Speakers

- Dr Stephen Yelland

- Nicola Morley NP

Wound Management Training for GPs

8:45am	Registration	
9:00am	Welcome	
9:05am	Wound Infection	Dr Andrew Jones
9:50am	Dermatological Issues	Dr Selim Ozluer
10:20am	Impact of wounds – wound healing process, patient and wound assessment, TIMERS	Dr Stephen Yelland Nicola Morley
11:20am	Morning tea	
11:50am	Wound products, wound dressing procedures Case studies	Dr Stephen Yelland Nicola Morley
1:15pm	Lunch & Trade Display	
1:55pm	Vascular Wounds of Lower Limb	Dr Mark Jackson
3:00pm	Arterial, ABPI Diabetes Case studies (continued)	Dr Stephen Yelland Nicola Morley
3:15pm	Compression therapy workshop	3M
4:15pm	Wrap up – Q & A Evaluation	Dr Stephen Yelland Nicola Morley
4:30pm	Close	

Learning Outcomes

1. **Discuss the specialist services available to patients with chronic or complex wounds and identify how to refer patients.**
2. **Determine the aetiology of a chronic wound.**
3. **Determine most appropriate general practice management plan for a patient with a chronic or complex wound compromised by infection or oedema.**
4. **Select and implement the most appropriate, evidence-based management approach for patients with diabetic foot pathology including identifying the need for pressure off-loading.**
5. **Discuss Arterial investigation options available to assist with the management of patients with Peripheral Arterial Disease within the general practice including Ankle Brachial Index monitoring.**

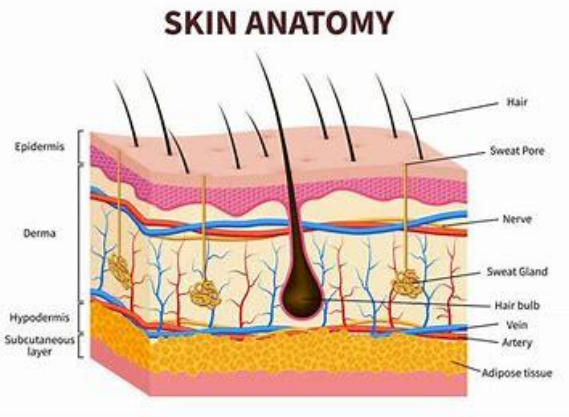
The Test

1) What is the largest organ in the body

1. BRAIN
2. LUNGS
3. HEART
4. SKIN
5. LIVER

2). A 1cm x 1cm piece of skin in forearm has

1.	A) 100000	B) 200000	C) 300000	EPIDERMAL CELLS
2.	A) 1.7	B) 2.7	C) 3.7	METRES OF NERVE
3.	A) 0.9	B) 1.5	C) 2.2	METERS OF BLOOD VESSELS
4.	A) 5	B) 10	C) 15	SEBACEOUS GLANDS
5.	A) 50	B) 100	C) 150	SWEAT GLANDS

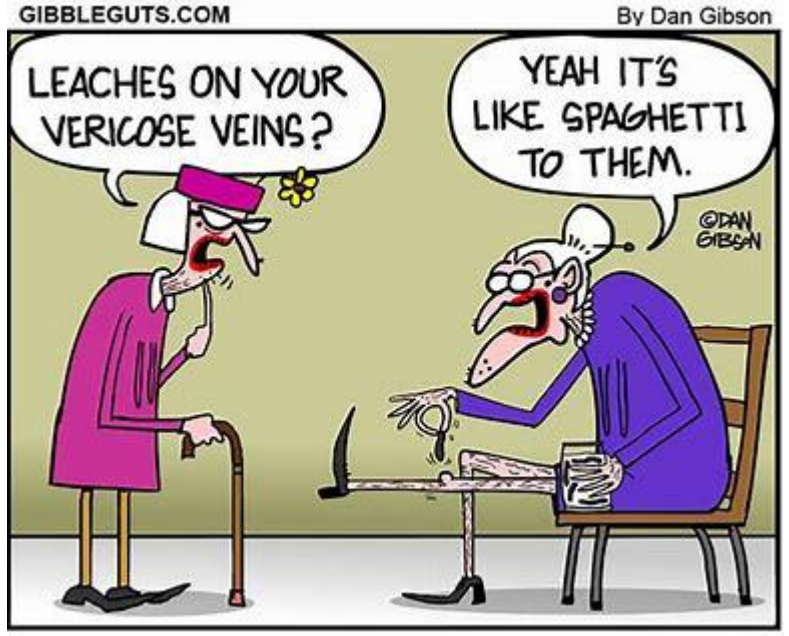


3). Which of the following characterizes the appearance of a venous leg ulcer

A. SHALLOW WITH REGULAR MARGINS
B. SHALOW WITH IRREGULAR WOUND MARGINS
C. DEEP WITH REGULAR WOUND MARGINS
D. DEEP WITH IRREGULAR WOUND MARGINS

4. WHICH OF THE FOLLOWING IS CONSIDERED THE "GOLD STANDARD" TO TREAT VENOUS LEG ULCERS?

A. ALGINATE DRESSINGS
B. ELEVATION
C. ANTIMICROBIALS
D. COMPRESSION THERAPY
E. RADIOFREQUENCY ABLATION



5. Which of the following is true of a venous leg ulcer?

A. SHALLOW
B. AN ARTERIAL SCAN IS MOST APPROPRIATE
C. HAEMOSIDERIN
D. PULSES PRESENT
E. IRREGULAR SHAPED

6) WHAT IS NOT A PHASE OF WOUND HEALING?

A) MATURATION
B) HAEMOSTASIS
C) INFECTION
D) INFLAMMATION
E) PROLIFERATION

7) MR D is experiencing WHAT KIND OF EXUDATE FROM HIS WOUND IF IT appears clear

- A) SEROUS
- B) SANGUINEOUS
- C) SEROSANGUINEOUS
- D) PURULENT

8) WHAT DOES THE ACRONYM “T.I.M.E.R.S” STAND FOR?

A) TISSUE, IMPROVEMENT, MANAGEMENT, EDUCATION, REPAIR, SALVAGE

B) TISSUE, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDGE MIGRATION, REGENERATION, SOCIAL FACTORS

C) THERAPY, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDUCATION, REMODEL, SOCIAL FACTORS

D) THERAPY, IMPROVEMENT, MANAGEMENT, EDGE MIGRATION, RENEWAL, SALVAGE

9) WHICH OF THESE WOULD YOU DEEM TO BE VENOUS?

A)

B)

C)

D)

10) WHICH OF THESE WOULD YOU NOT ADMIT TO HOSPITAL?

A)

b)

C)

D)

11) WHICH OF THE FOLLOWING IS NOT IMORTANT IN MANAGING THIS WOUND ?

- A) CALLUS REMOVAL
- B) OFFLOADING FOOTWEAR
- C) VENOUS DUPLEX SCAN
- D) PODIATRIST
- E) BGL MONITORING

12) NAME THE PULSES ?

A……. b……. c……. d…….

13) COBAN FULL applies 40mmhg compression ?

- A) TRUE
- B) FALSE

THE END OF PRE-TEST

Dr Andrew Jones

Dr Andrew Jones (Infectious Disease Specialist)

Name

Dr Andrew Russell Reece Jones

Qualifications

Bachelor of Medicine / Bachelor of Surgery University of London United Kingdom 1985

FRACP 1989

FRCPA

Occupation

Infectious Disease Specialist

Microbiologist

Gender

Male

Medical Specialties

Microbiology

Infectious Disease

Hospital Affiliations

Pindara Private Hospital

Gold Coast Private Hospital

Affiliated Organisations

The Royal Australasian College of Physicians (RACP)

Royal College of Pathologists of Australasia (RCPA)

Topics

Medical Microbiology

Infectious Diseases

Dr Selim Ozluer

DR SELIM ÖZLÜER

21:16

Committed to Your Wellbeing

Dr Özlüer has relocated from Turkey with his family in 1987 and graduated from the University of Queensland Medical School in 1992. He has worked as a Junior Medical Officer at the Rockhampton Base Hospital and Princess Alexandra Hospital for two years. Later he became a Fellow of the Royal Australian College of General Practitioners and worked as a GP at Yeppoon, Brisbane and Gold Coast General Practices.

This is when he discovered his passion for Dermatology and worked 12 months as a clinical assistant at South East Dermatology, Brisbane. Later he was accepted to four years Australasian College of Dermatologists training program and worked as a Dermatology registrar at St John's Institute of Dermatology (London), Mater Hospital, Greenslopes Private Hospital and Princess Alexandra Hospital. He obtained his fellowship in 2004.

goldcoastdermatology.com.au

Dr Mark Jackson

Mark Jackson

Vascular Surgery

Suite 6 Lvl 2, Gold Coast Surgery Centre 103
Nerang St
SOUTHPORT, QLD

College of Surgeons

An experienced vascular surgeon, fully trained in open and endovascular (minimally invasive) surgical techniques. Dr Jackson has appointments at Gold Coast University & Gold Coast Private hospitals, The Tweed Hospital, Toowoomba Base Hospital, Pindara and John Flynn Private hospitals. Dr Jackson also offers a broad range of venous therapies including ultrasound, sclerotherapy, thermal ablation and surgical techniques. Dr Jackson is an enthusiatic researcher including the areas of the management of peripheral arterial disease and in teaching & assessment of Vascular surgical trainees throughout Australia and New Zealand. He has been appointed Associate Professor at Griffith University Medical School.

Referral Templates

- Referral templates can be found on the GCPHN website: **gcphn.org.au website**

- Complex Wound Clinic | Bundall Medical Centre

- Wound clinic GCUH; Smart Referrals
- GCUHWound.Care@health.qld.gov.au
- Vascular clinic

- High Risk Foot Clinic

Chronic Disease Management Information and Resources

Resources available on the GCPHN website

The Impact of Chronic Wounds
Venous, Arterial, Neuropathic, Pressure

433,000 patients in Australia at any one time increasing with age and diabetes

- Financial Impact:
  - up to $10,000 per patient/per annum
  - equates to 2% of the national health care budget
  - or $3 billion per annum

- Pressure injury:

Prevalence - 4.5 - 48.4% in acute and sub-acute facilities

In Qld-160,060 bed days lost

= $12,968,668

McCosker, L, Tulleners, R, Cheng, Q, et al. Chronic wounds in Australia: A systematic review of key epidemiological and clinical parameters. *Int Wound J*. 2019; 16: 84– 95. https://doi.org/10.1111/iwj.12996

The Impact of Venous Leg Ulcers

- At any one time 42,600 Australians aged over 60 years suffer VLUs
- Rates of recurrence are high - increasing the health burden
- Majority of these miss out on recommended standard of care due to lack of subsidised compression bandages and stockings that can halve healing times
- The impacts include serious discomfort, reduced mobility, social isolation and mental health concerns
- GPs involved in diagnosis and management of over 90% of diagnosed VLUs

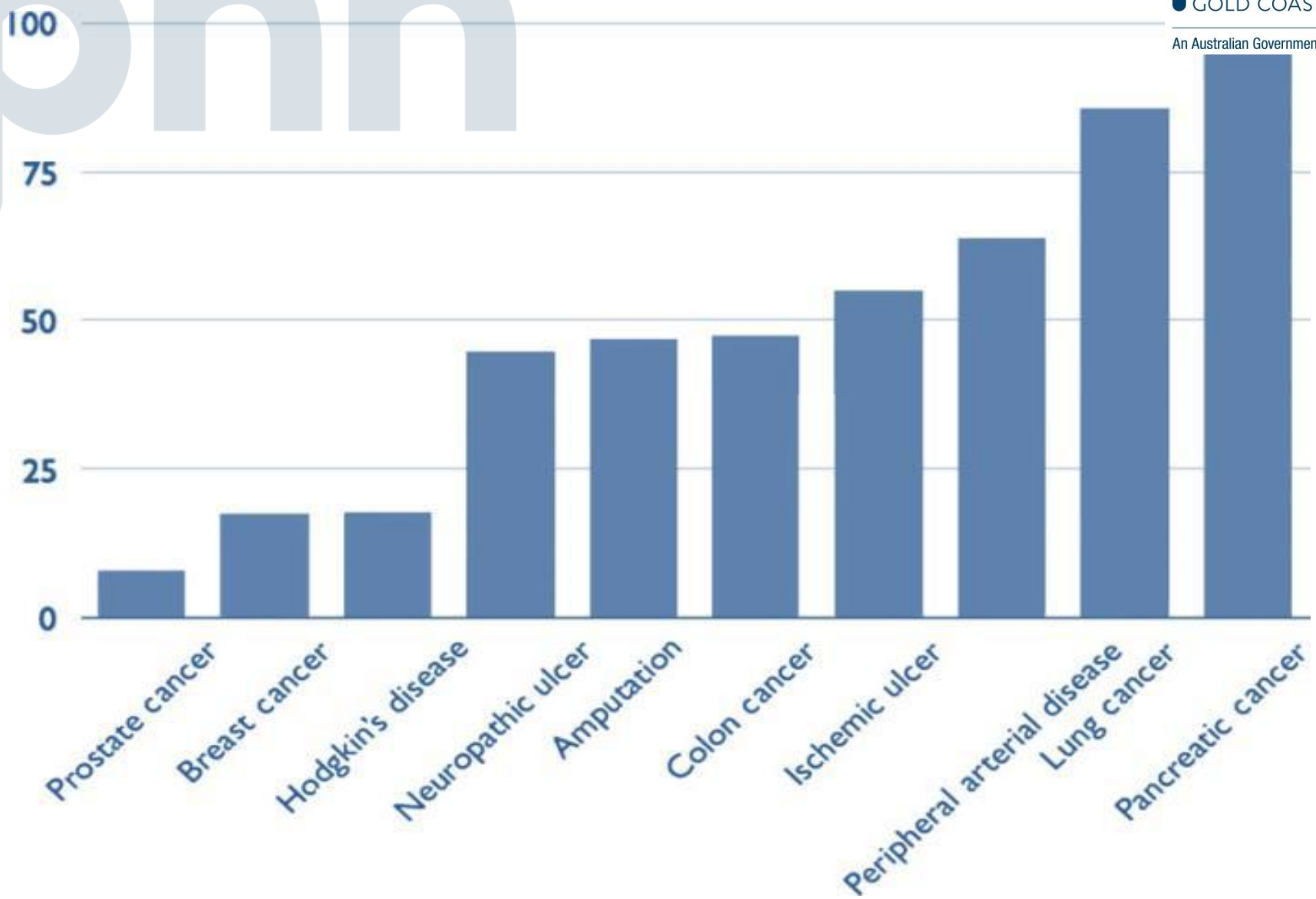
Australian/Queensland Update
Massive Diabetic Foot Disease Costs

2021 Australian evidence-based guidelines for diabetes-related foot disease

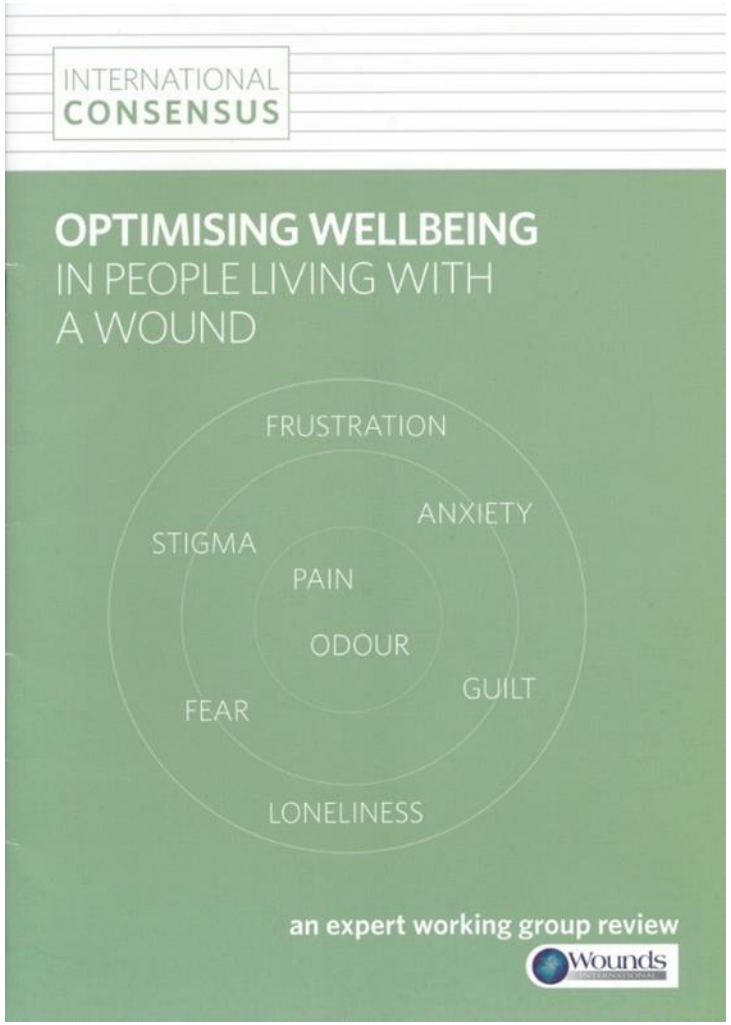
- 50,000 Australians are affected each year by DFD
- A Further 300,000 have risk factors for developing DFD
- Equates to 28,000 hospitalisations annually and direct cost of $350 million
- 4,500 amputations annually
- 1,700 deaths annually
- $ 1.6 billion annually in health care costs
- Very few admitted patients had received recommended multi-disciplinary foot care

"When people with diabetic foot disease receive multi-disciplinary foot care, we can prevent half of the hospitalisations, amputations and costs"

Peter Lazzarini | Senior Research Fellow QUT and Qld Health



Optimising Wellbeing in people living with a wound



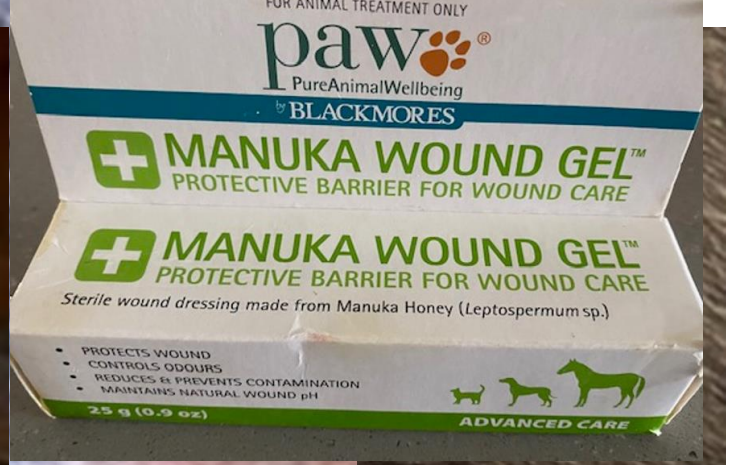
Domains of wellbeing :

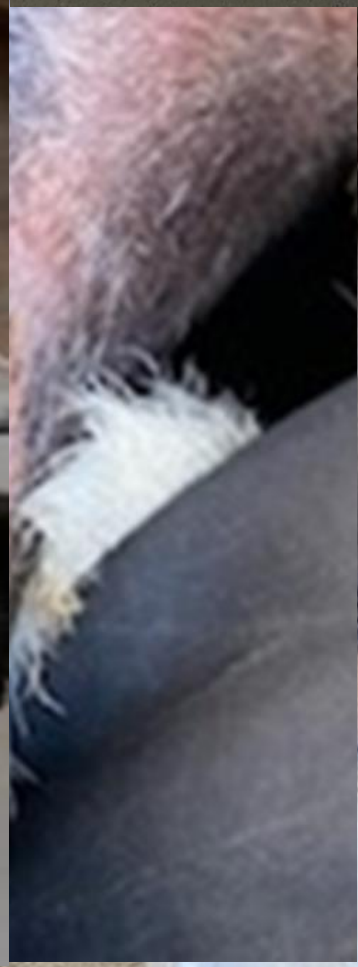
- Physical – ability to function independently
- Psychological – chronic wounds often associated with increased anxiety, depression and poor quality of life
- Social – patients often embarrassed by dressings, odours, disabled by pain and poor mobility and thus become socially isolated, unable to work
- Spiritual / Cultural-respecting beliefs, religious sensitivities and cultural backgrounds and involving patients in decision making

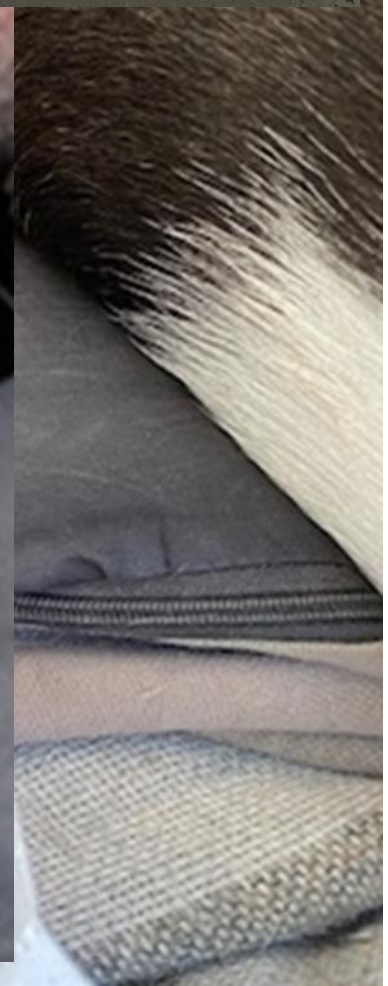

Spirometry Reference Chart


Want You for
Dinner


96


FOR ANIMAL TREATMENT ONLY
paw
PureAnimalWellbeing
by BLACKMORES
MANUKA WOUND GEL™
PROTECTIVE BARRIER FOR WOUND CARE
MANUKA WOUND GEL™
PROTECTIVE BARRIER FOR WOUND CARE
Sterile wound dressing made from Manuka Honey (Leptospermum sp.)
PROTECTS WOUND
CONTROLS ODOURS
REDUCES & PREVENTS CONTAMINATION
MAINTAINS NATURAL WOUND pH
25 g (0.9 oz)
ADVANCED CARE





A Team; Patient's Advocate Navigators

Approach

A joint position document

JWC

AWMA

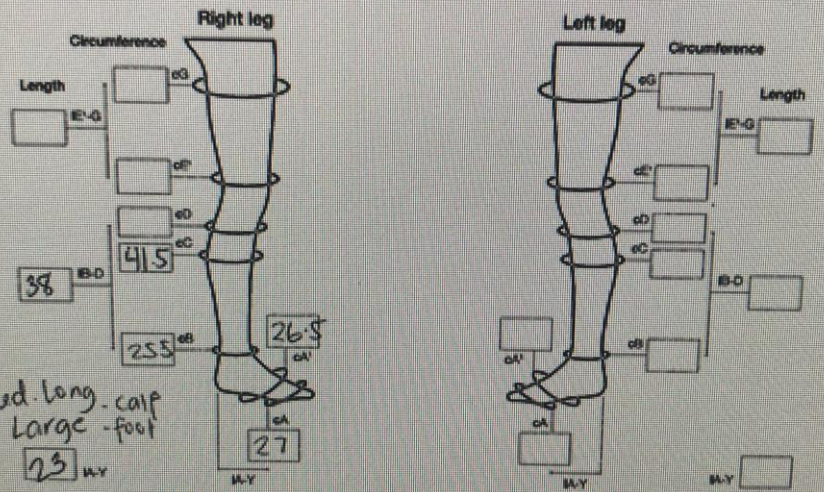
AAWC

EWMA

72 Yr M

Measurement and Order Form

How to measure the leg:
Ask the patient to stand, if possible. Mark and measure the leg as follows:



Write your measurement results in the box adjacent to measuring point

Measurement points required for each ReadyWrap garment

	Circumference							Length		
	cA	cA'	cB	cC	cD	cE'	cG	IA-Y	ID-B	IE'-G
ReadyWrap Toe	•									
ReadyWrap Foot CT	•	•	•					•		
ReadyWrap Foot BL	•		•					•		
ReadyWrap Calf			•	•					•	
ReadyWrap Knee					•	•				
ReadyWrap Thigh						•	•			•

Circumference points:
- cG 2 cm below gluteal fold
- cE' 5 cm above the knee
- cD 2-3 cm below popliteal fossa
- cC widest part of calf
- cB 2 cm above malleolus
- cA' around the arch/dorsum of the foot
- cA around base of toes

Lengths:
- IA-Y heel to base of toes
- ID-B the length between point cB (2 cm above the malleolus) and point cD (2 cm below popliteal fossa)
- IG-E' the length between point cE' (5 cm above the knee) and point cG (2 cm below gluteal fold)

NB c = circumference, l = length
All length measurements should be longitudinal and should follow body contours.
All measurements to be in centimetres (cm).

