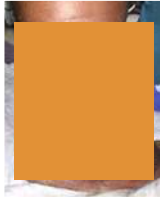


If Your Patient's Wound Leaks...What Would You Do?

- Case 1: The weeping wound... put more absorbate dressing on it!!!



6/14



Wrapped in a 2-layer cohesive for about 2 weeks
-wound is getting worse
-patient is frustrated

Tall (6 ftS)
Obesity (400#)
DM
OSA
HTN
CVI
Working and has to be able to fit into shoe

Why does the wound weep?

Keep in mind the patient height & weight

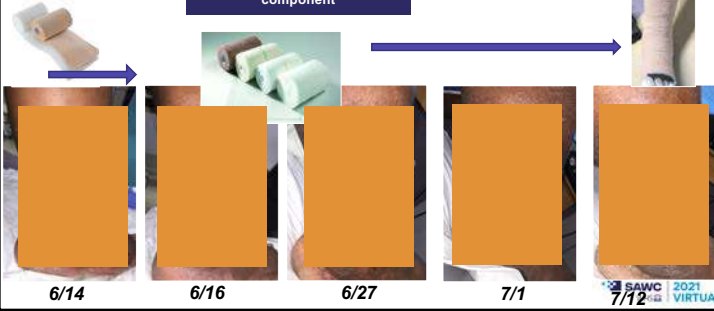
What can we do?
Are absorbent dressings the answer?

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Ongoing Assessment – When to Move On?

2-layer

2- or 4-layer with elastic component



Could We Have Gotten There Quicker?

- Evaluating the patient presentation day 1

– Impact of textile choice

- Does textile provide adequate dosage for patient
 - Multilayer with an elastic component higher resting and maintain therapeutic pressure for longer duration
- Is there an alternative textile that could provide different compression profile
 - Texture
 - Bolstering

– Impact of frequency of dressing change

- Amount of drainage
- Large volume change



Match textile to patient



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If Your Patient's Wound Leaks...What Would You Do?

2 1/2 weeks

3 months

NPWT & multilayer lymphedema wrap (MLLB)
(rolled white foam, 4 short stretch wraps)

VAC started 3/30/18
With VAC and MLLB
-Output **450ml /4days**

7/2

Initial presentation 3/13
Profuse weeping
Dressing change: 3x/wk - mepilix transfer, AG, DrawTex, Ultrasorb pad, kling

Photos Courtesy: Erin Fazant, PT, CWS, CLT

Ongoing Assessment – Move On?

4 months

With VAC and MLLB
-Output **450ml /4days**

What happens if you make a change?

Added longitudinal elastic stockinette

Post one treatment
↓ **250ml/4days**
↓ **120ml/4days**
NPWT d/c on 8/6/18

1 1/2 months

8/14

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Could We Have Gotten Here Quicker?

What is the impact of modification of compression application vs. dressing application?

Compression = Positive Pressure Wound Therapy (PPWT)

4 months

1 1/2 months

2 weeks

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If Your Patient's Wound Progress Has Stalled... What Would You Do?



49-yr. female
h/o breast
cancer
(+) tob
DVT



7/29/20

- Cohesive 2-layer wrap changed weekly
- Wound size relatively unchanged for 2 weeks
- What other compression options?
 - Different two layer
 - Bolster the wound
 - Texture

Ongoing Assessment... Know When to Switch it Up

Initial presentation
7/29



2-layer cohesive

8/17



Cohesive with elastic component = higher resting and working pressures
Added texture/bolster for focused compression

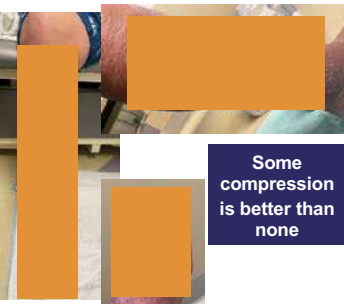
8/27



9/4



If Your Patient Doesn't Tolerate Compression ...What Would You Do?