1 of 1

8:51	55238	Duplex scanning of lower limb arteries (NDS)	06/03/2023	461846CT	$149.90
8:51	55238	Duplex scanning of lower limb arteries (NDS)	06/03/2023	461846CT	$90.00
08:51	55276	Duplex scanning of abdominal arteries (NDS)	06/03/2023	461846CT	$265.00

Excl. GST	$504.90
GST	$0.00
TOTAL	$504.90

mary:

Type	Paid By	Amount	Amount This Invoice	Our Ref.
EFT		$504.90	$504.90	1330190

received for this invoice: $504.90

REMITTANCE ADVICE

Please detach and include with your postal payment

Biller Code: 134155
Ref: 4590962 9

CREDIT CARD PAYMENT

If paying by post, please complete the following details and include this Remittance Advice with your payment

Mr TM 74yr

Multiple L) Lower leg SCCs
2015 - 2019
SSG / debride plastics

- RA
- Feltys syndrome – triad RA, Large Spleen, low neutrophils
- Leflunimde (DMARD disease modifying anti Rhem Drug)
- Skin hyperkeratosis
- Neutropenic

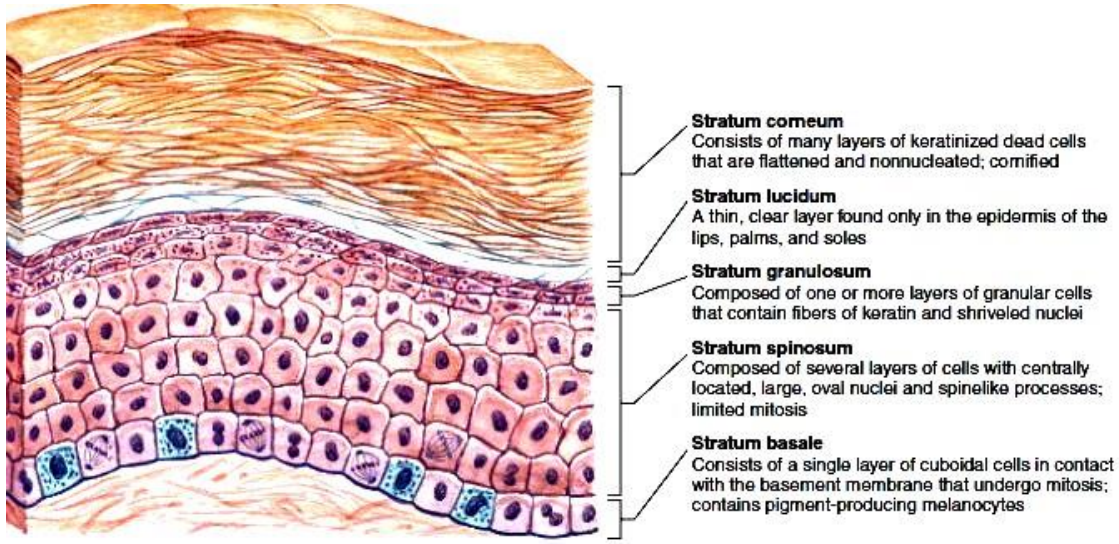
April 2020

The pattern of FDG avid bilateral hilar lymph nodes is stable and favoured to be of alternative reactive benign process. No clear distant metastatic disease.

AKA

SKIN

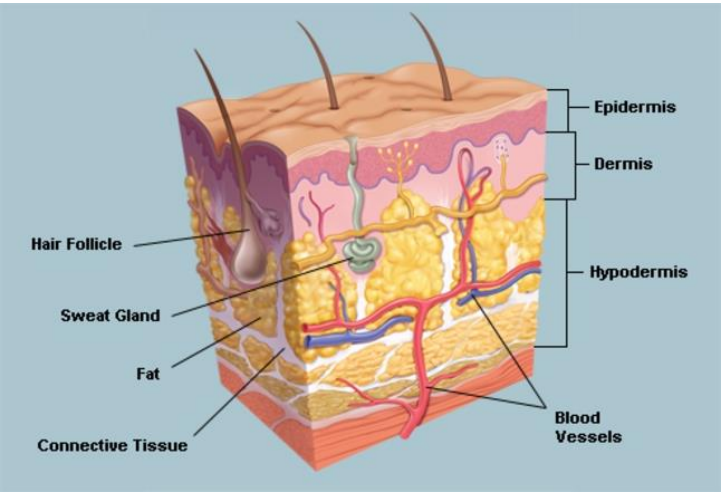
- Epidermis ; sheets of cells (300,000) 1cm Sq



- Dermis ; elastic fibres (elastin) protein fibres ; collagen (strength)
- Sweat (100) , sebaceous (15) hair follicles, blood vessels (0.9m) , nerves (3.7m)

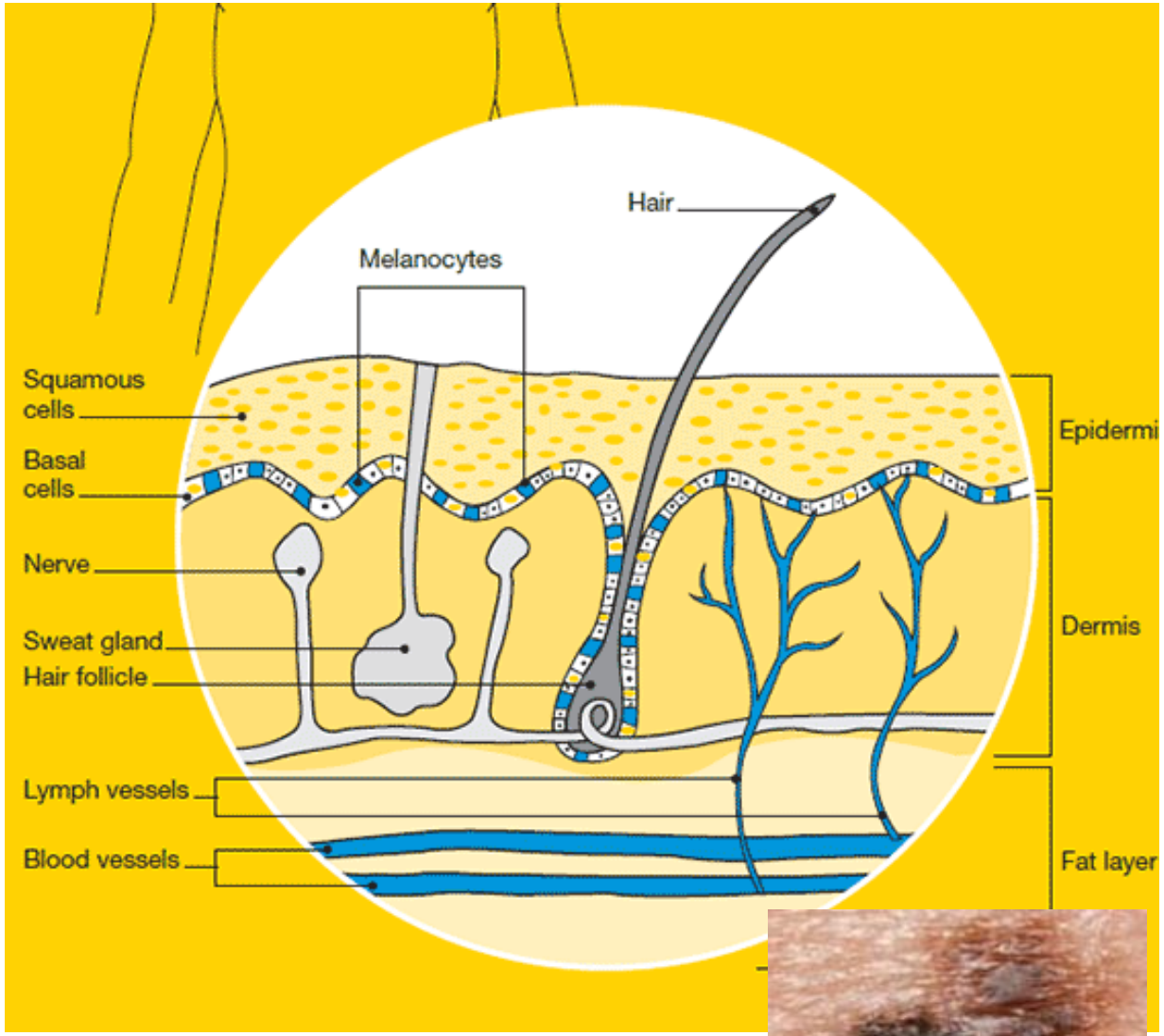
Functions

- Waterproofer; wraps our organs
- Defender; bacteria
- Cooler; via sweat
- Sensor; pain, pleasure, temp, pressure



Subcutaneous Layers; fat layer for thermal insulation, protection

https://www.cancervic.org.au/cancer NMSCs non melanoma skin cancers



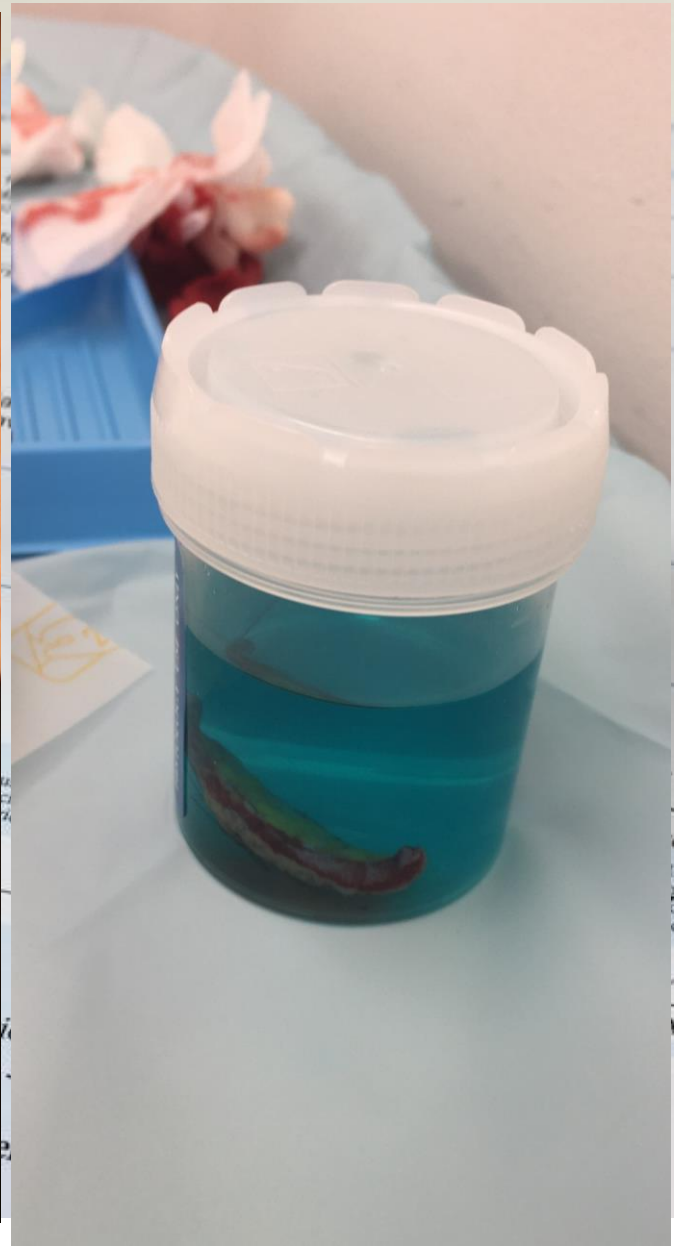
BCC (70% of non-melanoma cancers ; starts in lower layer)

SCC (30% of non-melanoma cancers; starts in upper layer) 2-5% metastasize

Melanoma (2 %) starts in melanocytes

more serious; mets

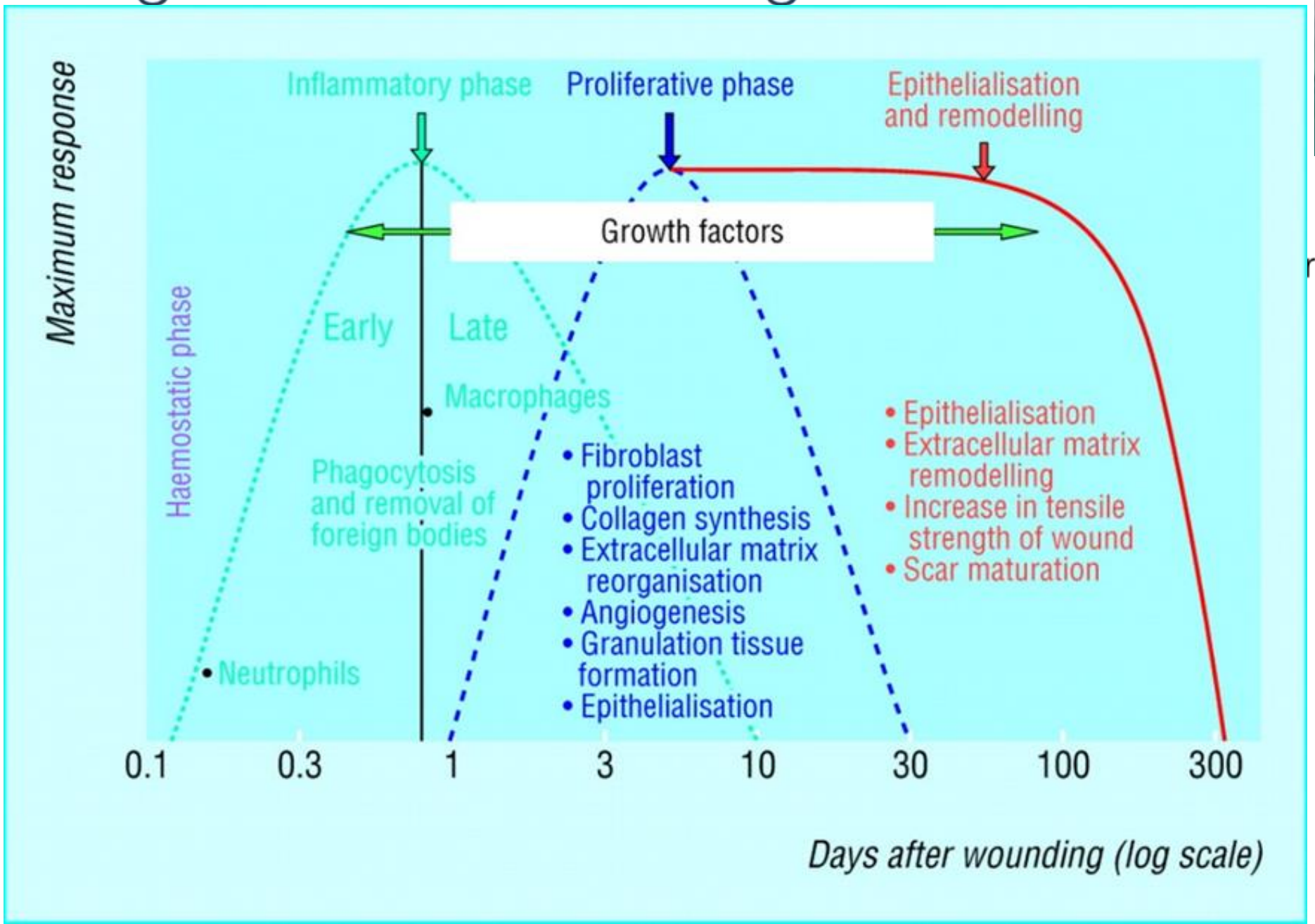
75% skin ca deaths

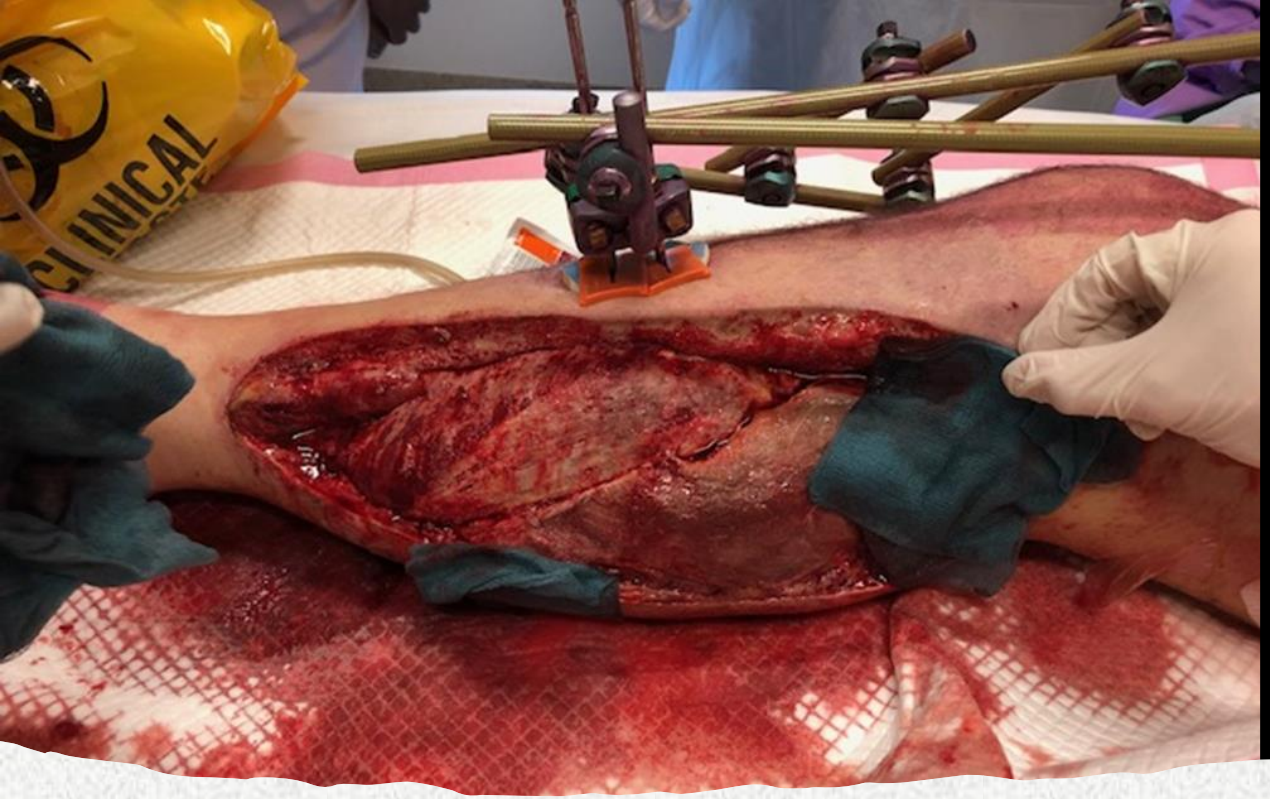


WHAT ARE THE 4 PHASES OF WOUND HEALING?

- A) Haemostasis, Inflammation, Proliferation, Maturation
- B) Inflammation, Clotting, Proliferation, Modelling
- C) Bacteria, Inflammation, Pus, Scar
- D) Haemostasis, Proliferation, Inflammation, Maturation

Stages of Wound Healing





Infection

- **Inflammation**

WHAT DOES THE ACRONYM “T.I.M.E.R.S” STAND FOR?

A) TISSUE, IMPROVEMENT, MANAGEMENT, EDUCATION, REPAIR, SALVAGE

B) TISSUE, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDGE MIGRATION, REGENERATION, SOCIAL FACTORS

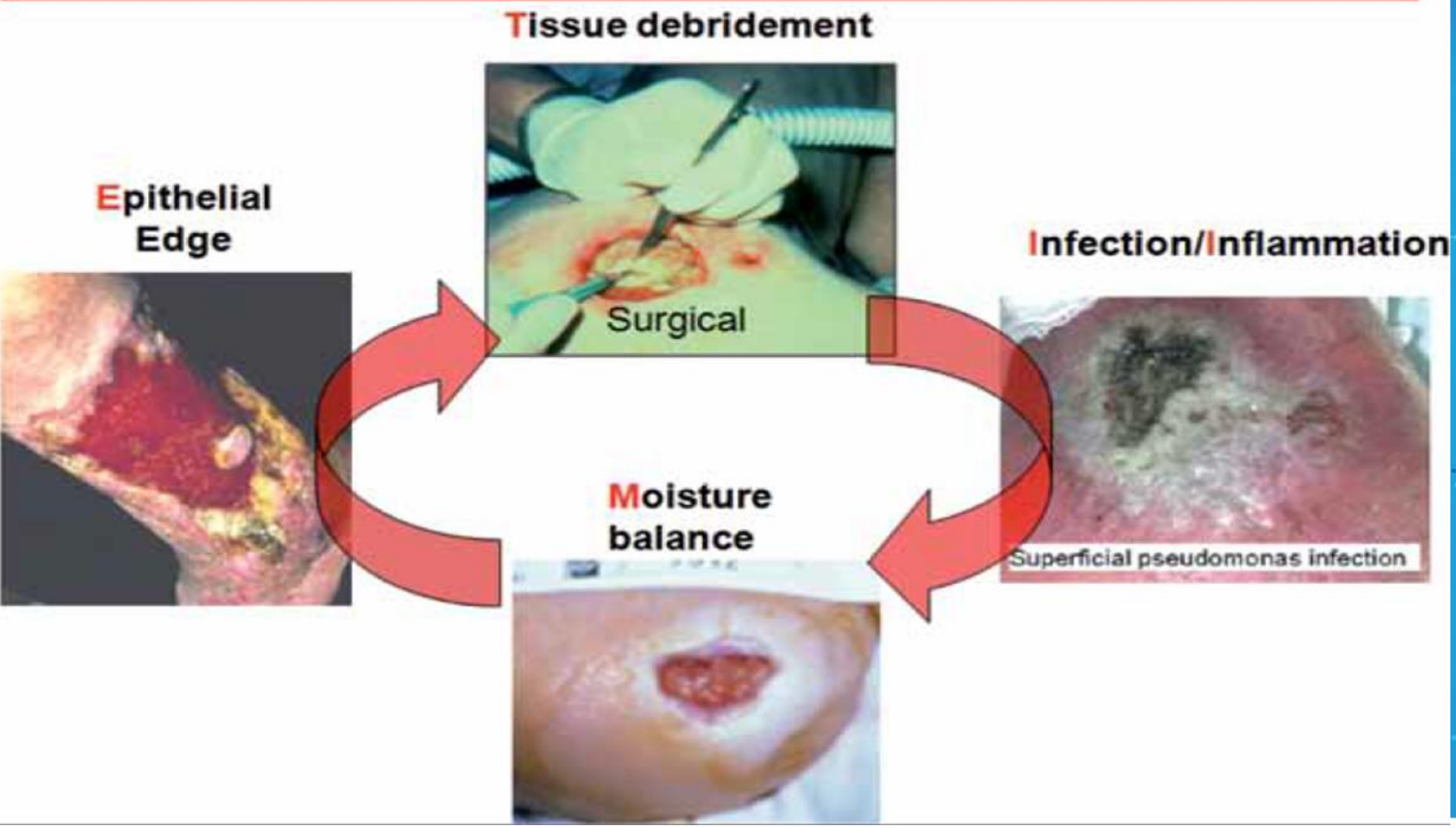
C) THERAPY, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDUCATION, REMODEL, SOCIAL FACTORS

D) THERAPY, IMPROVEMENT, MANAGEMENT, EDGE MIGRATION, RENEWAL, SALVAGE

Permission to use concept for training
Anthony Kerr: anthony.kerr@markallengroup.com

Wound Bed Preparation and 'T I M E'

Tissue, Inflammation/Infection, Moisture, Edge





TIMERS; Tissue

Necrosis Bone

- Odour
- Not tracking
- No pulses

- Tests
- ABPI ?
- Duplex
- BGL

Infection/ Inflammation

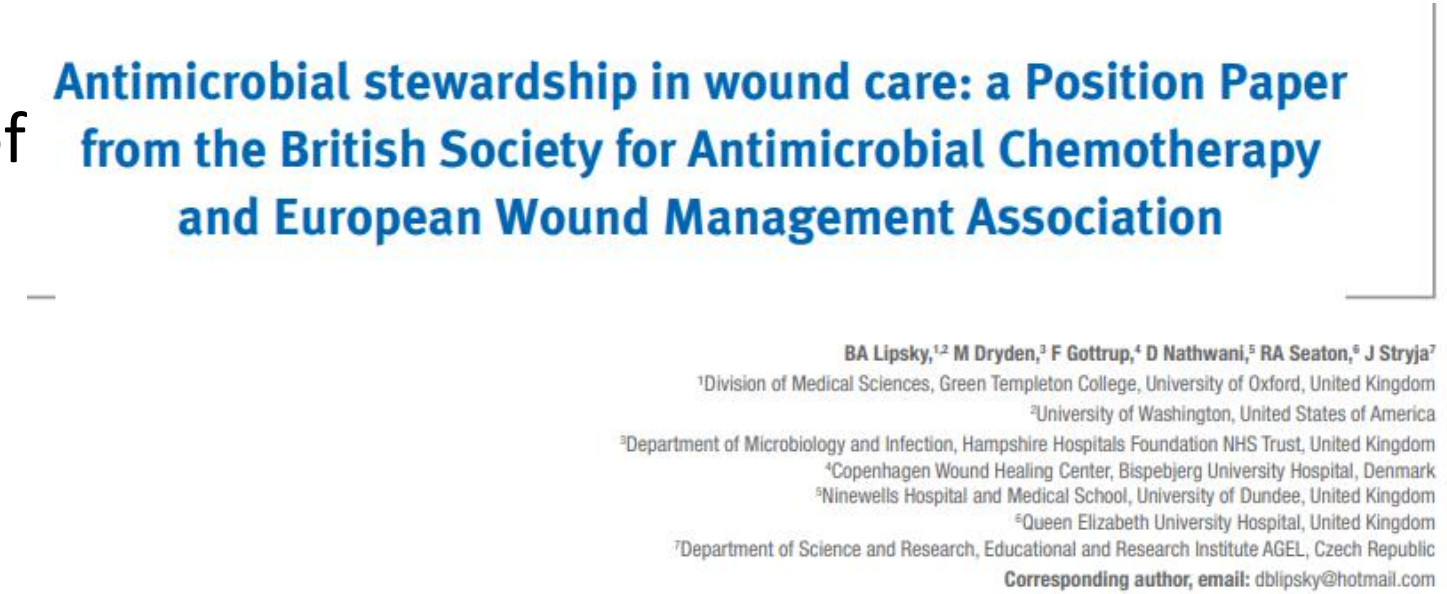
- Black skin necrosis
- Dressing?
- Infective?

- Cause ?
- Treat ?

Antibiotics the only drugs that becomes less effective with use.

- Global studies; 80% of antibiotic courses, and 20% of all antibiotics administered, are prescribed in the community or ambulatory setting.
- In both the outpatient and inpatient settings, up to 50% of these treatment courses are unnecessary or inappropriate.

- Lipsky, B. A., Dryden, M., Gottrup, F., Nathwani, D., Seaton, R. A., & Stryja, J. (2020). Antimicrobial stewardship in wound care: A position paper from the british society for antimicrobial chemotherapy and european wound management association. *Wound Healing Southern Africa, 13*(1), 13-21. Retrieved from https://login.libraryproxy.griffith.edu.au/login?url=https://www.proquest.com/scholarly-journals/antimicrobial-stewardship-wound-care-position/docview/2544453368/se-2



Antimicrobial stewardship in wound care: a Position Paper from the British Society for Antimicrobial Chemotherapy and European Wound Management Association

BA Lipsky,[1,2] M Dryden,[3] F Gottrup,[4] D Nathwani,[5] RA Seaton,[6] J Stryja[7]

[1]Division of Medical Sciences, Green Templeton College, University of Oxford, United Kingdom

[2]University of Washington, United States of America

[3]Department of Microbiology and Infection, Hampshire Hospitals Foundation NHS Trust, United Kingdom

[4]Copenhagen Wound Healing Center, Bispebjerg University Hospital, Denmark

[5]Ninewells Hospital and Medical School, University of Dundee, United Kingdom

[6]Queen Elizabeth University Hospital, United Kingdom

[7]Department of Science and Research, Educational and Research Institute AGEL, Czech Republic

Corresponding author, email: dblipsky@hotmail.com

antibiotics

MDPI

Review

Antiseptic Agents for Chronic Wounds: A Systematic Review

Koko Barrigah-Benissan [1,†], Jérôme Ory [1,†], Albert Sotto [2], Florian Salipante [3], Jean-Philippe Lavigne [1,*] and Paul Loubet [2]

- Interventions considered were those using antiseptics for cleansing or within a dressing.
- Of 838 studies, 6 were finally included, with a total of 725 patients. The included studies assessed iodine (cadexomer or povidone iodine) (n = 3), polyhexanide (n = 2), and octenidine (n = 1).
- Limited evidence suggested a better wound healing completion with iodine compared to saline (two randomised controlled trials (RCT), 195 patients, pooled RR 1.85 (95%CI (1.27 to 2.69), moderate-quality evidence). There was not enough evidence to suggest a difference in wound healing using octenidine or polyhexamide.

- Barrigah-Benissan, K., Ory, J., Sotto, A., Salipante, F., Lavigne, J.-P., Loubet, P., & Felgueiras, H. P. (2022). Antiseptic agents for chronic wounds: a systematic review. *Antibiotics*, *11*(3). https://doi.org/10.3390/antibiotics11030350

- None of the antiseptic agents influenced adverse event occurrence compared to saline.

Bill 72yr

- T2DM
- Ongoing from 1983- 2017
- Open # tibia + ulcers + cellulitis
- Repetitive skin breakdown
- Meds
- Aspirin, statin, metformin, glibenclamide, perindopril

OM L) shin following MVA 80s

- Venous skin changes
- Pulses
- ABPI
- Incompressible
- Refer Pvt Vasc ; Duplex
- Xray
- refer Ortho CT / MRI
- refer endo, dietician podiatry, OT


LITE COMPRESSION
CoFlex·TLC CALAMINE LITE
2 LAYER COMPRESSION KIT
2
ANDOVER
Includes Nylon Stockinette
PATENTED TECHNOLOGY - MADE IN THE USA


LAYER 1
Calamine medicated foam comfort roll
LAYER 2
A short stretch layer that provides adaptive compression levels.

Specimen : Swab Left,Foot

Gram Stain : Leucocytes 1+
Epithelials 3+

Gram pos. cocci 1+

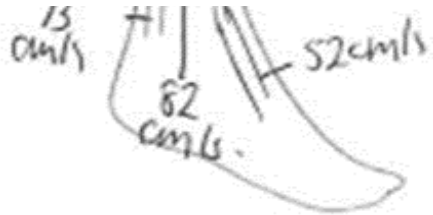
Culture : Normal skin flora 2+

	PEN	FLU	CFZ	DA
Staphylococcus aureus 2+	R	S	S	S

	SXT
Staphylococcus aureus 2+	S

Antibiotic Abbreviations Guide:

PEN	Penicillin G	FLU	Di(Flu)cloxacillin
SXT	Co-trimoxazole	CFZ	Cefazolin
		DA	Clindamycin



- **Feeling unwell for a week**
- **Intermittent fevers**
- **Foot pain**
- **Assess; Vascular, Xray, Bloods**
- **CRP 141, Swab**

TTO, Ankle Block, prep and drape
Incision around wound on plantar surface of foot, small abcess cavity evacuated. No deeper tracking found.
Washout with normal saline. Dressings.

ost Procedure

Post Operative Orders

Wound R/V Monday
Cont Abx
Podiatry review Monday
Contact with concerns

14/10/21,

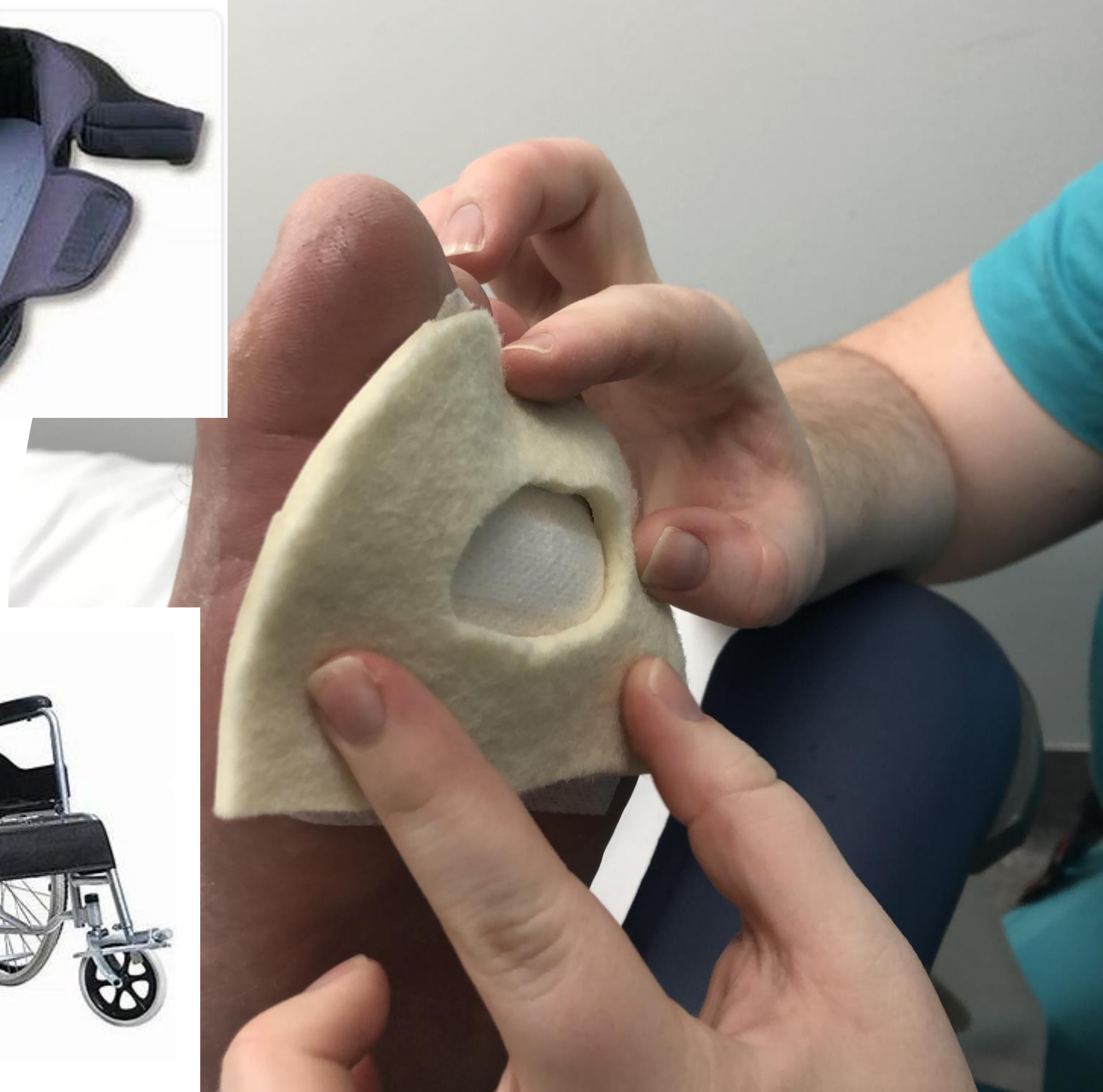
2/11/21

16/11/21

23/12/22

31/2/22

Offload



Sanet - Manageress

The happiest person that I have ever met (and she has the job that I would love to have).

r and four cubs – 3 months old

he

urate

me.

Dangerous

- https://th.bing.com/th?id=OVP.Or2F4EP0Y0tFJmj9cW7vSgHgFo&w=216&h=120&c=4&rs=1&o=6&pid=6.1&qlt=80

- https://www.youtube.com/watch?v=yCuTywekVyk
-

Moisture Balance

- Weepy excoriated
- Protease burn
- Cause?

- Wound plan?

EDGE MIGRATION

72yr M metal vs shin

16/10/20

Regeneration & Social Fa
42yr T2DM Chef 17/9/21 to

Repair & Regeneration

- Failing conservative Tx
- GF, PRP (platelet rich plasma)
- Bioengineered substitutes
- NPWT
- HBO
- Stem cell
- Skin graft

Social Factors

- Social Situation
- Pt Understanding
- Concordance
- Choices
- Psychosocial
- Belief systems

Plaque Ty

Report:

Surgical Debridement

Curette $11.90

Multigate scissors

Iris Scissors –

Sharp/Sharp Curved with 58mm Blade & White Plastic Handle 50 or more $2.84 each
Re-order code: 36-003

Adson forcep $4.70

Curette
Iris scissor
Scalpel

EXUDATE
Local factors
Systemic factors
Practical factors

EXUDATE

Table 1 | Examples of exudate components (White & Cutting, 2006; Gibson et al, 2009; McCarty & Percival, 2013; Bernardi et al, 2014)	
Exudate component	**Comments**
Water	Medium for other components; prevents tissues drying out
Fibrin	Blood clotting
Glucose	Cellular energy source
Immune cells, e.g. lymphocytes and macrophages	Immune defence, growth factor production
Platelets	Blood clotting
Proteins, e.g. albumin, fibrinogen, globulins	Transport of other molecules, anti-inflammatory effects, blood clotting, immune functions
Growth factors	Stimulate cellular growth
Proteases (protein-degrading enzymes)	Degradation of proteins, assisting in autolysis and cell migration, scar remodelling
Metabolic waste products	By-products of cellular metabolism
Micro-organisms	All wounds contain some micro-organisms
Wound debris/dead cells	Proteases in exudate aid autolysis of devitalised tissue

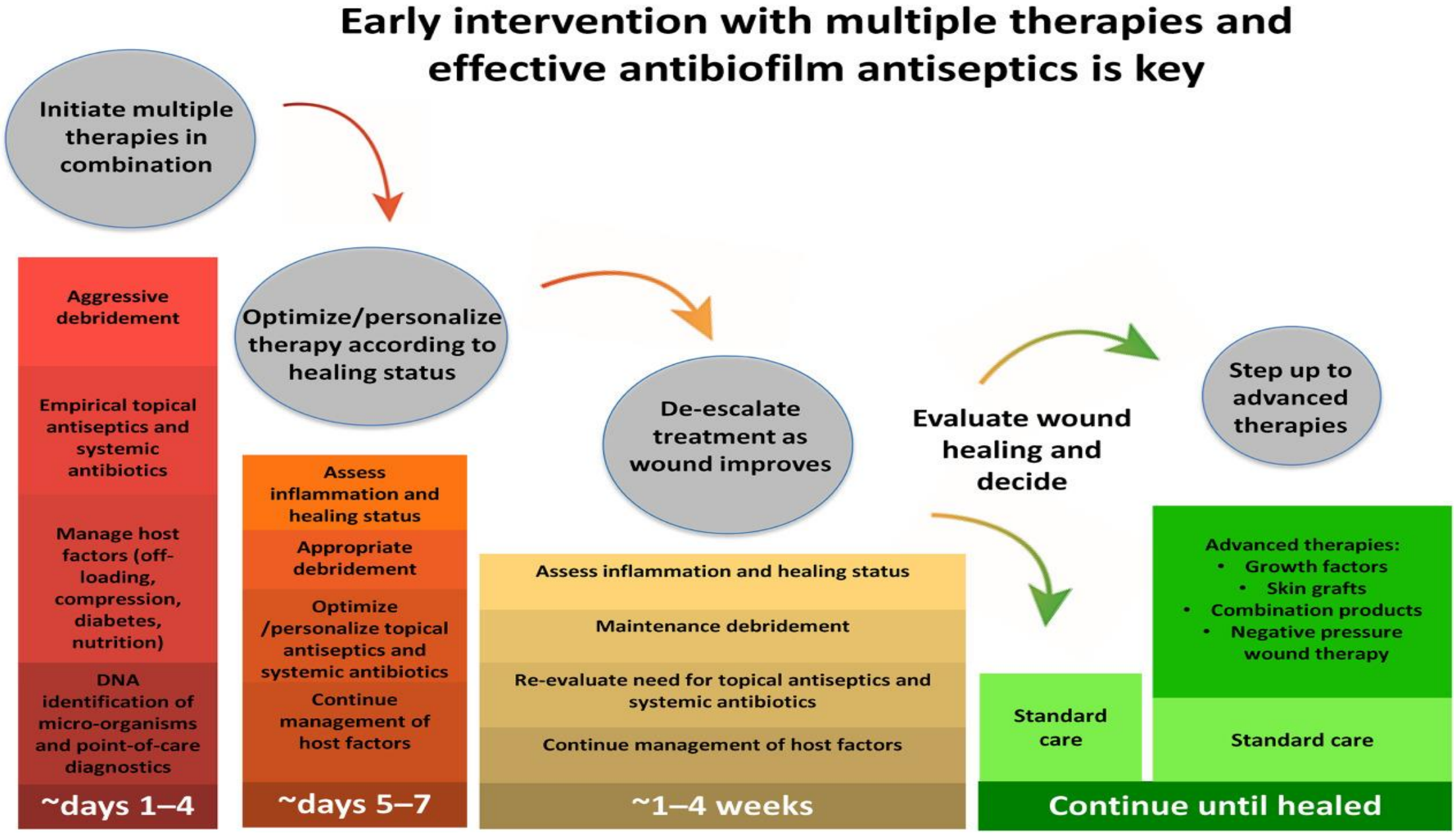
EXUDATE

Pyoderma Gangrenosum conclude both of major and 2 minor

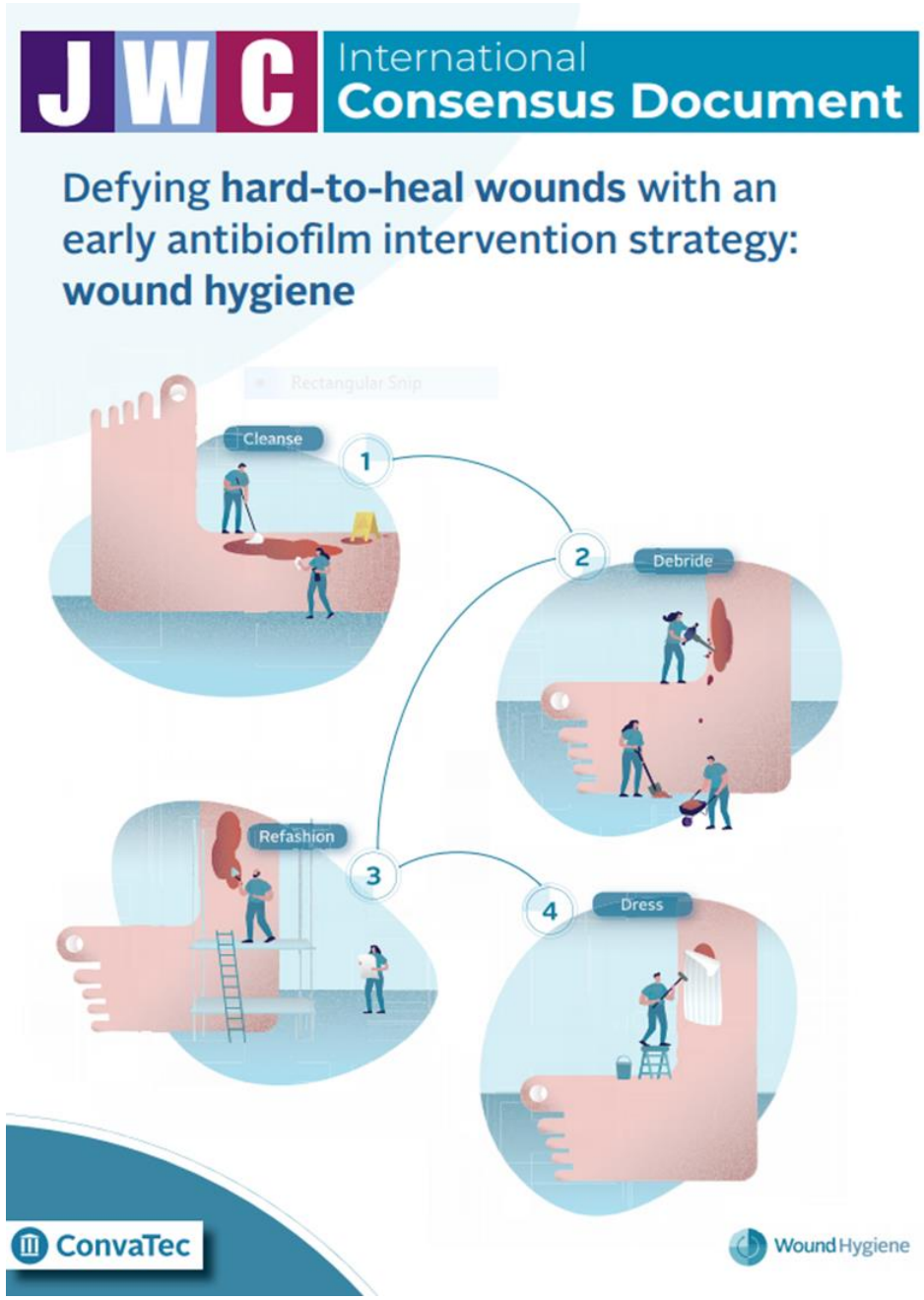
- Biopsy ; take inflamed border/ ulcer edge into subcut fat
- Send for Histo / micro staining / bacterial and fungal atypical myco bacterial culture
- FBC, UEC, LFT, ESR, CRP
- ANA, ANCA, APL antibiodies, RF
- Hep B, C, cryoglobulins,

- **Major** ; rapid progression of painful ulcer, necrolytic cutaneous irregular violaceous undermined border
- **Minor** : hX suggestive of pathergy, cribriform scarring, systemic Dx
- Histo sterile dermal neutrophils +/- mixed inflammation =/- lumphocytic vasculitis

Wounds are like hands they need to be washed



Wound Repair and Regeneration, Volume: 25, Issue: 5, Pages: 744-757, First published: 29 September 2017, DOI: (10.1111/wrr.12590)



- Clean
- Debride
- Refashion
- Dress

Morning Tea

OBJECTIVE 3

Oedema and Compression

Understand the pathogenesis and assessment of oedema and lymphoedema and the implications for healing

Learn various forms of compression therapy

Learn practical use and application of compression therapy in the clinical setting

Wound products

understand the types of products based on their interaction with the wound

learn how to select and use products

Demonstration and use of ABPI measurements

Maintaining a dry wound - dry

- Topical Liquid Antiseptics-povodine iodine, chlorhexidine [when healing is not the goal]
- Low adherent/light absorbent pads-also commonly used as a secondary dressing

Moisture Donation

Products applied to wound to allow moisture to transfer from the product to the wound to rehydrate dry wounds

- Hydrogels
  - Solugel, Intrasite Gel, Purilon Gel, Duoderm Gel
- Sheet Hydrogels
  - Aquaclear, Nugel
- Isotonic saline
  - Tenderwet

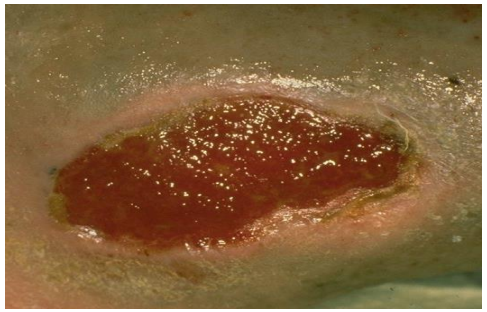
Wound Protection Products

Aiming to protect a good quality healing wound

- Tulles [not Impregnated gauzes] Mepital, Hydrotul, Adaptic, Atrauman, Urgotul, Cutericerin
  - can stay in-situ and just change outer dressing
  - useful under compression
- Low adherent pads
- Foams
- Hydrocolloids
- Silicone sheets

Moisture Retention

Products trap any humidity released from the wound to hydrate the tissue below.



For wounds that are minimally moist

- Polyurethane Films
  - Tegaderm, Opsite, Mepore film, Hydrofilm
- Sheet Hydrocolloids
  - Duoderm, Comfeel, Hydrocol, Tegaderm Absorbent

Allow moisture to evaporate - need to know MVTR [moisture vapour transfer rate]

Moisture Management

Products capture the bulk of wound exudate and remove it from wound surface

- for wounds producing a lot of exudate
- aiming to remove excess moisture ,leave enough to hydrate wound while avoiding maceration

- Traditional based products
  - Mesorb, Exudry, Zetuvit, Absorb plus
- Foams
  - Biatain, Allevyn, Mepilex
- Alginates
  - Kaltostat, Algisite-M, Sorbsan, Melgisorb
  - Hydrofibre-Aquacell, Duofibe

Maybe either fluid absorbing or fluid retaining products.