Some
compression
is better than
none

- Patient with h/o 'bad experience' with compression
- Claustrophobic
- Medical condition contributing to compression precautions (decreased sensation, decreased LOA, volume status changes)
- BUT ... they have a wound and edema
- How can you tailor the compression application?

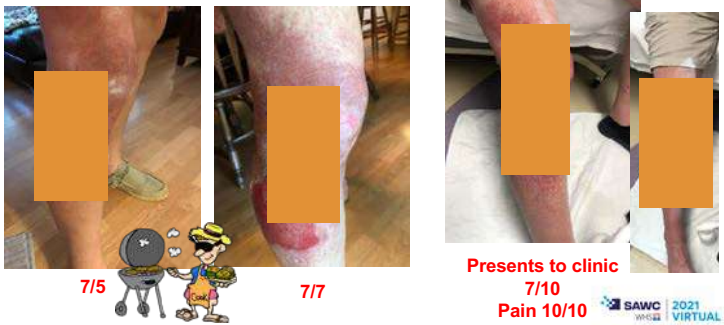
Creative Compression – Life Is Not Always Perfect



Some Compression Is Better than None



Your Patient Has a Burn on His Leg... Would You Apply Compression?



Your Patient Has a Burn on His Leg... Would You Apply Compression?

Pain 10/10

2-layer cohesive
Toes to thigh

Pain 5-6/10

7/10

7/11

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Your Patient Has a Burn... Why Wouldn't You Use Compression?

9th 10th 11th 12th 13th 14th 17th

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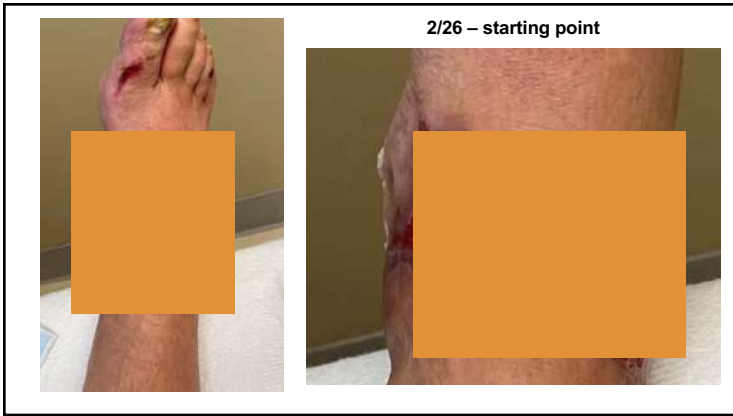
Your Patient Has a Wound But No Swelling... They Don't Need Compression! Right?

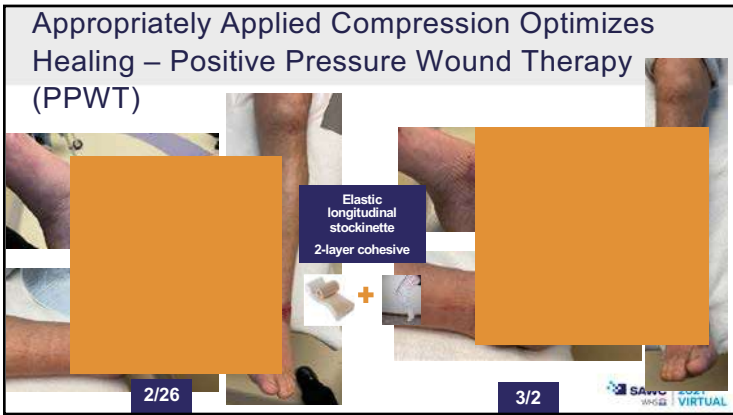
48-yo male
Motorcycle vs. car
CHI
Hip/pelvic fracture
Previously seen weekly at
wound center for weekly
debridement
-painfull!
-pt refused to go back and had
been managing it at home
himself

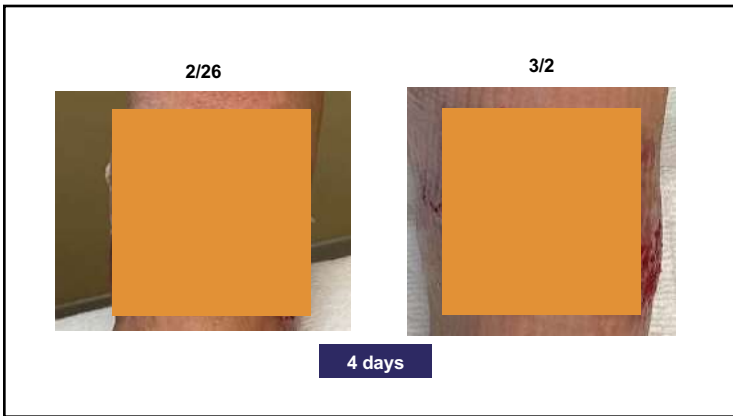
2/26

> 4 months

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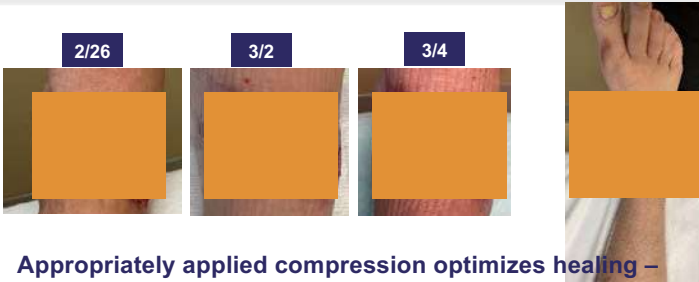






Compression... More than Edema Management

2/26 3/2 3/4

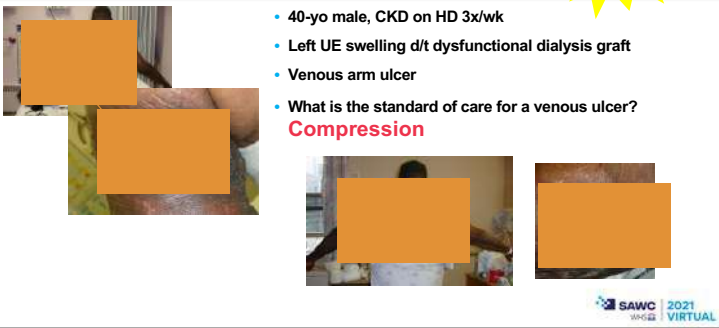


Appropriately applied compression optimizes healing –
Positive Pressure Wound Therapy (PPWT)

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Compression ... Just for Leg Swelling. **WRONG!!**

- 40-yo male, CKD on HD 3x/wk
- Left UE swelling d/t dysfunctional dialysis graft
- Venous arm ulcer
- What is the standard of care for a venous ulcer?
Compression



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WOUND VIRTUAL

Compression ... Just for Leg Swelling. **WRONG!!**



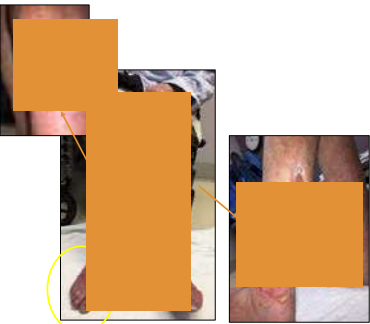
Compression = PPWT

Learn to paint a better picture

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WOUND VIRTUAL

Photos Courtesy: Erin Fazzari, PT, CWS, CLT-LANA

Your Patient Does Not Walk, He Will Not Benefit from Compression, Right?!?!? Use Elastic Bandage



WRONG!!

- Some is better than none
- Types of compression (single layer)
 - No stretch (gauze): very low resting, high working
 - Short stretch: low resting, high working
 - Long stretch: high resting, low working

Compression Dilemma – PAD and Non-Ambulatory



Compression doesn't have to be tight!!!

- Some is better than none
- Types of compression (single layer)
 - No stretch (gauze): very low resting, lower working
 - Short stretch: low resting, high working
 - Long stretch: high resting, low working

Longitudinal compression (8-12 mmHg) stockinette & an EVEN layer of kling

Your Patient's Thighs Are Swelling... What Would You Do?