Moisture Management

Traditional Products

Melolin, Mesorb, Exudry, Zetuvit, Absorb plus

- do not achieve and maintain moist wound healing environment
- generally cheap
- require frequent changing usually
- often used as secondary dressing

Moisture Management

Fluid Absorption Products:

- fluid enters by diffusion
- fluid held within spaces of dressing like sponge
- can leak easily
- not good under compression

E.g. foams, hydroactive foams, silicone foams

-hydroactive foams

-silicone foams

With or without silver

With or without a border

Moisture Management

Fluid Retention Products:

- take up fluid and forms a gel, thus retaining fluid
- can reduce lateral wicking onto periwound, reducing maceration
- very useful under compression therapy

Alginates

- Hydrofibre - Aquacell, Duofibre
- Gelling foams - Versiva, Alione

Antimicrobials

Products aiding in controlling growth and multiplication of bacteria

- may have multiple functions
- Iodosorb-also controls and absorbs exudate, debride wound bed
- Medicated honey-also can debride wound bed
  - Manuka, Comvita, Medihoney
- Special Alginates-Flaminyl, also debrides and rehydrates
- Ag products

Products to Reduce Pain in the Wound or on Dressing Changes

- Biatain IBU - will also manage exudate and maintain moist environment
- Hydrogels on a dry wound
- Tulles - Hydrotul, Urgotul
- Silicone dressings - Mepital

Debridement Products

- Hydrogels
- Hydrocolloids
- Alginates
- Hydrofibe
- Isotonic impregnated pads
- Cadexomer iodine based products
- Hypertonic saline
- Enxzynmatic alginates
- Medicated honey
- Silver based products
- Capillary wicking products
- Biosurgical larvae products
- Teatree oil based products

Scar Management Products

To prevent or treat hypertrophic and keloid scars- soften and flatten scar tissue

- Polyacrylate tapes - e.g. Fixomull
- Silicone sheets – e.g. Cicacare
  - can be washed and reused
- Mepiform
- Kelo-cote

Retention Tapes and Products

- Tubular retention bandage - tubifast
- Tubular support bandage - tubigrip
- Tubular protection - tubular plus
- Paper tapes - micropore
- Polyacrylate tapes - mefix, hypafix, fixomull

Skin Care

Maintaining skin ands wound environment within normal pH scale

- Barrier creams and ointments - zinc and castor oil, Sudocream, Calmaseptine, UngvitaA
- Moisturisers - Dermaveen, Hamiltons, Cavilon, QV
- Protective barrier wipes – Convacare
- Skin barrier removers

Advanced Wound Therapies accessible to General

Negative Pressure Wound Therapy

Reduces oedema, contracts wound edge, removes debris and exudate, promotes granulation, mechanically stimulates wound bed

Indicated in:

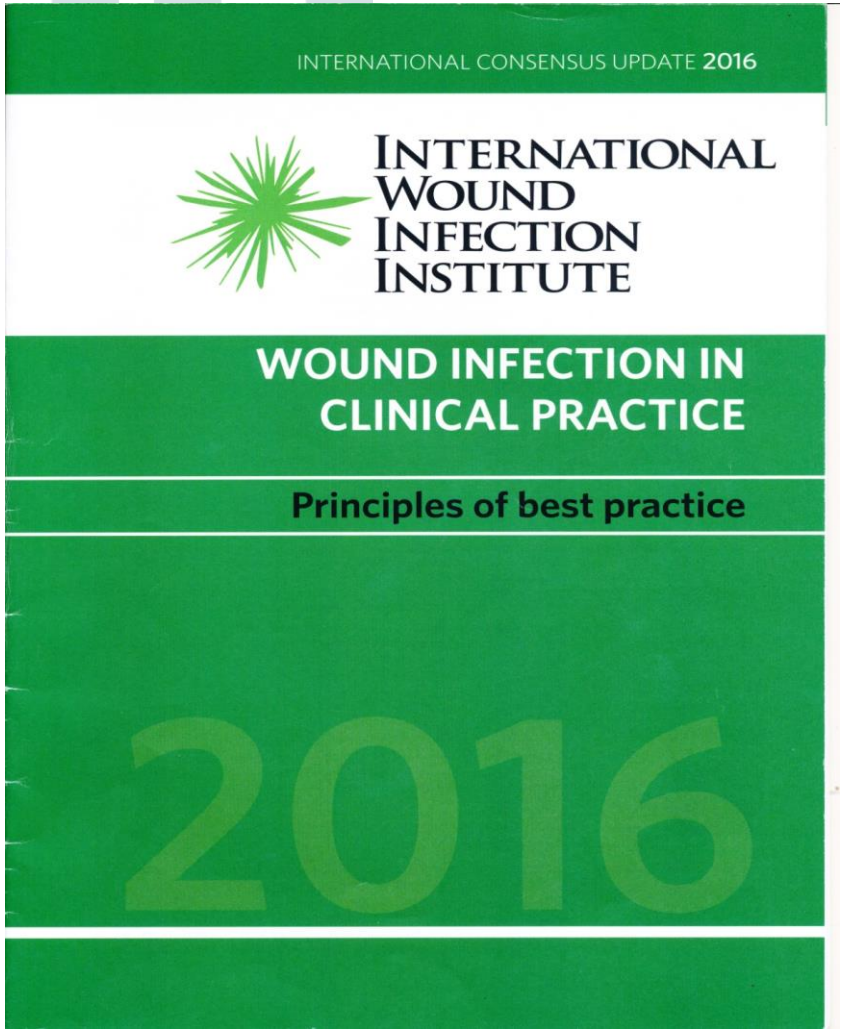
- Acute wounds
  - to prepare wound bed for secondary closure or grafting
  - over skin grafts or surgical wounds to improve healing
- Chronic wounds – pressure injury, DFU, VLU
- Types – portable and reusable or disposable

Warning: Instruct patient to call if burning or discomfort is an issue

phn GOLD COAST
An Australian Government Initiative

Allergy to bandage

Allergy to a dressing


INTERNATIONAL CONSENSUS UPDATE 2016
INTERNATIONAL WOUND INFECTION INSTITUTE
WOUND INFECTION IN CLINICAL PRACTICE
Principles of best practice
2016

Definition of Wound Infection

The invasion of a wound by proliferating microorganisms to a level that invokes a local and/or systemic response in the host

The presence of microorganisms within the wound causes local tissue damage and impedes wound healing

The effectiveness of the host's defence system, together with the quantity and virulence of microbes, influences the development of wound infection

International Wound Infection Institute. Wound infection in clinical practice 2016

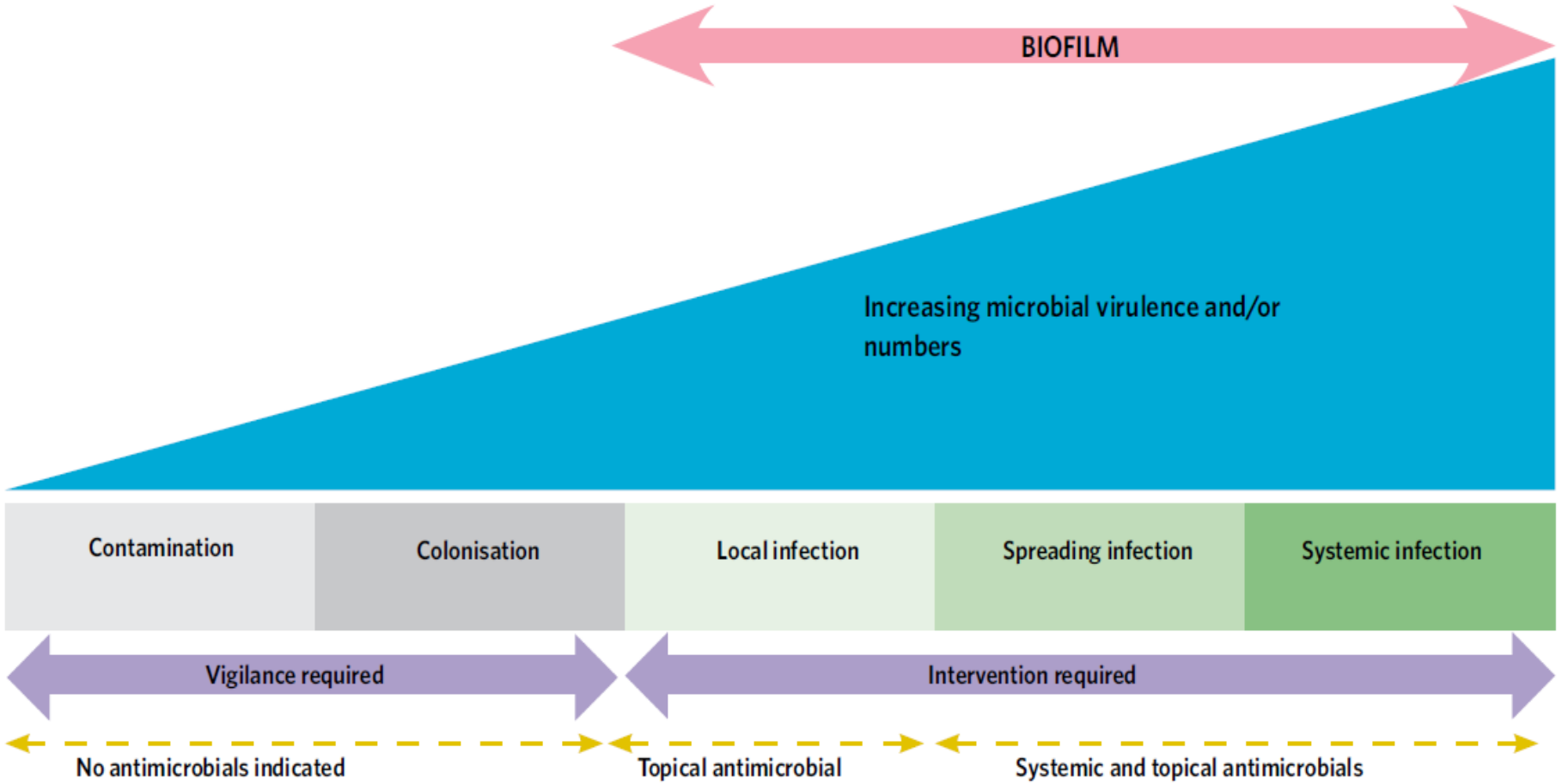
Wound Infection

- Antibiotic resistance has risen from excessive use of antibiotics in community and hospitals.
- Now have – multi-resistant or community acquired MRSA and Pseudomonas developing resistance to Ciprofloxacin.
- No new antibiotics are under development.

Practical points

- *Infection is defined clinically, by the symptoms and signs of inflammation, regardless of the results of any wound culture.*
- *Identify different stages of infection to assist choice of management and wound product.*
- *Effective use of wound products can reduce use of oral antibiotics – essential for these times of increasing rise of resistance in bacteria.*

Figure 1 | IWII wound infection continuum[22, 24, 25]



Stages in the Wound Infection Continuum

Virtually from the time of wounding, all open wounds are contaminated with microbes.

Contamination

- non-proliferating bacteria
- no host reaction
- host defences respond swiftly to destroy bacteria by phagocytosis

Colonisation

- replicating bacteria
- no host reaction
- wound healing is not impeded or delayed

Wound Bed Preparation - TIME

Stages in the Wound Infection Continuum

Local Infection

- increased microbial burden invoking a host response
- infection is contained in one location, system or structure
- subtle or covert signs initially that may develop into more classic signs

Spreading Infection

- the invasion of the surrounding tissue by infective organisms that have spread from a wound
- microorganisms proliferate and spread, to a degree that signs and symptoms extend beyond the wound border
- may involve deep tissue, muscle, fascia, organs or body cavities.

Local Infection

Covert (subtle) signs of local infection:

- Hypergranulation - (excessive ‘vascular’ tissue)
- Bleeding, friable granulation
- Epithelial bridging and pocketing in granulation tissue
- Wound breakdown and enlargement
- Delayed wound healing beyond expectations
- New or increasing pain
- Increasing malodour

Overt (classic) signs of local infection:

- Erythema
- Local warmth
- Swelling
- Purulent discharge
- Delayed wound healing beyond expectations
- New or increasing pain
- Increasing malodour

Spreading Infection

- Extending in duration +/- erythema
- Lymphangitis
- Crepitus
- Wound breakdown/dehiscence with or without satellite lesions
- Malaise/lethargy or non specific general deterioration
- Loss of appetite
- Inflammation, swelling of lymph glands

Systemic Infection

Sepsis – documented infection with pyrexia or hypothermia, tachycardia, tachypnoea, raised or depressed WCC

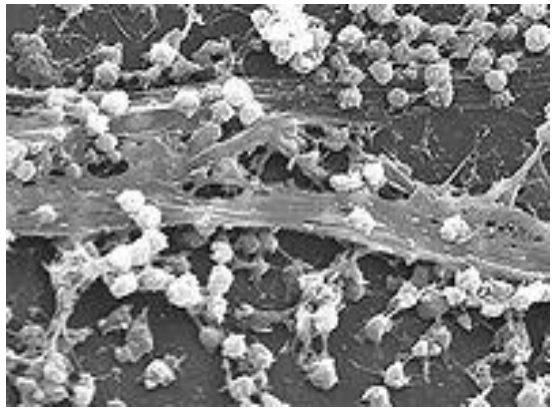
Severe sepsis – and multi-organ failure

Septic shock – sepsis and hypotension

Death

Biofilms

- Occur in 60% of chronic wounds and 6% acute wounds
- Structured community of bacterial cells enclosed in a self produced matrix
- May contain multiple species of bacteria
- Difficult to detect-cultures of no value
- Difficult to eradicate
- Can form within 30 minutes
- May develop down to 5mm below wound bed
- Aggressive debridement can reduce the bioburden which can improve healing. Most benefit in first 30 to 60 days
- Bioburden can reform in 8-12 hours thus frequent debriding necessary. In this period bioburden more sensitive to antimicrobials.



Criteria indicative of potential biofilm

Biofilm cannot be directly visualised in a wound. The experienced clinician may suspect biofilm is present through observation of indicative wound characteristics.

- Failure of appropriate antibiotic treatment
- Recalcitrance to appropriate antimicrobial treatment
- Recurrence of delayed healing on cessation of antibiotic treatment
- Delayed healing despite optimal wound management and health support
- Increased exudate/moisture
- Low-level chronic inflammation
- Low-level erythema
- Poor granulation/friable hypergranulation
- Secondary signs of infection

Application to practice

- Infection may produce different signs and symptoms in wounds of different types and aetiologies
  - Delphi process has identified identifying criteria in six different wound types - Acute, Diabetic, Arterial, Venous, Pressure, Burns

- Infection in acute wounds in healthy patients is usually obvious.

- Infection in chronic wounds and debilitated patients may be more subtle or have non-specific general signs e.g. loss appetite, malaise, loss glycaemic control.

- Delayed healing
  - healing progressing at a slower rate than expected;
  - open surgical wounds - epithelial margin advances about 5mm/week
  - clean pressure ulcers expect signs of healing in 2-4 weeks
  - reduction in venous ulcer surface area of >25% after two weeks is predictive of healing

Investigations - Microbiology

- Microbiological tests should not be performed routinely
- Tests are only to support and guide management
- Sampling techniques:
  - wound swabbing-Levine, Z-Zag methods
  - needle aspiration
  - wound biopsy
- Beware of interpreting a microbiology report in isolation, consider report in context of patient and the wound.

Principles for Wound Swabbing

- Culture clean tissue-remove loose debris by irrigating with sterile saline
- Do not culture slough or necrotic tissue
- Do not use antiseptics prior to culture
- Levine method preferred-obtaining fluid and microbes at or below wound bed
- Obtain specimen from cleanest area in the wound
- Consider biopsy

(Morison et al., 2005; Bryant & Nix, 2007)

Biopsy – Quantitative Bacteriology

Pros …

- Accurately identifies the type and number of organisms in tissue

Practice Point

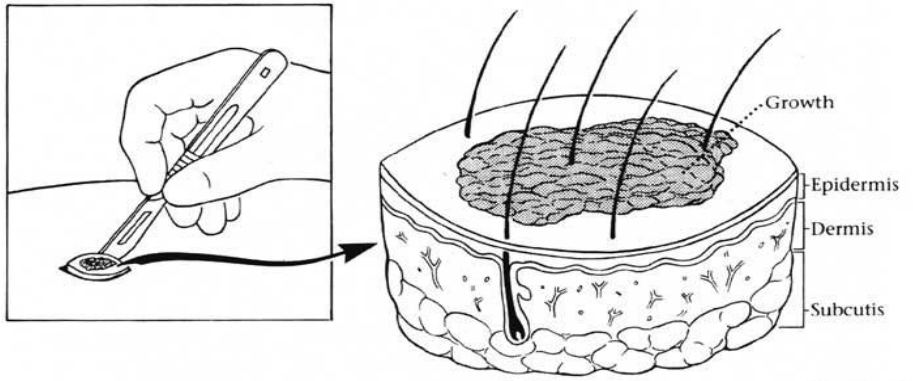
Ask for histology as well

[put in saline, not formalin]

Reserve for wounds with delayed healing

Cons …

- Requires technical expertise
- More time consuming
- Restricted to hospitals or doctors rooms
- Increased cost
- Causes pain
- May delay healing but generally regenerates well



Cleansing solutions and gels

- Sterile normal saline -no effect on biofilm , non-antiseptic solution
- Sterile water - no effect on biofilm, non-antiseptic solution
- Potable tap water - not sterile
- PHMB-surfactant qualities, low cytotoxicity, disrupts biofilm attachments, does not promote bacterial resistance
- Octenidine dihydrochloride (OCT) - surfactant, antimicrobial, high cytotoxicity no disruption to healing, prevents formation of new biofilm
- Super-oxidised with hypochlorous acid (HOCL) and sodium hypochlorite – antiseptic, penetrates biofilm rapidly
- Povidone iodine-antiseptic, inhibits development of new biofilm, eradicates young biofilm, significantly reduces mature biofilm, enhances angiogenesis, thereby promoting healing, may inhibit excess protease levels in chronic wound.

Managing Infection
Reducing Microbial Load

phn GOLD COAST
An Australian Government Initiative

Antiseptics:

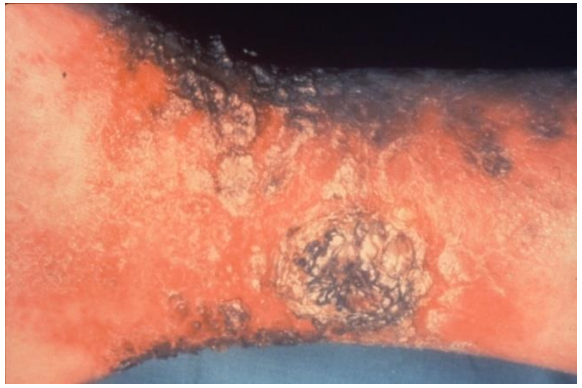
- topically applied, non-selective agents that either inhibit multiplication or kill micro-organisms
- maybe cytotoxic and cytotoxicity maybe concentration dependent
- development of resistance is unusual as act at multiple sites on micro- organism
- may be used to cleanse a wound
- may be incorporated in a wound dressing
- use products with a sustained release of antimicrobial agent at concentrations low enough to minimise toxicity but still destroy microbes
- duration of use – have a two week challenge then review

Antibiotics

- can be used topically but not recommended due to risk of allergy, hypersensitivity reactions and development of resistance
- to avoid antibiotic resistance only use in specific circumstances:
  - topical metronidazole for malodour in fungating wounds
  - silver sulphadiazine in burns and wounds

Wound Bed Preparation: Surrounding Skin

- Good management can reduce vulnerability of wound to breakdown and infection
- Wash with shower hose, use Dermeveen or QV wash for cleansing
- Consider a barrier cream – zinc paste
- For varicose eczema apply cortisone ointment [not cream] - avoid wound edge
- Use emollients



P
2

2.00pm-2.15pm Online presentation

- **Hartmann**

2.15pm-2.45pm Trade Display

- **Molnlycke**
- **Balance Medical**
- **Bbraun**
- **3M**

- 2.45pm-3:00pm ABPI

3.00pm

- **Diagnosis & Management of Oedema**

3.45pm

- **Compression Therapy (3M)**

4.15pm

- **Q & A**

Debrisoft®

Debridement

BEFORE
Thick Yellow Slough
in Wound Bed

AFTER
2-4 Minutes of
Debrisofting

*

QUICK EASY REMOVAL PAINLESS REMOVAL OF SLOUGH

* Barbara Pritchard, Wrexham Maelor Hospital, Wales, UK

Debrisoft®
Debridement

- Angled fiber tips for highly efficient results
- 18 million fibers for gentle application
- Sewen edge and reinforced reverse side

- Angled fiber tips loosen debris and exudate from the wound as well as skin flakes and keratosis from the skin surrounding the wound

Indications:

- Debridement of superficial wounds and surrounding skin in cases of:
  - Diabetic ulcers
  - Arterial and venous ulcers
  - Pressure ulcers
  - Postoperative wounds healing by second intention

The Basic Principles for Management of Chronic Wounds

1. Evaluation of Ulcer Aetiology
2. Treatment of Underlying Cause
3. Management of the Wound
4. Monitoring and maintenance of healing of Wound

Wound Assessment and Diagnosis

HEIDI

- History- patient, medical history, wound, previous wounds ,identify factors affecting healing
- Examination : general and local

  -venous disease, limb ischaemia, lymphoedema, neuropathy

  -different wounds have different characteristics eg position on leg , shape ,exudate ,wound edge etc
- Investigations-blood pathology, ABP Index [most frequently used to assess arterial circulation] , arterial and/or venous duplex scanning, microbiology and histopathology, imaging
- Diagnosis
- Indicators and Intervention-documentation-measurements, photographs, document regularly [weekly] to evaluate healing

Practical Point

If VLU is not healing at optimal rate of 25% improvement in 4 weeks review diagnosis, assessment and management

70% of uncomplicated VLU should be healed in 12 weeks

Moiste Wound Healing Motto…

If its wet……..DRY it!
If its dry with blood supply…MOISTEN it!
If its dry with NO supply… keep dry!
If its irritated…SOOTHE it!
If its chronic…IRRITATE it!
If its palliative. COMFORT it!
If its oedematous SQUEEZE it!
If its red RELIEVE it!
If its green .. NUKE it!

If its wet dry it:

If its dry with supply…MOISTEN it!
Or debride CSWD

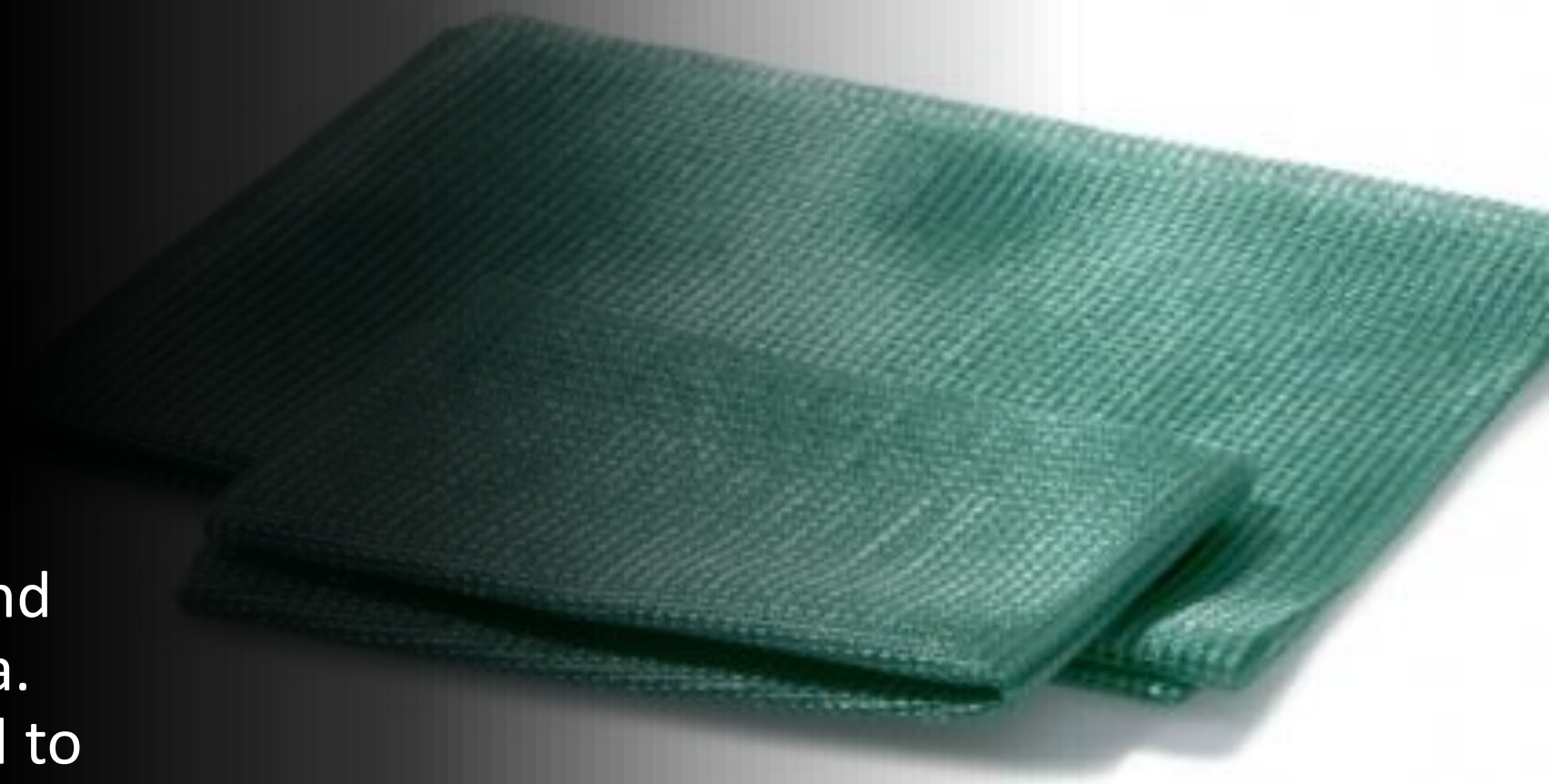
If its dry with no supply keep it dry

If is chronic irritate it

If its irritated sooth it:

Sorbact
https://www.abigo.com/products/wound-fungus/sorbact/mode-of-action/

- Within 15–30 seconds Adsorbs and inactivates pathogens, e.g. Staphylococcus aureus and Pseudomonas aeruginosa. Bacteria and fungus bind to Sorbact until the dressing is removed from the treated area.



If it’s oedematous SQUEEZE it

- If its palliative comfort it

- If it’s red relieve it

- If its green NUKE IT

Independence Austalia

- Flaminal Hydro

$28.00

- Iodosorb paste

$78.98

- Iodosorb powder

$13.59

- Debrisoft

$21.89

- Aquacel AG

$33.00

Independence Australia

• Coban / lite	$43.95
• Acticoat flex 7 day 5 x 5cm	$ 39.77
• Acticoat flex 3 days 5 x 5cm	$ 24.42
• Inadine 10 x 10cm	$ 3.91
• Sorbact 7 x 9 in 8 layers	$6.88
• Melolin 10 x 10	$2.75
• Aquacel foam 10 x 10	$7.35
• Mepilex ag 10 x 10	$24.65
• Zetuvit plus 10 x 10	$3.19

TRADE DISPLAY / LUNCH

Sarah Wallis (Molnlycke)

Annabelle McGrath (Braun)

Suzanne Pritchard 3M

Cassandra Garson (Balance Medical)

Danielle Wheelahan (Hartmann) – online 1:50pm

Dr Mark Jackson

Mark Jackson

Vascular Surgery

Suite 6 Lvl 2, Gold Coast Surgery Centre 103
Nerang St
SOUTHPORT, QLD

College of Surgeons

An experienced vascular surgeon, fully trained in open and endovascular (minimally invasive) surgical techniques. Dr Jackson has appointments at Gold Coast University & Gold Coast Private hospitals, The Tweed Hospital, Toowoomba Base Hospital, Pindara and John Flynn Private hospitals. Dr Jackson also offers a broad range of venous therapies including ultrasound, sclerotherapy, thermal ablation and surgical techniques. Dr Jackson is an enthusiatic researcher including the areas of the management of peripheral arterial disease and in teaching & assessment of Vascular surgical trainees throughout Australia and New Zealand. He has been appointed Associate Professor at Griffith University Medical School.

Arterial

- Pain
- Pulseless
- Pallor
- Paresthesia
- Punched out
- Deep

Arterial scan
CTA
MRA

Refer

Painless Dressing

Horizontal or
Dependent

Which of these does not require Revascularisation?

A)

B)

C)

D)

40yr T2DM
Thromboangitis Obliterans

Full Compression is indicated for patients with an ABPI between 0.8 to 1.2 ?

- TRUE
- FALSE

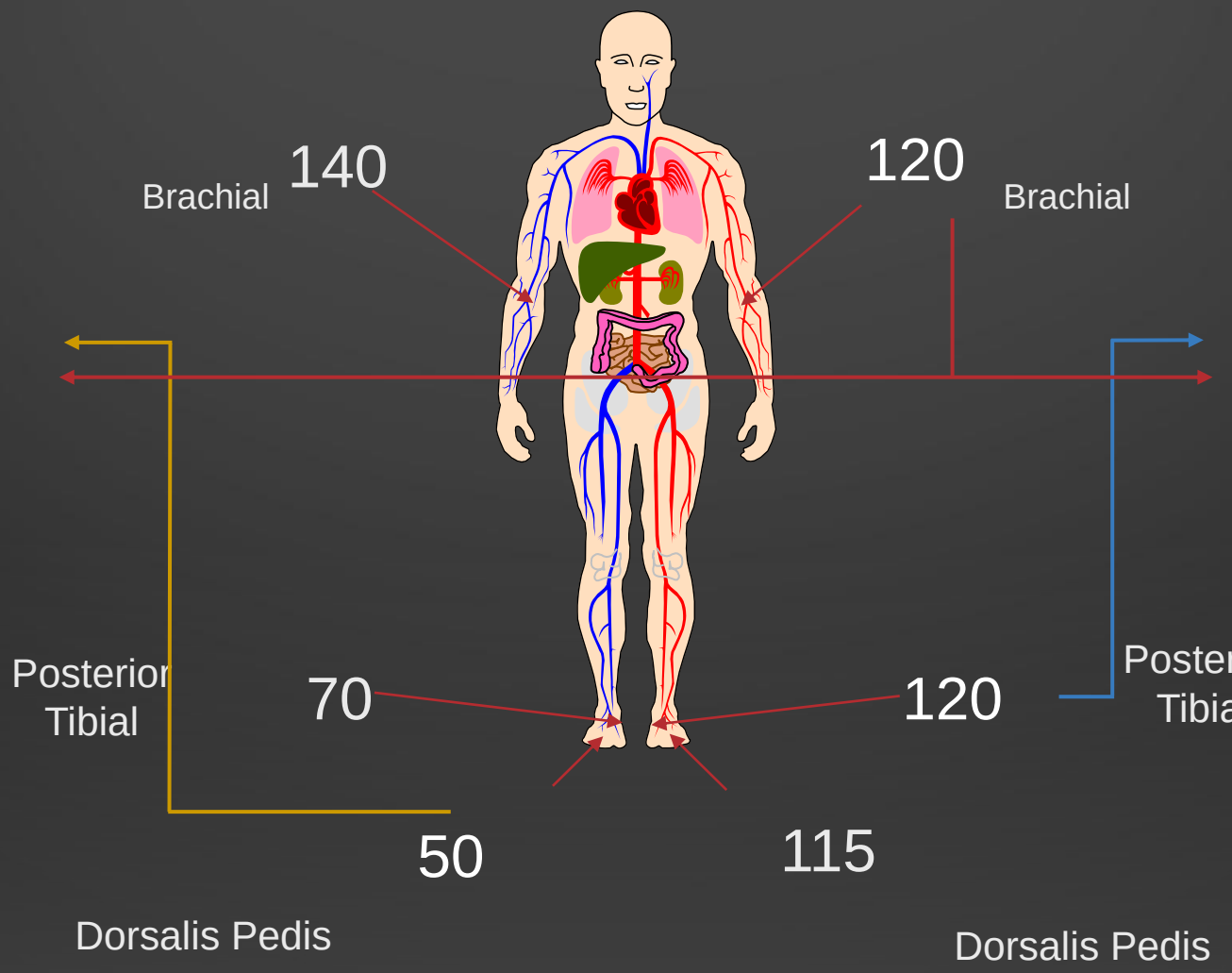
For referencing Team V et al. Ankle Brachial Pressure Index and compression application: Review summary. WP&R Journal 2019; 27(2):108-111.

HOW TO CALCULATE THE ABPI

R) ABPI

$\frac{70}{140}$

= 0.5



L) ABPI

$\frac{120}{120}$

= 1.0

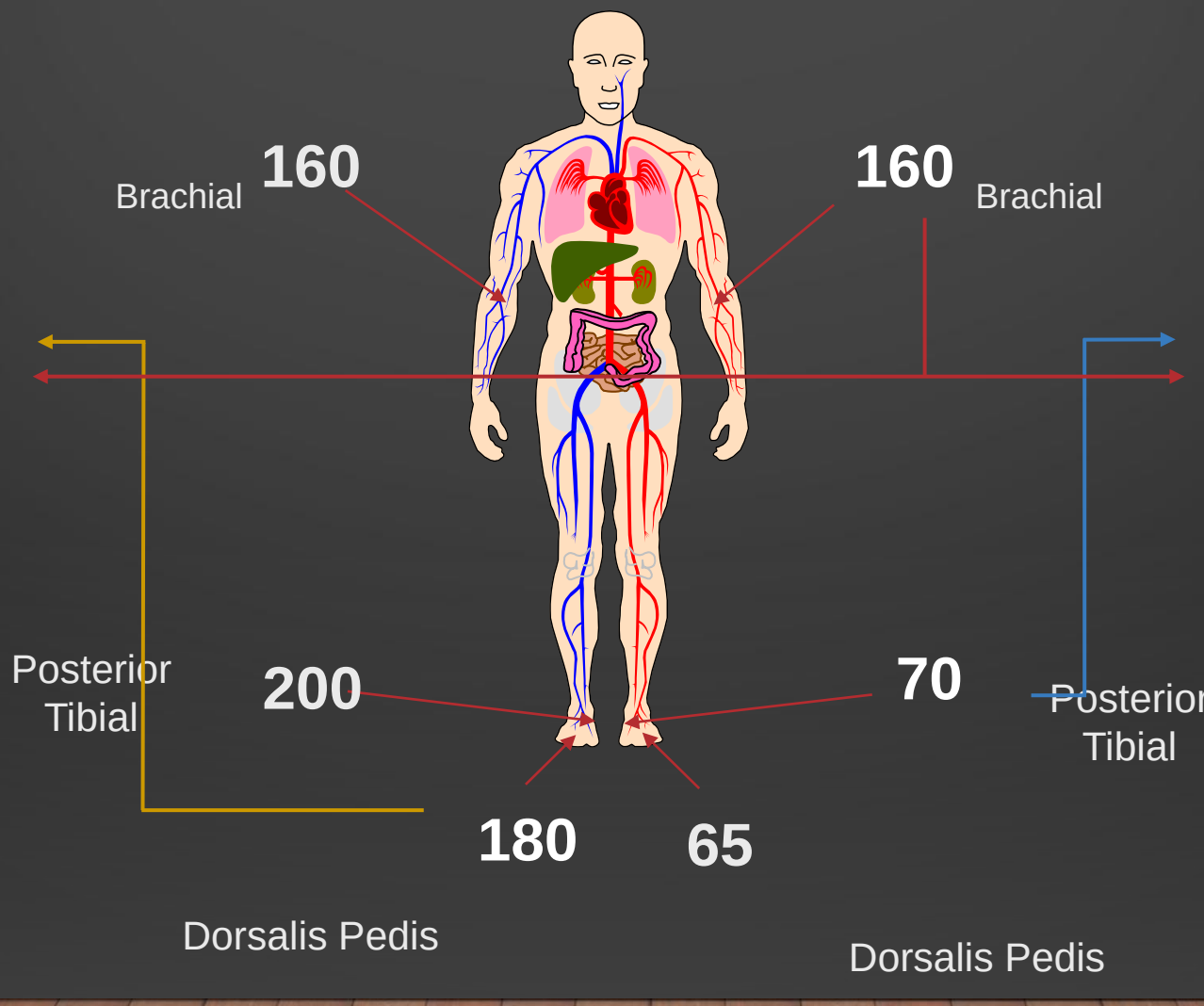
Belch JJF *et al. Arch Int Med* 2003; 163: 884-92; Hiatt WR. *N Engl J Med* 2001; 344: 1608-21.

HOW TO CALCULATE THE ABPI

R) ABPI

$\frac{200}{160}$

= 1.25

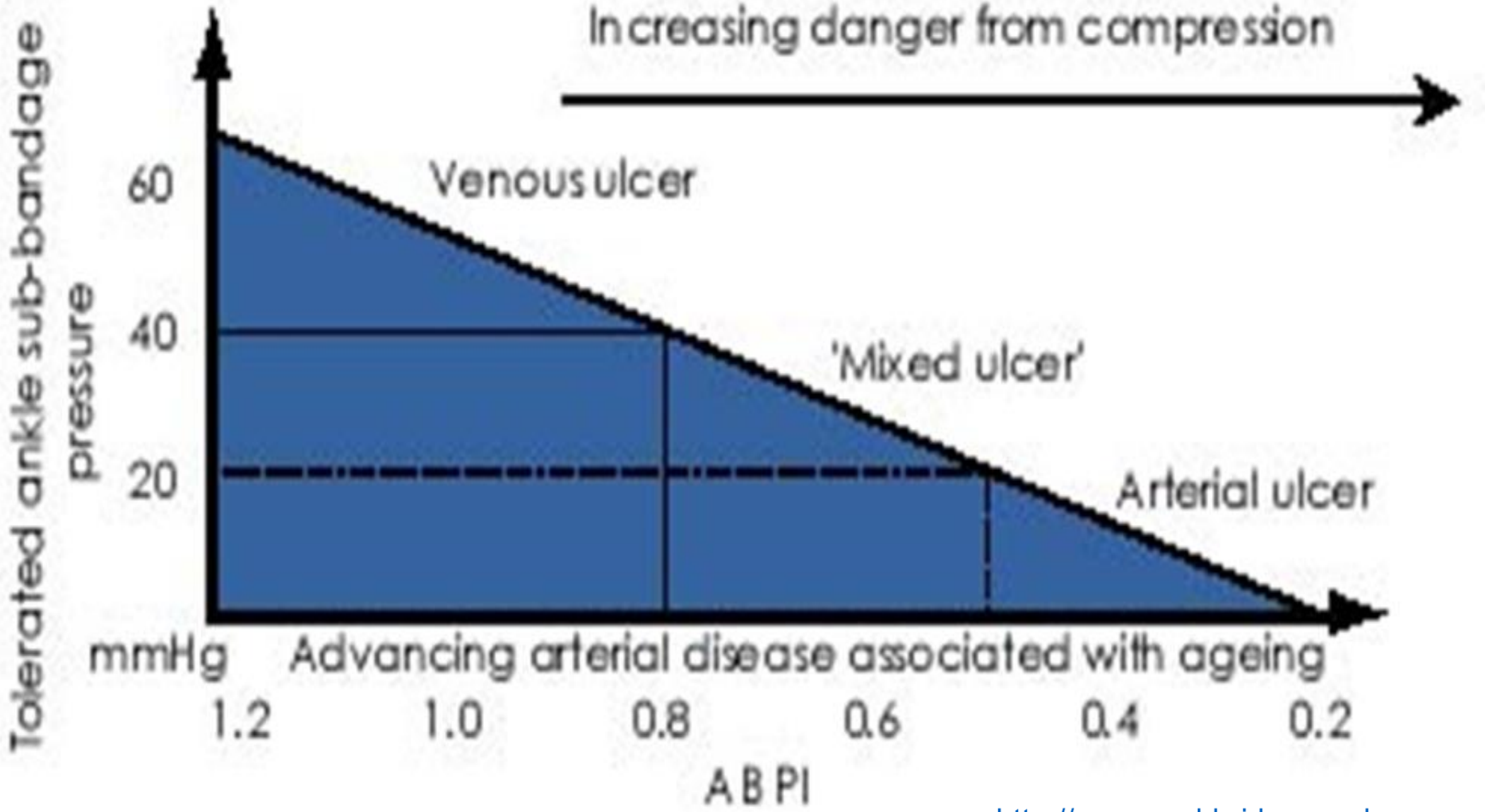


L) ABPI

$\frac{70}{160}$

= 0.43

Belch JJF *et al. Arch Int Med* 2003; 163: 884-92; Hiatt WR. *N Engl J Med* 2001; 344: 1608-21.



http://www.worldwidewounds.com

ABPI 1.2

What is the best choice?

a) Full compression
b) Light Compression
c) Tubigrip graduated
d) Tubigrip Single

Need to consider

- a) neuropathy
- b) HF
- c) pain
- d) tolerance

11610

Group	D1 - Miscellaneous Diagnostic Procedures And Investigations
Subgroup	5 - Vascular

MEASUREMENT OF ANKLE: BRACHIAL INDICES AND ARTERIAL WAVEFORM ANALYSIS, measurement of posterior tibial and dorsalis pedis (or toe) and brachial arterial pressures bilaterally using Doppler or plethysmographic techniques, the calculation of ankle (or toe) brachial systolic pressure indices and assessment of arterial waveforms for the evaluation of lower extremity arterial disease, examination, hard copy trace and report.

Fee: $65.70 **Benefit:** 75% = $49.30 85% = $55.85

Diabetes

Each year in Australia

- DFU affects an estimated 50,000 people
- resulting in around 30,000 hospitalisations
- and 5000 amputations

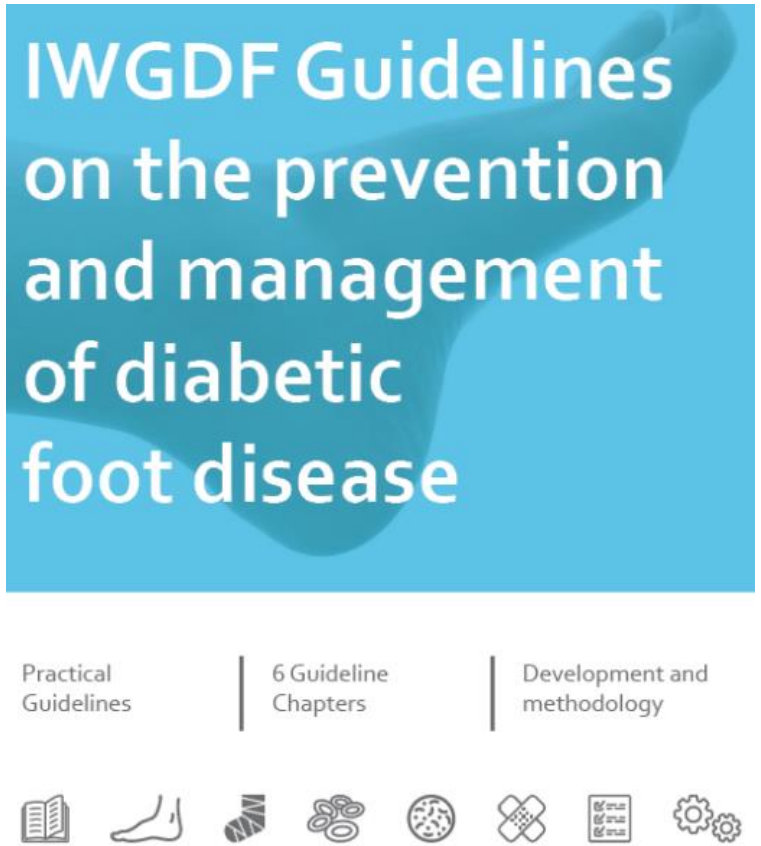
- Neuropathy
- PAD
- Foot deformity
- Cardiovascular risk Mgt: smoking; Tx HTN, control glycaemia, statin, low dose clopidogrel, aspirin
- Infection Mgt
- Offloading
- Wound care

[10] [11] [12] [13] [14]. The prognosis of a patient with diabetes, PAD and foot ulceration requiring amputation is worse than many common cancers – up to 50% of patients will not survive 5 years [4] [15].

CORNERSTONES OF FOOT ULCER PREVENTION

There are five key elements that underpin efforts to prevent foot ulcers:

1. Identifying the at-risk foot
2. Regularly inspecting and examining the at-risk foot
3. Educating the patient, family and healthcare professionals
4. Ensuring routine wearing of appropriate footwear
5. Treating risk factors for ulceration



https://diabeticfootaustralia.org

Refer in 2 days or less

- The ulcer less severe
- Healing is faster
- Less chance of infection

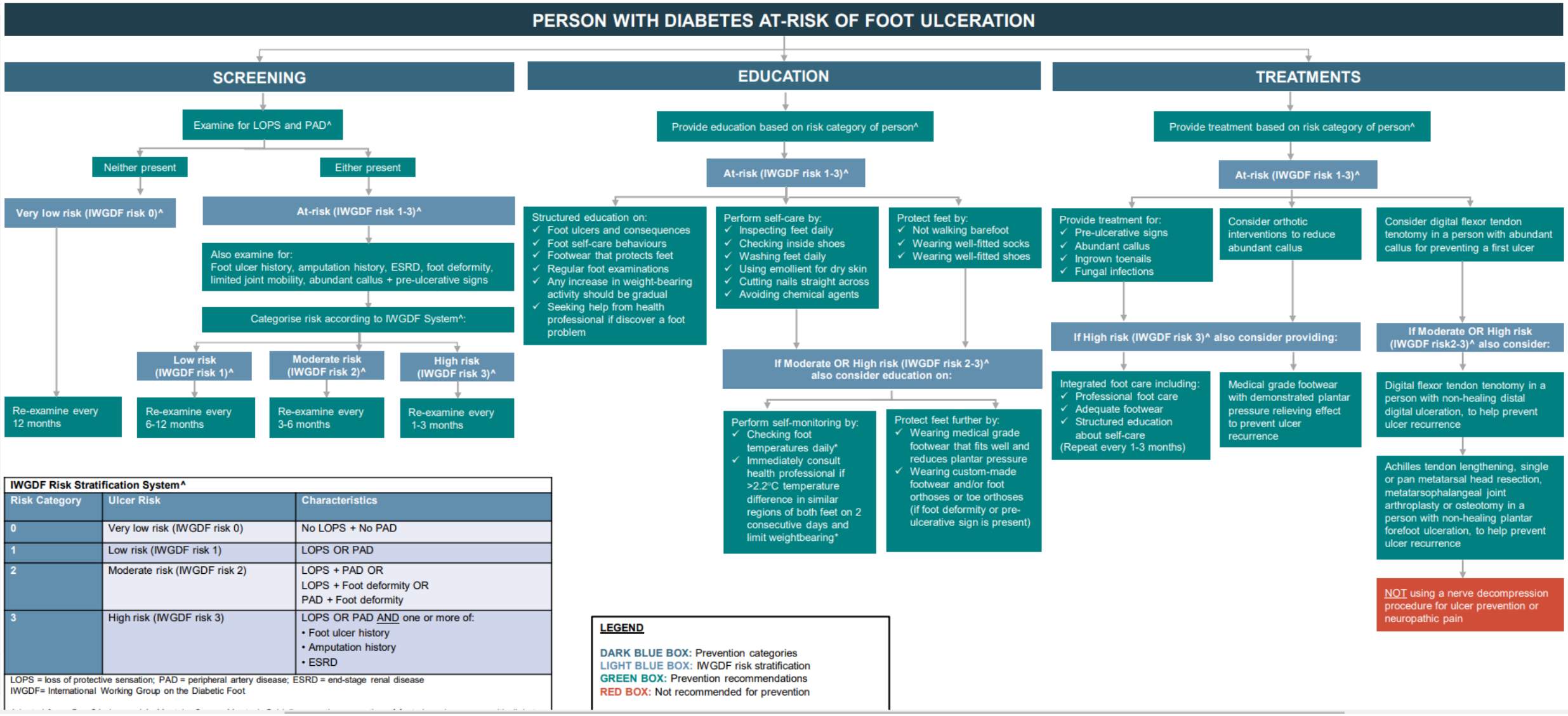
After 2 days

- Increase risk infection
- Hospitalization
- Amputation

Highriskfootpodiatryservice@health.qld.gov.au

New Guidelines - Diabetes Feet Australia

Figure 2. Australian evidence-based clinical pathway on prevention of foot ulcers for people with diabetes



IWGDF Risk Stratification System^

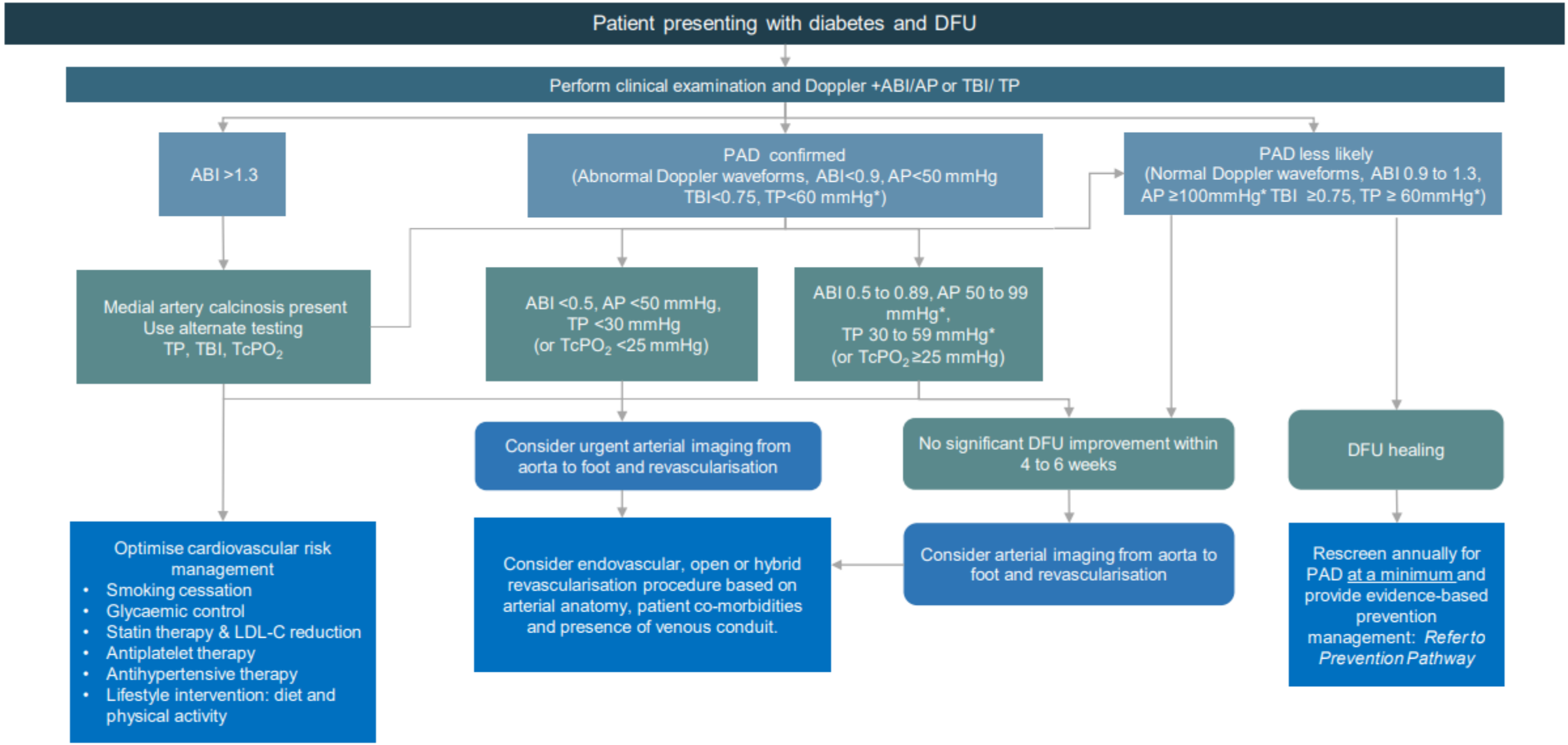
Risk Category	Ulcer Risk	Characteristics
0	Very low risk (IWGDF risk 0)	No LOPS + No PAD
1	Low risk (IWGDF risk 1)	LOPS OR PAD
2	Moderate risk (IWGDF risk 2)	LOPS + PAD OR LOPS + Foot deformity OR PAD + Foot deformity
3	High risk (IWGDF risk 3)	LOPS OR PAD AND one or more of: • Foot ulcer history • Amputation history • ESRD

LOPS = loss of protective sensation; PAD = peripheral artery disease; ESRD = end-stage renal disease
IWGDF= International Working Group on the Diabetic Foot

LEGEND

DARK BLUE BOX: Prevention categories
LIGHT BLUE BOX: IWGDF risk stratification
GREEN BOX: Prevention recommendations
RED BOX: Not recommended for prevention

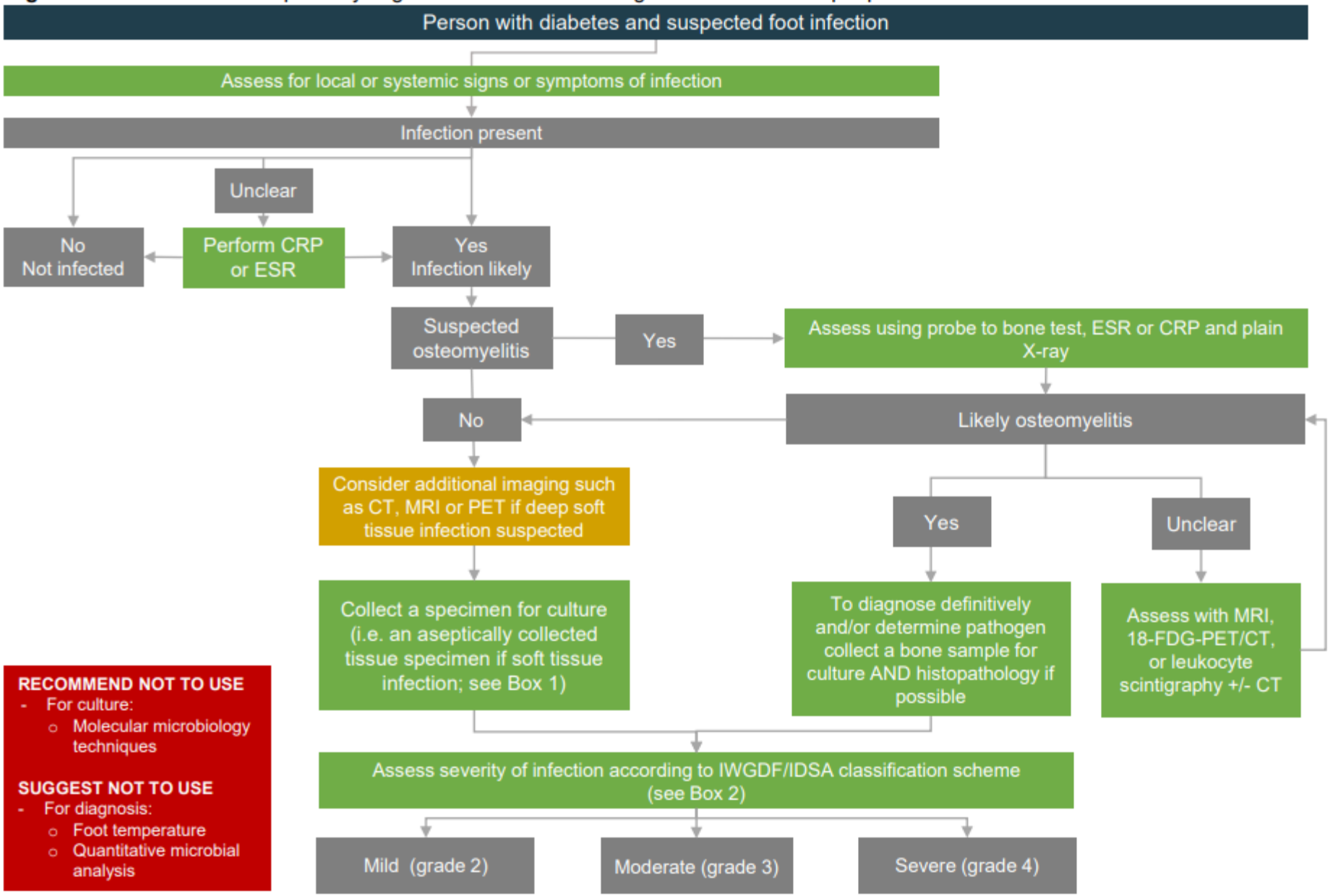
Figure 2. Australian evidence-based clinical pathway on diagnosis and management of peripheral artery disease for people with diabetes and a foot ulcer



ABBREVIATIONS **ABI** Ankle-brachial index, **AP** Ankle pressure, **DFU** Diabetes-related foot ulcer, **LDL-C** Low density lipoprotein cholesterol, **PAD** Peripheral artery disease, **TBI** Toe-brachial index, **$TcPO_2$** Transcutaneous oxygen pressure **TP** Toe pressure

PAD treatments recommended *Figures based on wound, ischaemia, and foot infection (WIfI) classification system (44)

Figure 1a: Australian clinical pathway to guide evidence-based diagnosis of infection in people with diabetes



RECOMMEND NOT TO USE
- For culture:
  - Molecular microbiology techniques

SUGGEST NOT TO USE
- For diagnosis:
  - Foot temperature
  - Quantitative microbial analysis

Box 1. Tips for collecting diagnostic samples
- Wherever possible collect tissue, bone or pus using an aseptic technique for culture.
- Histopathology should also be requested on bone specimens.
- Avoid taking superficial swabs of ulcers as they will more likely identify colonising organisms than infecting pathogens.
- Before collecting a sample, debride and clean (using saline) the ulcer base.
- Do not sample areas of necrotic or non-viable tissue.