Think outside the box

Mix your materials

Wrap the thigh

Photo Courtesy: Karen Beck, MPT, CWS, CLT-LANA

OH My ... What Do I Do with that?!?!?

Wound Care 101
Take your pick....
T.I.M.E.R.S.
D.I.I.M.E.
Wound Hygiene Concept

Murphy C, Atkin L, Swanson T, Tachi M, Tan YK, Vega de Ceniga M, Weir D, Wolcott R. International consensus document. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. *J Wound Care* 2020; 29(Suppl 3b):S1-28. Moore Z, Dowsett C, Smith G, Atkin L, Bain M, Lahmann NA, Schultz GS, Swanson T, Vowden P, Weir D, Wolcott R. A COVID-19 updated tool to address the current challenges in wound care. *J Wound Care* 2019 Mar 5;28(3):154-161. Snyder RJ, Fife C, Moore Z. Components and Quality Measures of DIME (Debridement, Tissue, Infection/Inflammation, Moisture Balance, and Edge Preparation) in Wound Care. *Adv Skin Wound Care* 2018 May;29(5):205-15.

What Role Does Compression Play??

Wound Care 101
Take your pick....
T.I.M.E.R.S.
D.I.I.M.E.
Wound Hygiene Concept

Do these wounds need...
Better circulation
Reduced inflammation
Healing environment (reduce bioburden, exudate management)

Needs Compression!

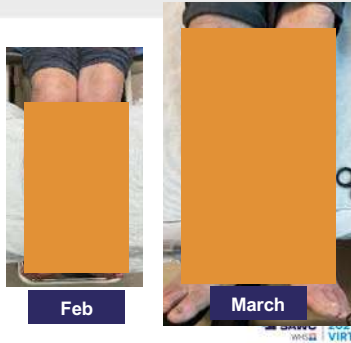
Murphy C, Atkin L, Swanson T, Tachi M, Tan YK, Vega de Ceniga M, Weir D, Wolcott R. International consensus document. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. *J Wound Care* 2020; 29(Suppl 3b):S1-28. Moore Z, Dowsett C, Smith G, Atkin L, Bain M, Lahmann NA, Schultz GS, Swanson T, Vowden P, Weir D, Wolcott R. A COVID-19 updated tool to address the current challenges in wound care. *J Wound Care* 2019 Mar 5;28(3):154-161. Snyder RJ, Fife C, Moore Z. Components and Quality Measures of DIME (Debridement, Tissue, Infection/Inflammation, Moisture Balance, and Edge Preparation) in Wound Care. *Adv Skin Wound Care* 2018 May;29(5):205-15.

Appropriately Applied Compression Optimizes Healing – Positive Pressure Wound Therapy (PPWT)

5/4 5/24 6/8 7/2 8/8

Parting picture... What Does it Say to You??

- Each compression textile has a different impact
- Therapeutic Compression
 - Dosage
 - Containment
 - Distribution
- Compression is Positive Pressure (Wound)Therapy (PPWT)
 - Reduces swelling
 - Reduces inflammation
 - Integument restoration



Good Compression Is an ART!!!

“We **ALL** need to learn to ‘paint’ a better picture.”

Marta Osler, PT, CWS, CCS, DAPWCA

Let's use compression science to problem-solve compression selection

Adapting compression applications to patient presentation



My compression challenge to you...

- Learn more about compression!!!
- Impact of compression is not just about how tightly you wrap
- Therapeutic compression
 - Working and resting pressures that are therapeutic
 - Reliable application of compression requires consistent pressure, minimal slippage and containment
 - Adaptable to patient according to size, shape, location of swelling and level of perfusion
 - People friendly - patient comfort equal compliance, but keep in mind Price
- Compression is more than just edema reduction - integument restoration!!





Suzie.ehmann@atriumhealth.org

Toe Wrap

<https://www.woundsresearch.com/video/how-apply-toe-wrap-two-layer-cohesive-compression>