Box 2. IWGDF severity classification scheme

Mild (grade 2) diabetic foot infection:
- Involves only the skin or subcutaneous tissue.
- Erythema extends <2cm from the wound margin.
- No systemic features of infection.

Moderate (grade 3) diabetic foot infection:
Infection is not associated with systemic inflammatory response syndrome (SIRS) and either:
- Involves structures deeper than the skin and subcutaneous tissues (e.g., tendon, muscle, joint, bone) OR
- Erythema extends ≥2cm from the wound margin.

Severe (grade 4) diabetic foot infection:
Any infection associated with systemic inflammatory response syndrome (SIRS), as manifested by ≥2 of the following:
- Temperature, >38°C or <36 °C
- Heart rate, >90 beats/min
- Respiratory rate, >20 breaths/min or $PaCO_2$ <32 mmHg
- White blood cell count >12 x 10^9/L or <4 x 10^9/L, or >10% immature (band) forms

Osteomyelitis:
Infection involving bone (add '(O)' after grade)

LEGEND Grey box: Infection type Green box: Recommended good standard of care Yellow box: Suggested standard of care Red box: Contraindication

Screening, diagnosis and management of diabetic sensorimotor polyneuropathy in clinical practice: International expert consensus recommendations

Dan Ziegler [a,b,*], *Solomon Tesfaye* [c], *Vincenza Spallone* [d], *Irina Gurieva* [e,f], *Juma Al Kaabi* [g,h], *Boris Mankovsky* [i], *Emil Martinka* [j,k], *Gabriela Radulian* [l], *Khue Thy Nguyen* [m], *Alin O Stirban* [n], *Tsvetalina Tankova* [o], *Tamás Varkonyi* [p], *Roy Freeman* [q], *Péter Kempler* [r], *Andrew JM Boulton* [s]

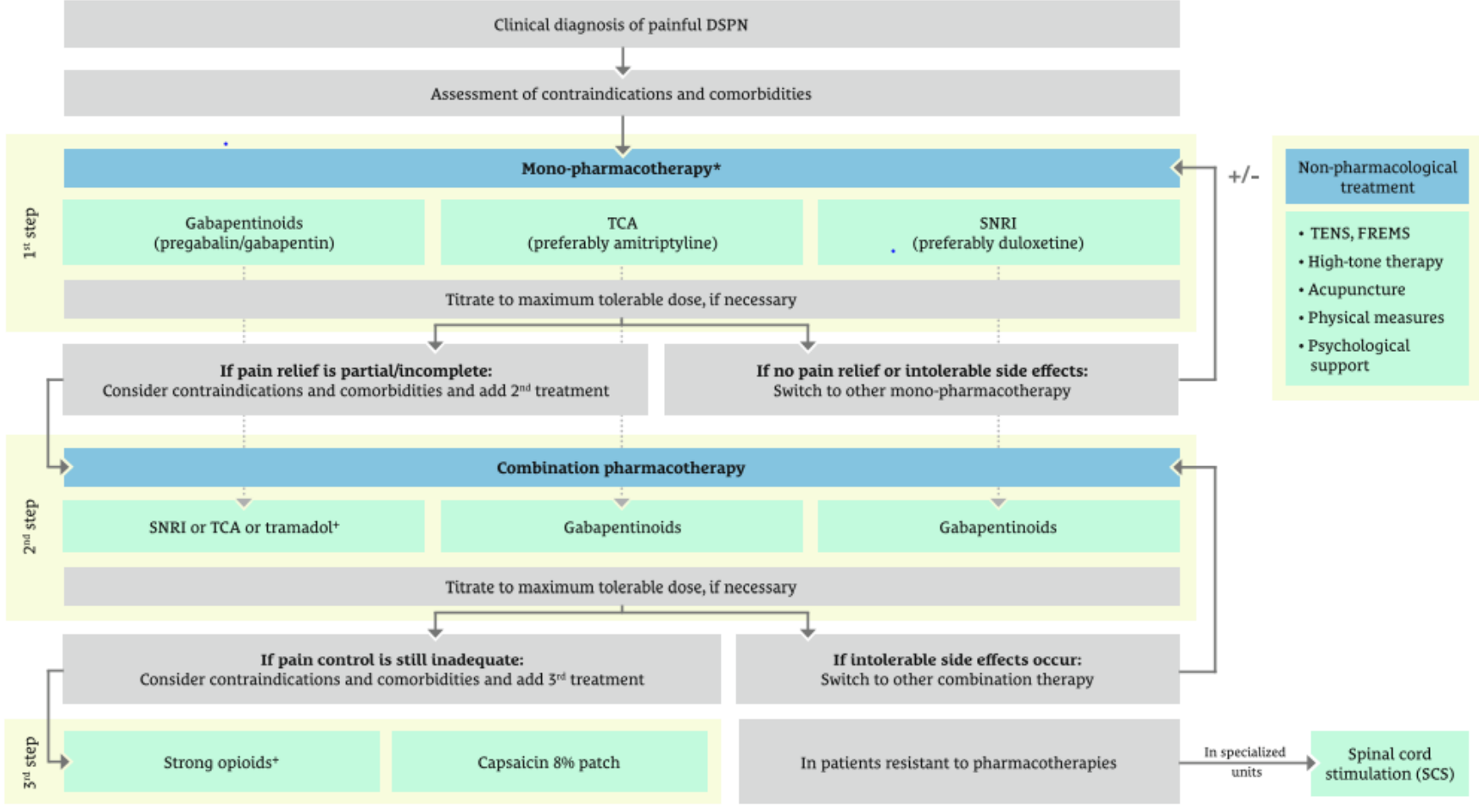


Fig. 3 – Consensus recommendation of an algorithm for analgesic pharmacotherapy and non-pharmacological treatment options in painful DSPN in clinical practice. Footnotes/abbreviations: * Pathogenetically oriented treatment approaches may

Combining Neuropathic Agents

Amitriptyline supplemented with pregabalin

Pregabalin supplemented with amytriptyline

Duloxetine supplement with pregabalin

130 people in end analysis UK multicentre trial, double blineded 16 weeks in each arm

Monotherapy then combination

Average age 61.8yrs

Monotherapy 40 % received 50% reduction in pain from baseline

Combination an additional 19% achieved 50 % reduction (numerical Rating scale improved)

Reference

Tesfaye, S., Sloan, G., Petrie, J., White, D., Bradburn, M., Julious, S., Rajbhandari, S., Sharma, S., Rayman, G., Gouni, R., Alam, U., Cooper, C., Loban, A., Sutherland, K., Glover, R., Waterhouse, S., Turton, E., Horspool, M., Gandhi, R., … OPTION-DM trial group. (2022). Comparison of amitriptyline supplemented with pregabalin, pregabalin supplemented with amitriptyline, and duloxetine supplemented with pregabalin for the treatment of diabetic peripheral neuropathic pain (option-dm): a multicentre, double-blind, randomised crossover trial. Lancet (London, England), 400(10353), 680–690. https://doi.org/10.1016/S0140-6736(22)01472-6

Vit D deficiency ; wound healing and ulcer pain

Vit D deficiency has been involved in the pathogenesis of small-fibre neuropathy; affecting nociceptor fibres

High dose Vit D supplement in DN 40,0000IU week in 24 weeks improved symptoms

- 76pts 5000 IU vs 40,000 IU Randomised
- 78% pts detected Vit D deficiency
- Improvement in clinical manifestation, cutaneous microcirculation and inflammatory markers in patients with T2DM and peripheral neuropath

Reference

Karonova, T., Stepanova, A., Bystrova, A., & Jude, E. B. (2020). High-dose vitamin d supplementation improves microcirculation and reduces inflammation in diabetic neuropathy patients. *Nutrients*, *12*(9). https://doi.org/10.3390/nu12092518

Debriflo

Leader In Debridement Innovations

DEBRIFLO DEBRIDEMENT DEBRIFLO UPDATES DEBRIFLO SUPPORT

Ultrasonic Wound Therapy

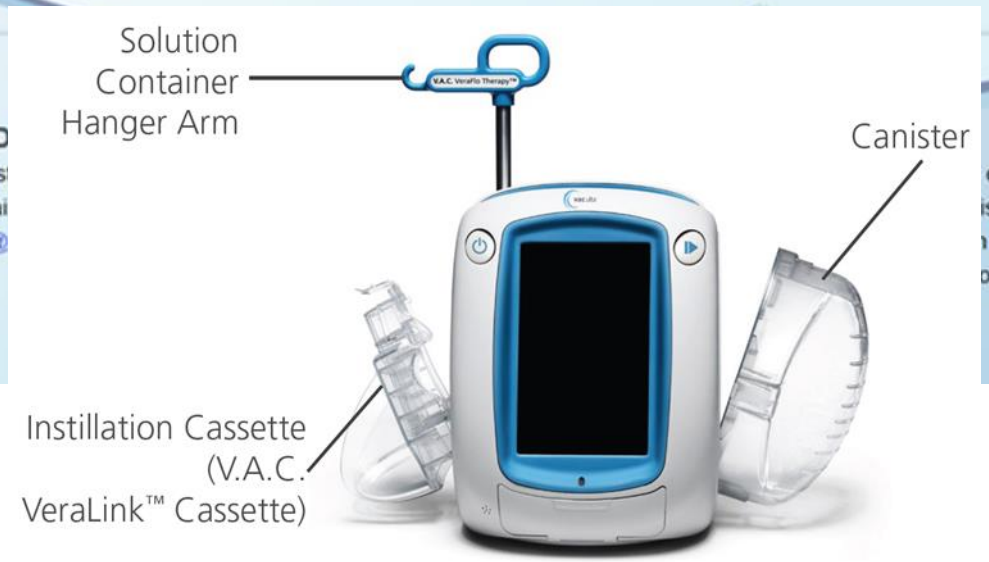
The Debriflo ~ UWI Ultrasonic Wound Therapy System mixes ultrasonic energy for selective dissection and fragmentation of tissue, wound debridement (acute and chronic wounds, burns, diseased and necrotic tissue) and utilising cleansing saline irrigation at the site for the removal of debris, exudate, fragments and other matter. Not only does the Ultrasound Wound Therapy System provide a superior debriding process, but it also helps stimulate circulation and create cavitation that destroys bacteria and biofilm.

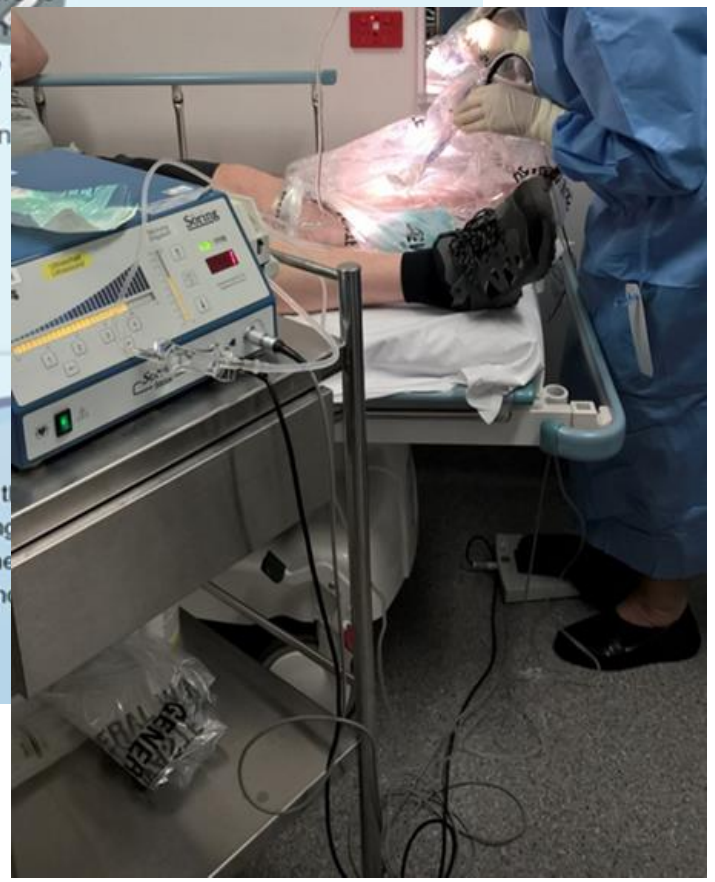
Education & Training

Debriflo is committed to providing customers with high quality education and workshops. We will provide online networking opportunities as well as benchmarking outcomes with other clinicians utilising low frequency ultrasonic wound irrigation.

How D

To regis
and Trai
admin@





V.A.C. VeraFlo™ Therapy Provides Automated, Volumetric Fluid Delivery

Mechanical Debridement with low frequency Ultrasound

- Oscillation of microscopic bubbles that concentrates acoustic energy into a shearing field
- Less traumatic, less painful and has selective tissue debridement
- Achieves faster healing rates by reducing the bioburden from debris and biofilms in the wound
- Can be performed in a small clinical setting
- Can reduce need for more aggressive surgical debridement

48yr T2 DM,
Neuropathic DFI
Admitted
28.11.14
MSSA
OT amp 2nd & 3rd toes
NPWTi 30/11-11/12
USWD 8 & 11/12/14
LOS 13 days
NPWT 4 weeks
Complete healing 24.3.15
3 months

2015

The use of negative pressure wound therapy as a dual closure and splinting device is associated with rapi primary wound closure in hig diabetic patients following di amputation: a case series

Iannella SM, McInnes W, Fitridge R & Dawson J

with steri-strips (Smith & Nephew, NSW, Australia) (Figure 1) after two or three days, and Mepitel™ silicone dressing (Mölnlycke Australia, NSW, Australia) was applied over the closure line and the base of the remaining open wound. A thin piece of Granufoam dressing (KCl Medical Australia, NSW, Australia) was placed on top, and further sealed with the film dressing. The T.R.A.C. Pad® (KCl Medical Australia, NSW, Australia) was located away from the wound site using film as an initial contact layer on the skin and a bridging piece of granufoam dressing, in order to remove undesirable pressure effects on tissues surrounding the wound (Figure 2). This offloading of the closure site is an essential aspect of wound care and facilitates appropriate healing, particularly in diabetic patients. In this way, the V.A.C.® (KCl Medical Australia, NSW, Australia) dressing had been applied to act as a closure and splinting device. We describe the outcomes of this approach in three cases of diabetic toe amputations. Informed consent was obtained from all participants.

Figure 1: Closure of wound with steri-strips three days postoperative first and second toe amputation

Figure 3: A: Ulcer at presentation; B, C: Wound following debridement and amputation of the 1st and 2nd metatarsals; D: Wound following V.A.C.® removal; E: Wound healing at 2-month follow-up

Patient 2 presented with a two-week history of a malodorous, deep necrotic foot ulcer overlying the right first metatarsal. Surgical management required debridement of the ulcer with amputation of the first metatarsal bone. V.A.C.® therapy was ceased after eight days and the patient discharged 11 days postoperatively. At follow-up after eight weeks the wound had healed.

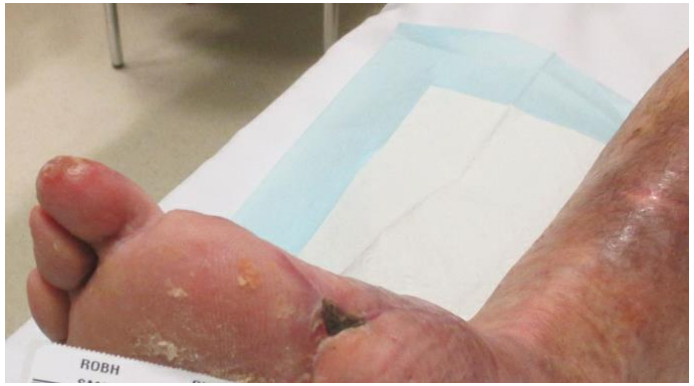
- 42yr T1 DM
- Admit; 14.11.15
- OT 16.11.15 Veraflo VAC &

USWD

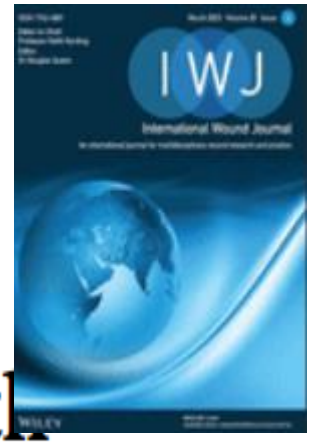
- LOS 6 days,
- 15 days TNP
- D/C 20.11.15
- **Healed 45 days**
- **NWB**
- **Podiatry**


02-JUN
ADM157


13/7/20
25/8/20
25/9/20


ROBH

Wang et al 2022 NPWTi vs NPWT



Clinical outcomes of negative pressure wound therapy with instillation vs standard negative pressure wound therapy for wounds: A meta-analysis of randomised controlled trials

Key points

1. This is the first meta-analysis conducted based on RCTs only for the efficacy of NPWT vs NPWTi.
2. NPWTi could decrease the number of surgeries and dressing changes.
3. NPWTi showed a smaller wound area after treatment.
4. No significant difference was observed on complications between NPWTi and NPWT.

Infection 27 recommendations
13 Wound Healing Interventions

27b	do not routinely use topical antiseptics, silver preparations, honey, bacteriophage therapy, or negative pressure wound therapy (with or without instillation). (Weak; low)

1. Sharp debridement; slough, necrotic tissue, callus **Strong / Low**
2. Don’t use antimicrobials solely to accelerate healing **Strong / Low**
3. Consider Use Sucrose octasulfate Dressings **Weak / Moderate**
4. Consider HBO **Weak / Moderate**
5. Consider NPWT to reduce wound size & post op **Weak / Low**
6. Consider Placenta, autologous leucocyte platelet and fibrin **Weak/ Low**
7. Not to use physical environment altering agents ; electricity, magnetism, Ultrasound, shockwaves in preference to standard car **Weak / Low**

Plastic Surgery
2017, Vol. 25(1) 21-26

DOI: 10.1177/2292550317693813
journals.sagepub.com/home/psg
SAGE

Low-Frequency Ultrasound Debridement in Chronic Wound Healing: A Systematic Review of Current Evidence

Le débridement par ultrasons à basse fréquence pour la cicatrisation des plaies chroniques : une analyse systématique des données probantes à jour

Ying-Ju Ruby Chang, MSc[1], Julie Perry, PhD[1], and Karen Cross, MD, PhD[1]

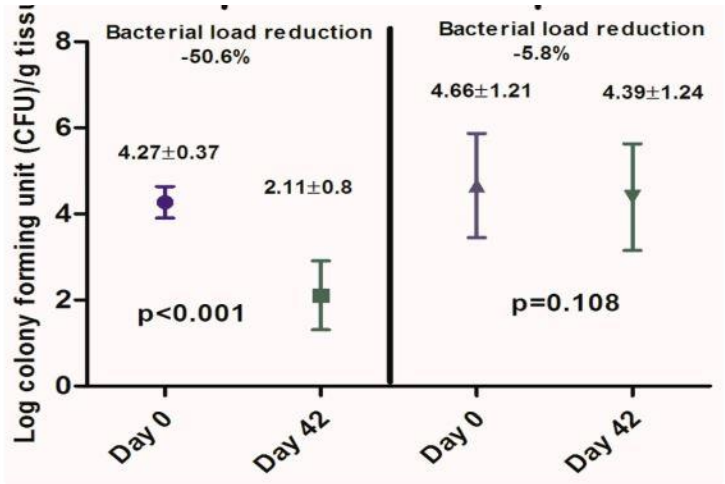


Figure 6. Comparison of bacterial loads in diabetic foot ulcer tissue samples at patient inclusion (Day 0) and after six-week treatment period (Day 42) after UAW or surgical debridement.

Review

Ultrasound-Assisted Wound (UAW) Debridement in the Treatment of Diabetic Foot Ulcer: A Systematic Review and Meta-Analysis

Sebastián Flores-Escobar [1,2], Francisco Javier Álvaro-Afonso [1,2,*], Yolanda García-Álvarez [1,2], Mateo López-Moral [1,2], José Luis Lázaro-Martínez [1,2] and Esther García-Morales [1,2]

[1] Diabetic Foot Unit, Clínica Universitaria de Podología, Facultad de Enfermería, Fisioterapia y Podología, Universidad Complutense de Madrid, 28040 Madrid, Spain; jhflores@ucm.es (S.F.-E.); ygarci01@ucm.es (Y.G.-Á.); matlopez@ucm.es (M.L.-M.); diabetes@ucm.es (J.L.L.-M.); eagarcia@ucm.es (E.G.-M.)
[2] Instituto de Investigación Sanitaria del Hospital Clínico San Carlos (IdISSC), 28040 Madrid, Spain
* Correspondence: alvaro@ucm.es; Tel.: +34-91-394-13-64 or +34-64673372

Journal of *Clinical Medicine*
MDPI

Article

Cellular Proliferation, Dermal Repair, and Microbiological Effectiveness of Ultrasound-Assisted Wound Debridement (UAW) Versus Standard Wound Treatment in Complicated Diabetic Foot Ulcers (DFU): An Open-Label Randomized Controlled Trial

José Luis Lázaro-Martínez [1,2], Francisco Javier Álvaro-Afonso [1,2,*], David Sevillano-Fernández [3], Yolanda García-Álvarez [1,2], Irene Sanz-Corbalan [1,2] and Esther García-Morales [1,2]

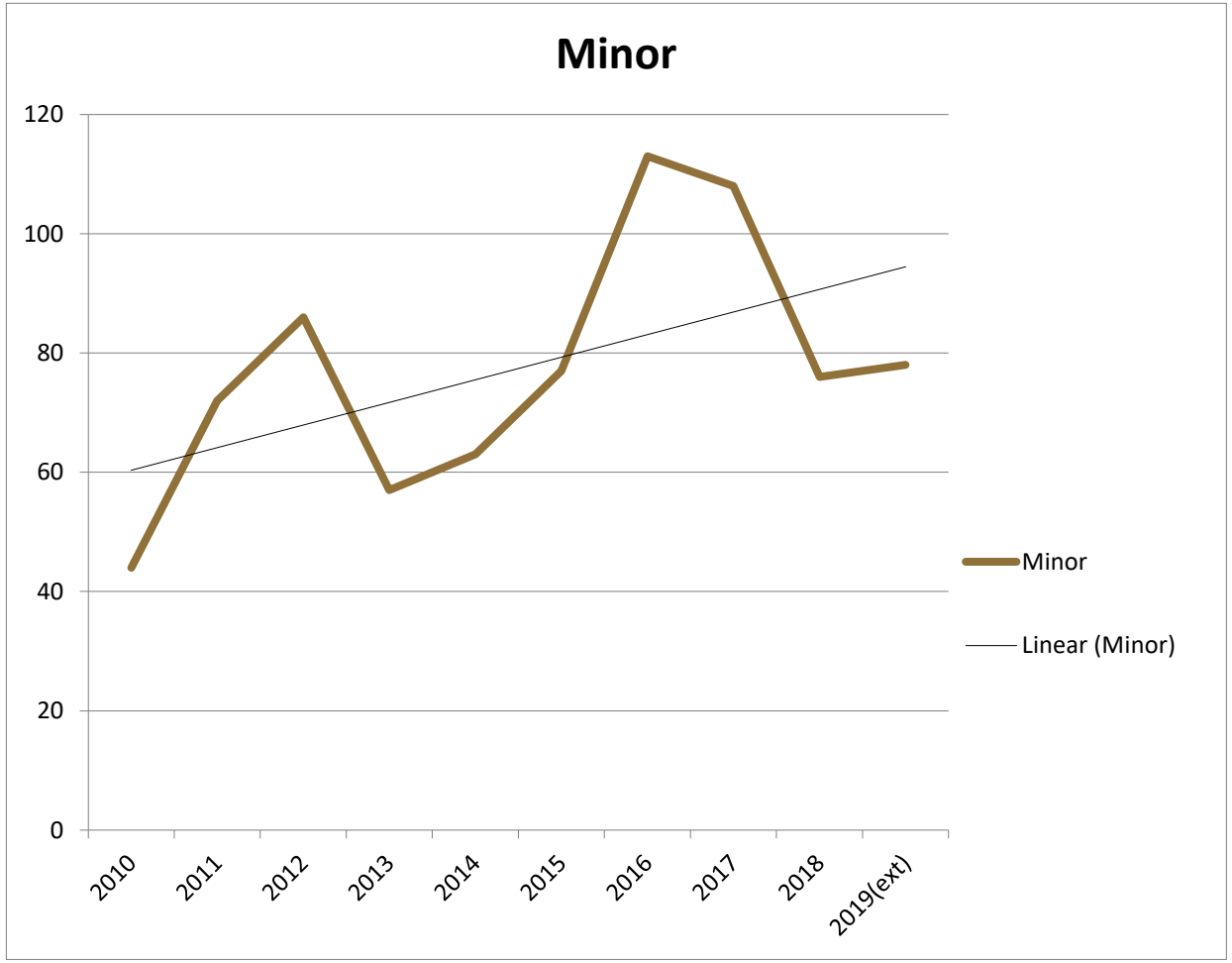

PRESSURE REDUCING MA

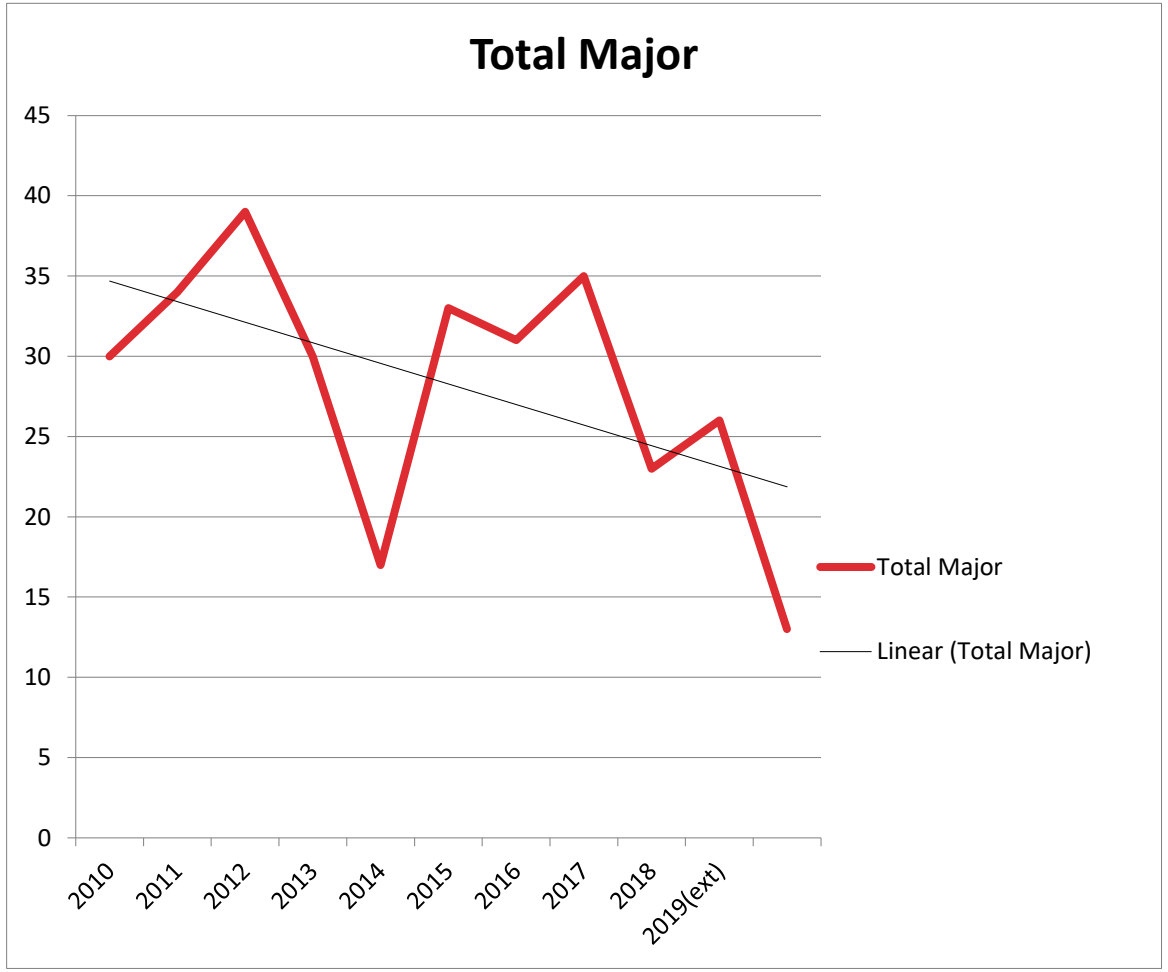
08am

11/2/22 – 24/2/22

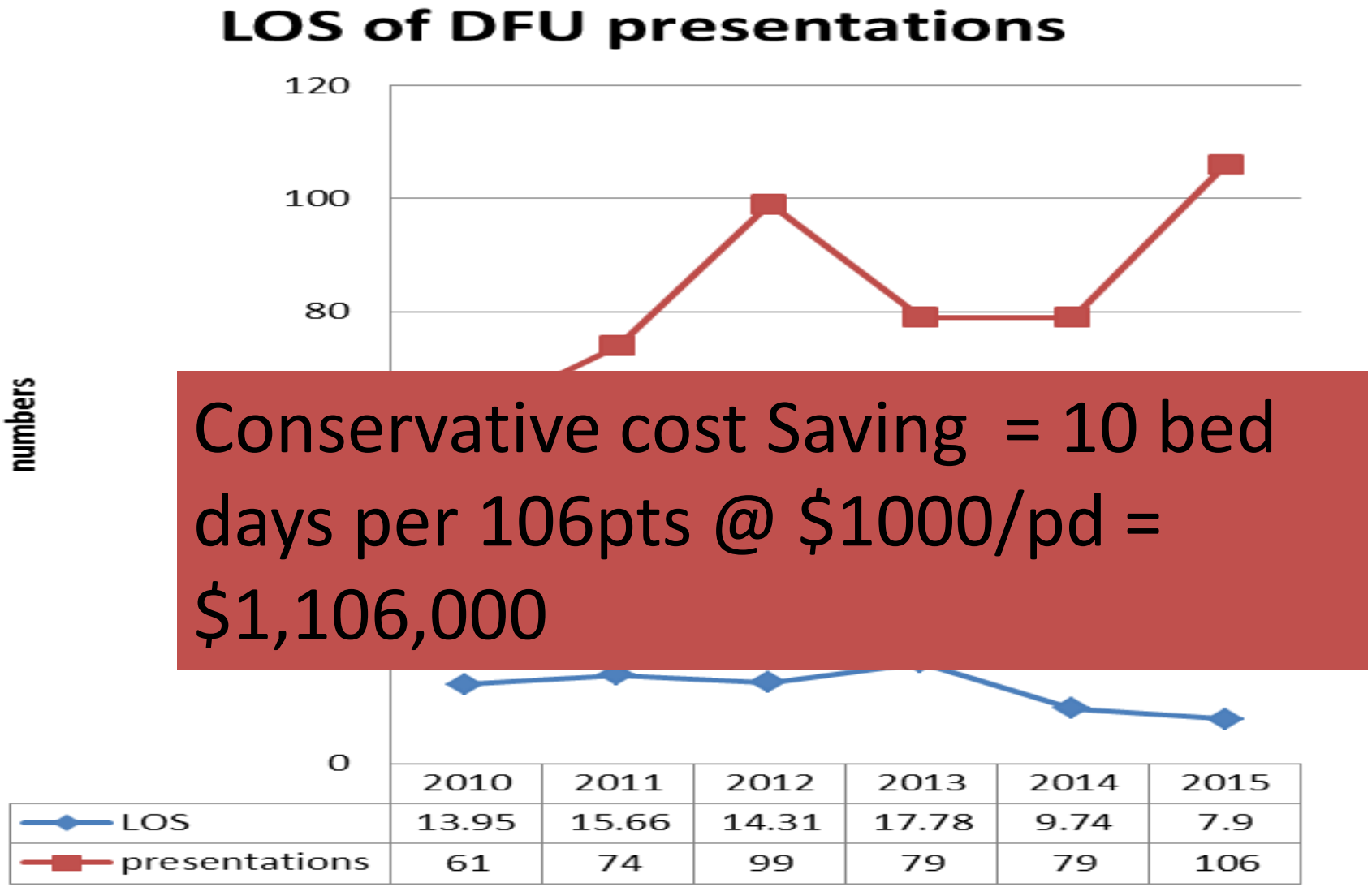



2nd Feb – 31st May


Minor
120
100
80
60
40
20
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019(ext)
Minor
Linear (Minor)


Total Major
45
40
35
30
25
20
15
10
5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019(ext)
Total Major
Linear (Total Major)

AVA Database DM debridement, Drainage, Minor amputation



	2010	2011	2012	2013	2014	2015
LOS	13.95	15.66	14.31	17.78	9.74	7.9
presentations	61	74	99	79	79	106


12/5/22
24/6/22
19/8/22

Peripheral Neuropathy + PAD + foot deformity =

NP/Surgeon/ Podiatry/GP
Monitoring MDT
6 USWD 3 weeks VAC

ED
Neuro-ischaemia
Vascular

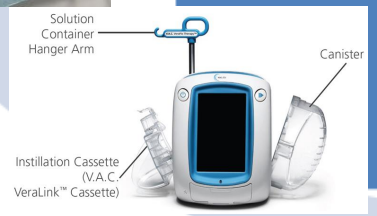
OT / Angio

Return
OPD ongoing care 1/52 USWD 2x /52 TNP
NWB / W/C Podiatry

D.A.W.S.C

Ward /24 hrs
Silvercel

TNPI + USWD
1-7 days



V.I.P.S need I.D.s

20/7/21 27/7/21 3/8/21 10/8/21

OEDEMA MGT VEINS

Which of these would you deem Venous ?

A)

B)

C)

D)

- Shapely
- Chronic inflammatory changes of skin
- Peau d orange
- Bubbling
- Thickening
- Deep skin folds
- Ulcers, Exudate
- Itch / scaley
- Staining
- Venous / Lymph
- chronic edema

Causes of VLU / CVI

- Damage valves :

Principles of compression in venous disease: a practitioner's guide to treatment and prevention of venous leg ulcers. Wounds

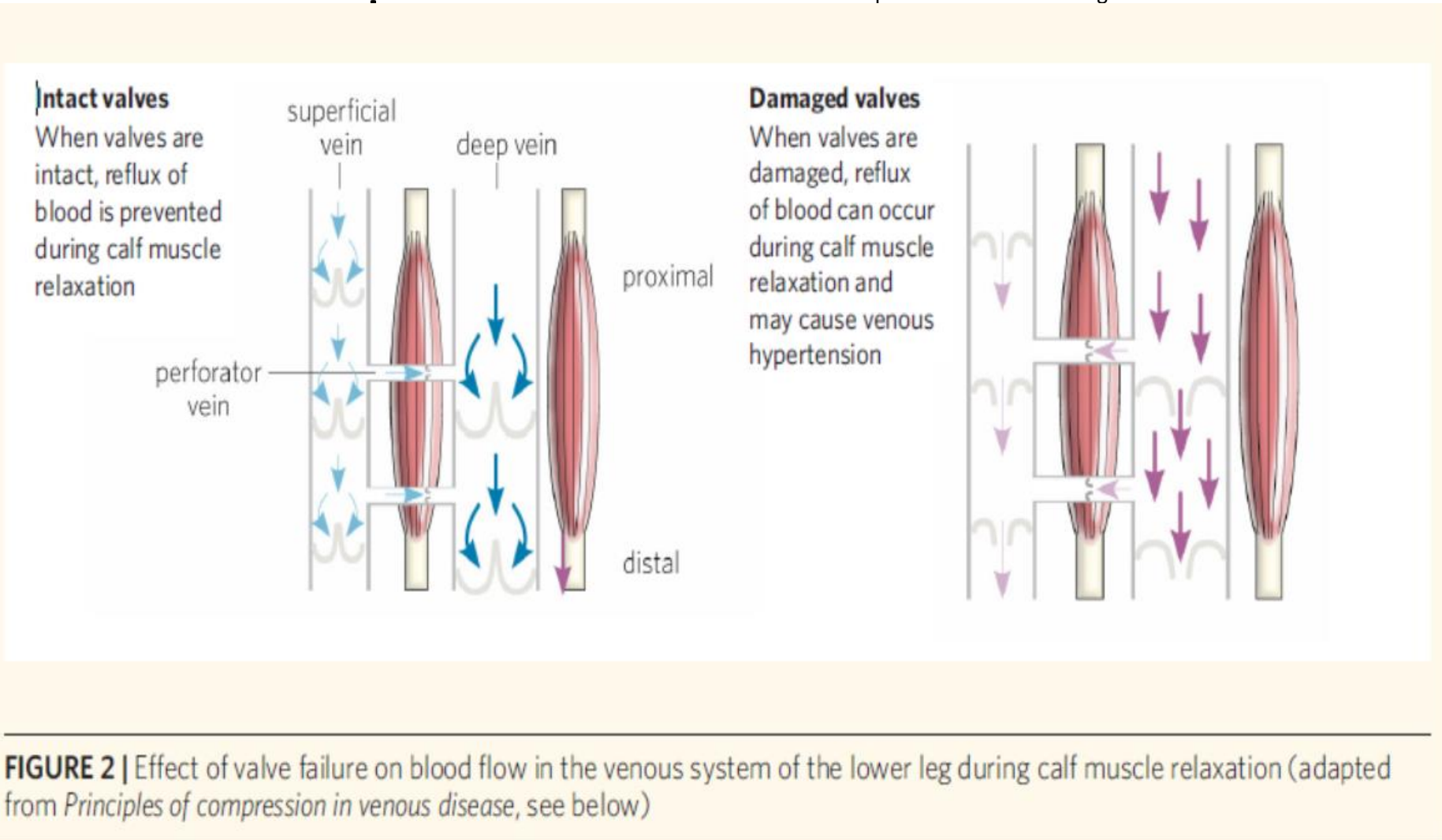


FIGURE 2 | Effect of valve failure on blood flow in the venous system of the lower leg during calf muscle relaxation (adapted from *Principles of compression in venous disease*, see below)

Venous Skin Changes

<u>Ankle Flare</u>

Pooling /stretching veins

<u>Hyperpigmentation</u>

Skin colour changes

<u>Varicose Eczema</u>

Itchy flakey

Clinical*

- C_0 - No clinical signs
- C_1 - Small varicose veins
- C_2 - Large varicose veins
- C_3 - Edema
- C_4 - Skin changes without ulceration
- C_5 - Skin changes with healed ulceration
- C_6 - Skin changes with active ulceration

Etiology*

- E_C - Congenital
- E_P - Primary
- E_S - Secondary
  (usually due to prior DVT)

Anatomy*

- A_S - Superficial veins
- A_D - Deep veins
- A_P - Perforating veins

Pathophysiology*

- P_R - Reflux
- P_O - Obstruction

"Early application of compression should be performed to correct swelling and progressive scarring and to initiate the healing process by improving the venous microcirculation."

Kistner R. Specific Steps to Effective Management of Venous Ulceration. Supplement to Wounds June 2010.

*Fronek HS, Bergan JJ, et al. The Fundamentals of Phlebology: Venous Disease for Clinicians. 2004. pg 151.

Clinical Classifications with examples

C_1 - telangiectasias or reticular veins

C_2 - varicose veins

C_3 - edema & corona

C_4 - lipodermato-sclerosis and eczema

C_5 - ulcer scar

C_6 - active ulcer

GoodRX Health

1) Amlodipine

- Amlodipine (Norvasc) HTN. One in 10 patients experience swelling when taking amlodipine at a dose of 10 mg daily.
- F vs M 3 x more likely

2) Gabapentin

- Gabapentin (Neurontin) is used to treat nerve pain, which often occurs after shingles (known as postherpetic neuralgia) or as a result of nerve damage from diabetes (diabetic peripheral neuropathy). Gabapentin is known to cause lower leg swelling. In studies on patients with shingles, swelling appeared in 8% of the patients taking gabapentin.

3) Pregabalin

- Pregabalin (Lyrica) may also cause swelling in the feet and legs. Pregablin is similar to gabapentin in that it is prescribed for nerve pain. But it's also used in patients with spinal cord injury, seizures, or fibromyalgia.

4) NSAIDs

- Non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen (Motrin, Advil) and naproxen (Aleve) are popular over-the-counter medications used for pain and inflammation. They are a well-known cause of swelling due to salt retention. In this case, the swelling is typically mild and will go away when you stop taking the medication.

- **5) Oral contraceptives**
- The estrogen component of some oral contraceptive pills can cause swelling. Estrogen can increase your risk of a blood clot in the leg (deep vein thrombosis), This is an urgent medical issue. However, estrogen can also cause swelling in both legs, which is usually not an emergency.
- If you notice swelling and you're taking a birth control pill, be sure to seek medical attention right away. You may also want to look into a progesterone-only option after your doctor has determined you don't have deep vein thrombosis.
- **6) Oral steroids**
- Oral steroid medications like prednisone are often prescribed for asthma, worsening COPD (chronic obstructive pulmonary disorder), severe allergic reactions, or other autoimmune diseases. Prednisone causes salt retention, which may lead to swelling in the legs and feet.
- **7) Pioglitazone and rosiglitazone**
- Pioglitazone (Actos) and rosiglitazone (Avandia) are medications used to treat type 2 diabetes. Leg swelling is a well-known side effect of both meds, so if you experience swelling while taking them, ask your doctor about switching to another medication.

Education anyone?

ABC model for leg ulcer management

This document aims to clarify best practice in the assessment and management of leg ulcers around three main steps: **A B C** (Figure 3).

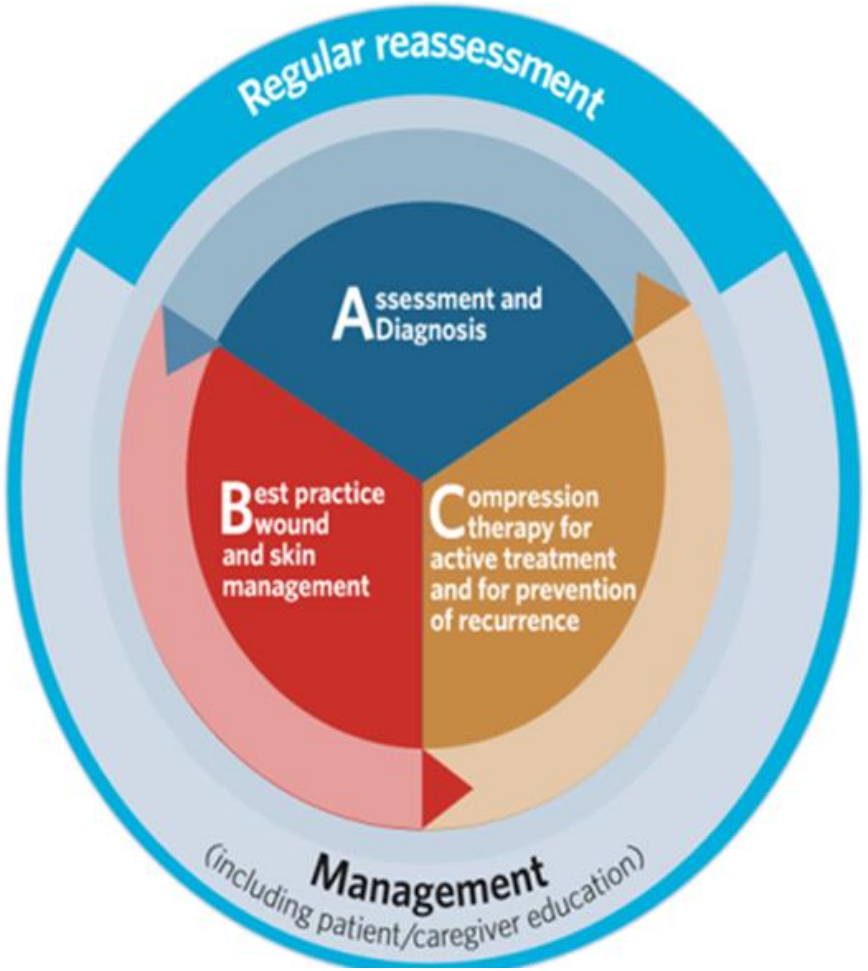
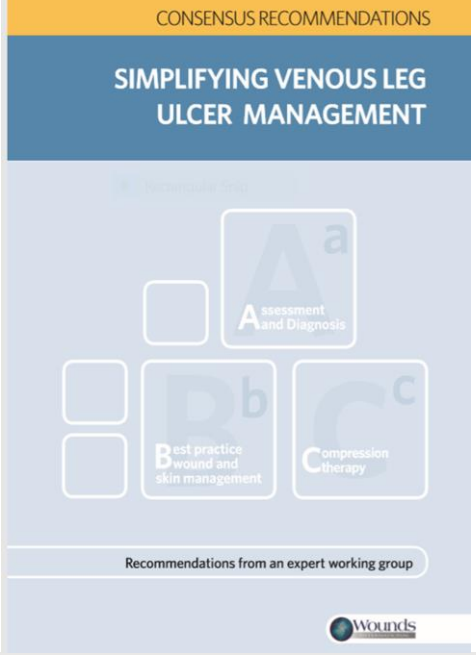


FIGURE 3 | Overview of the ABC model of assessment and management of leg ulcers



; specialist clinics about 45–70%[19,20]

.4 months for mixed aetiology ulcers[21]

have been reported up to 60 months[4]

Ulcer/ Assessment

- History; start, duration, recurrent, meds
- Examination; characteristics; veins, eczema, shape, location, depth, oedema, pulses
- Investigation; ABPI, xray, biopsy, duplex
- Diagnosis; Venous / mixed/ arterial or other
- Intervention; plan of care

Management; Compression ,dressing , debride, educate

Referral; Surgeon, dermatology, plastics, OT

LDS

- Subcut fibrosis
- Hard / thick ankles
- Venous outflow obstruction
- Incompetent valves
- Calf Mx Dysfunctiom

Concluded: SVR surgery correction + compression doesn't improve healing but reduces recurrence at 4 yrs (more ulcer free time)

BMJ

RESEARCH

Long term results of compression therapy alone versus compression plus surgery in chronic venous ulceration (ESCHAR): randomised controlled trial

Manjit S Gohel, specialist registrar,[1] Jamie R Barwell, consultant vascular and transplant surgeon,[2] Maxine Taylor, leg ulcer nurse specialist,[1] Terry Chant, vascular nurse specialist,[3] Chris Foy, medical statistician,[4] Jonothan J Earnshaw, consultant surgeon,[5] Brian P Heather, consultant surgeon,[5] David C Mitchell, consultant surgeon,[3] Mark R Whyman, consultant surgeon,[1] Keith R Poskitt consultant surgeon[1]

- **ESCHAR study (Gohel MS, Barwell JR, Taylor M et al) 2007**
- 89% healing at 3 years for the compression group
- 93% for the compression + surgery group.
- 56 % recurrence at 4 years for the compression group
- 31% for compression plus surgery group

2018 EVRA trial

ORIGINAL ARTICLE

A Randomized Trial of Early Endovenous Ablation in Venous Ulceration

Manjit S. Gohel, M.D., Francine Heatley, B.Sc., Xinxue Liu, Ph.D., Andrew Bradbury, M.D., Richard Bulbulia, M.D., Nicky Cullum, Ph.D., David M. Epstein, Ph.D., Isaac Nyamekye, M.D., Keith R. Poskitt, M.D., Sophie Renton, M.S., Jane Warwick, Ph.D., and Alun H. Davies, D.Sc., for the EVRA Trial Investigators*

SVR treated early

With Endovenous ablation = faster healing of VLU and more free healing times than those deferred.

85.6 % in 24 wks early vs

73.6 % in deferred

57yr F Skin Tear + Signs Venous Insufficiency 6/2/20

VEINS

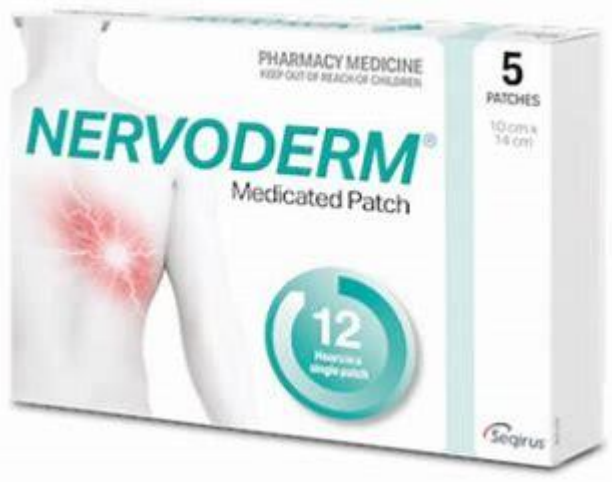
- Endovenous radiofrequency ablation of long saphenous vein
- With avulsions

Post Thrombotic Syndrome

- 20 to 50 % PTS with LEDVT within 2 yrs – 10 yr
- Post Diagnosis stockings can reduce symptoms
- Severe debilitating pain, skin changes, heamosiderin, swelling, impairs Qol
- Recurrent ulcers

PTS
59yr F
PE / DVT L) leg

- 7/2/20

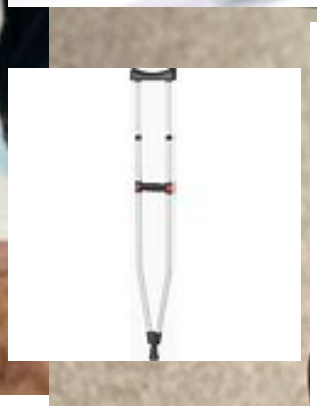


Full Compression is indicated for patients with an ABPI between 0.8 to 1.2 ?

- TRUE
- FALSE

For referencing Team V et al. Ankle Brachial Pressure Index and compression application: Review summary. WP&R Journal 2019; 27(2):108-111.


smith&nephew
PICO°
Single Use
Negative Pressure
Wound Therapy System

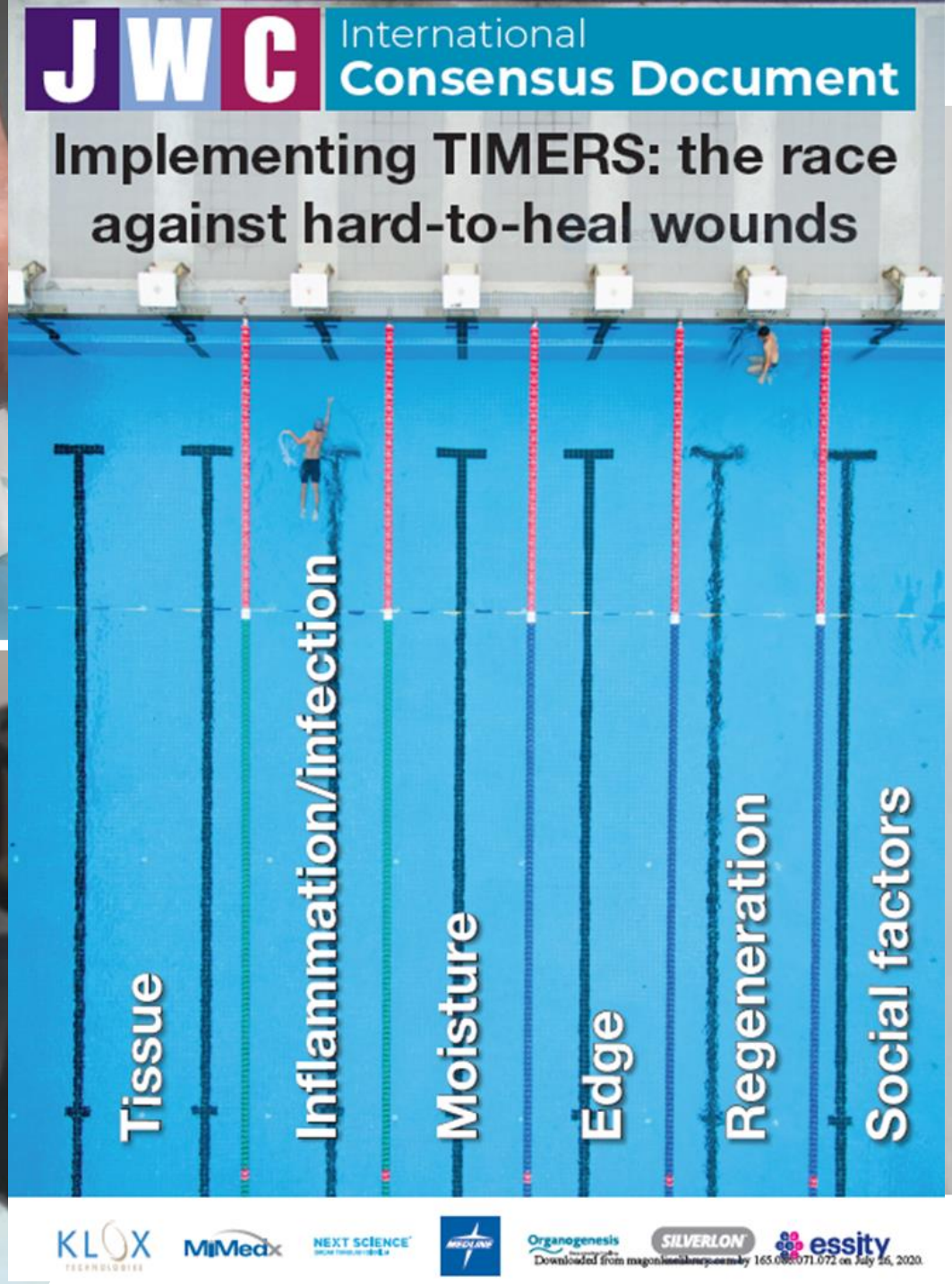



Coban 2

Hands On compression

"And as if that wasn't bad enough. They've just discovered that I'm allergic to bandages!"

1) History
2) Examination
3) Investigations
4) Diagnostics
5) Intervention
6) Concordance
7) Evaluation



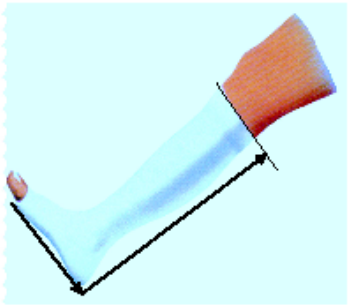
Compression uses

- Oedema / Lymphoedema
- Venous
- Mixed
- Cellulitis
- Prevent DVT / Post DVT & PTS
- Skin tears / lacerations
- Holding the DFU together

3 layers of straight elasticated b

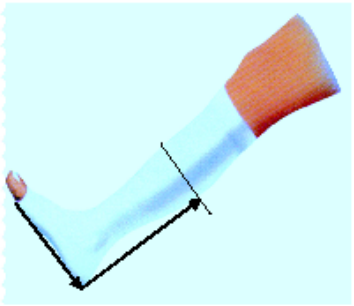
Application of 3 layer compression bandaging with Tubular Form™ tubular compression bandage

LAYER 1



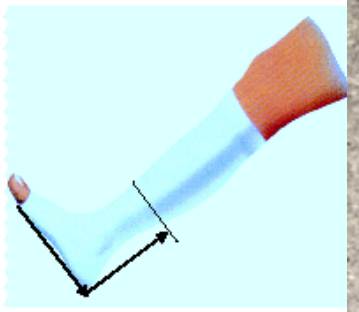
LAYER 1 RUNS FROM THE BACK OF THE TOES TO THE BACK OF THE KNEE, 2 FINGERS DOWN

LAYER 2



LAYER 2 RUNS FROM THE BACK OF THE TOES TO MID CALF

LAYER 3



LAYER 3 RUNS FROM THE BACK OF THE TOES TO MID POINT BETWEEN MID CALF AND THE ANKLE

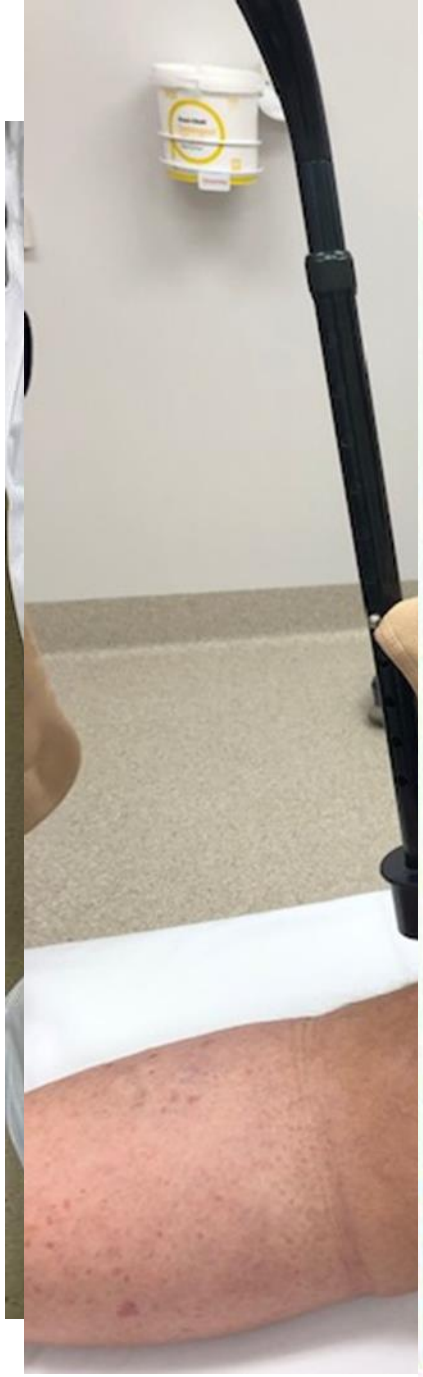
- Always measure smallest circumference (ankle) to select the correct Tubular Form™ bandage size
- Measure bandage length from the back of the toes around the heel to desired length along the leg
  - If patient is uncomfortable remove one layer to still maintain compression treatment
  - 2 layers of Tubular Form will provide approximately 18 - 22mmHg
  - Always consult physician if unsure of patient's vascular condition

Sutherland Medical Pty Lim

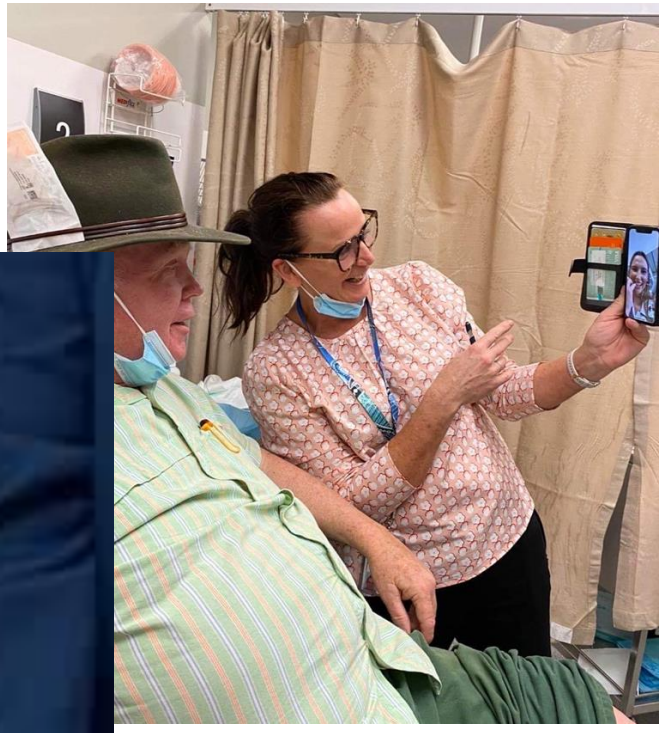
ABPI should be between?

4 Activities of Wound Hygiene ?

- Cleanse
- Debride
- Refashion the wound edge
- Dress the wound




TAKING MY PATIENTS SOCKS
OFF... SKIN CELLS BE LIKE
@snarkynurses



Consumer Group

The Wound Survival Guide

GCUHwound.care@health.qld.gov.au (GCUH wound referrals)

Ph 0427802340

Nicola.morley@health.qld.gov.au (Public GCUH / Robina)

Ph 0431492179

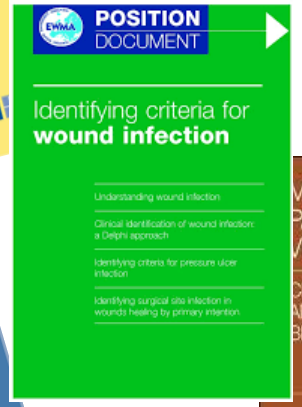
highriskfootpodiatryservice@health.qld.gov.au (podiatry)

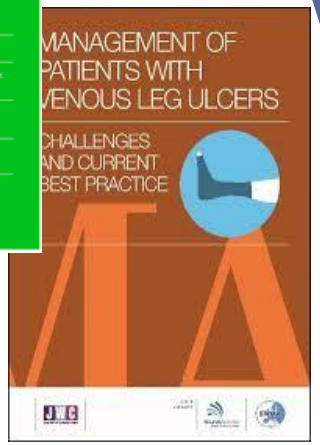
gcphn.org.au website (Complex Wound Clinic | Bundall Medical Centre)

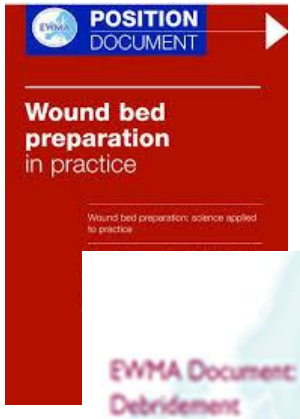
woundtherapies@gmail.com (RACF reviews)

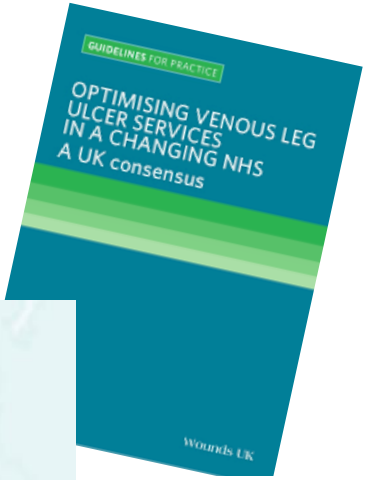
www.nicolamorley.com.au

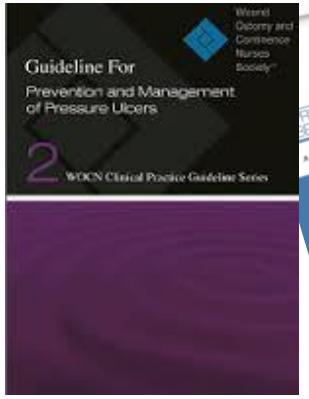
Best Practice Guidelines

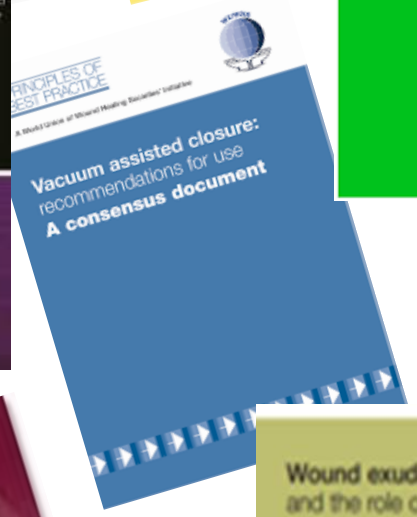


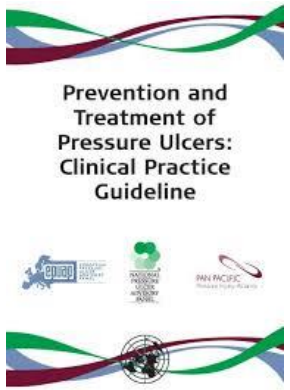


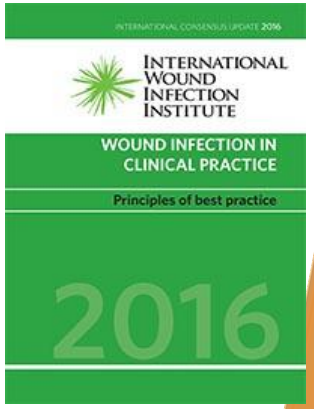




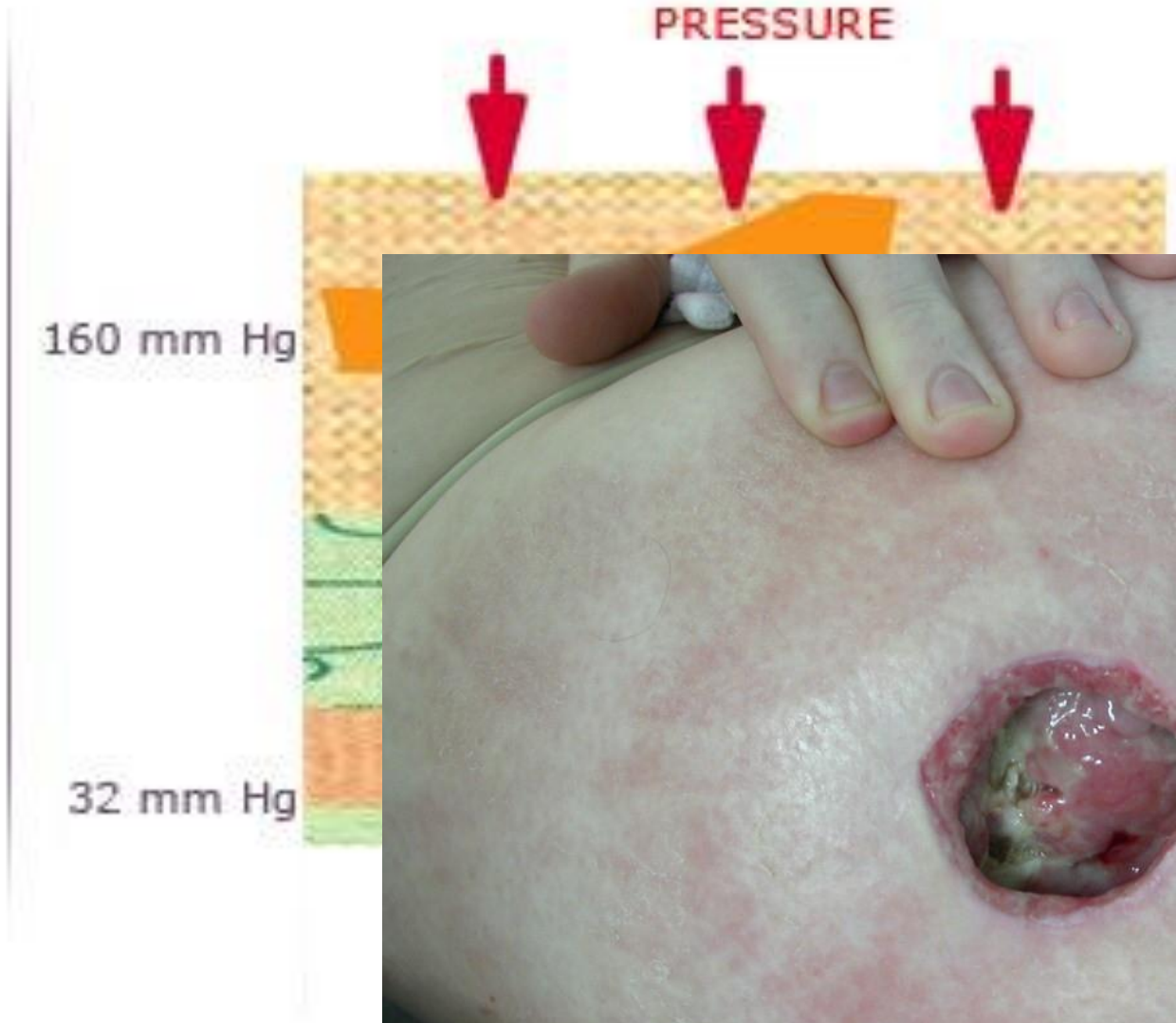








Courtesy of C.Torrance Pressure Injury Prevention Program



- It ha a major
  caus ally and that
  mar

Pressure

A.1

B.2

C.3

D.4

E.Unstageable

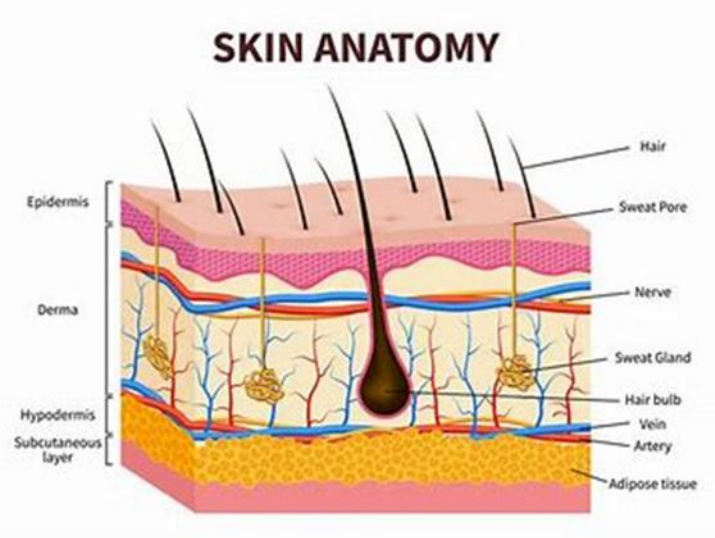
F.Suspected Deep Tissue

1) WHAT IS THE LARGEST ORGAN IN THE BODY

1. BRAIN
2. LUNGS
3. HEART
4. SKIN
5. LIVER

2) A 1CM X 1CM PIECE OF SKIN IN FOREARM HAS

1. A) 100000 B) 200000 C) 300000 EPIDERMAL CELLS
2. A) 1.7 B) 2.7 C) 3.7 METRES OF NREVE
3. A) 0.9 B) 1.5 C) 2.2 METERS OF BLOOD VESSELS
4. A) 5 B) 10 C) 15 SEBACEOUS GLANDS
5. A) 50 B) 100 C) 150 SWEAT GLANDS



3). WHICH OF THE FOLLOWING CHARACTERIZES THE APPEARANCE OF A VENOUS LEG ULCER

A. SHALLOW WITH REGULAR MARGINS

B. SHALOW WITH IRREGULAR WOUND MARGINS

C. DEEP WITH REGULAR WOUND MARGINS

D. DEEP WITH IRREGULAR WOUND MARGINS

"Your spider veins are not the largest I have ever seen, but they are varicose."

4. WHICH OF THE FOLLOWING IS CONSIDERED THE "GOLD STANDARD" TO TREAT VENOUS LEG ULCERS?

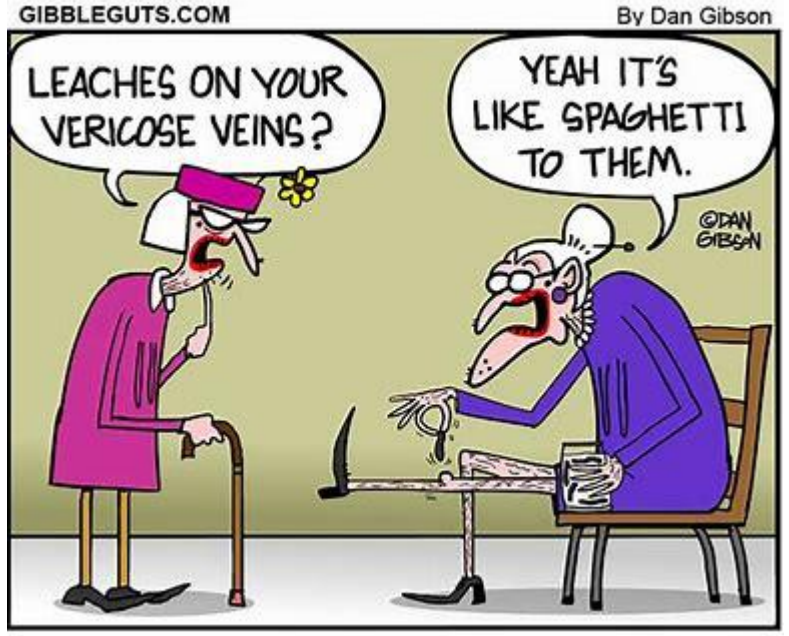
A. ALGINATE DRESSINGS

B. ELEVATION

C. ANTIMICROBIALS

D. COMPRESSION THERAPY

E. RADIOFREQUENCY ABLATION



5. WHICH OF THE FOLLOWING IS NOT TRUE OF A VENOUS LEG ULCER?

A. SHALLOW

B. FULL THICKNESS SKIN LOSS

C. HAEMOSIDERIN

D. PULSES PRESENT

E. IRREGULAR SHAPED

6) WHAT IS NOT A PHASE OF WOUND HEALING?

A) MATURATION

B) HAEMOSTASIS

C) INFECTION

D) INFLAMMATION

E) PROLIFERATION

7) MR D IS EXPERIENCING WHAT KIND OF EXUDATE FROM HIS WOUND IF IT APPEARS CLEAR AND WATERY ?

- A) SEROUS
- B) SANGUINEOUS
- C) SEROSANGUINEOUS
- D) PURULENT

8) WHAT DOES THE ACRONYM “T.I.M.E.R.S” STAND FOR?

A) TISSUE, IMPROVEMENT, MANAGEMENT, EDUCATION, REPAIR, SALVAGE

B) TISSUE, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDGE MIGRATION, REGENERATION, SOCIAL FACTORS

C) THERAPY, INFECTION / INFLAMMATION, MOISTURE CONTROL, EDUCATION, REMODEL, SOCIAL FACTORS

D) THERAPY, IMPROVEMENT, MANAGEMENT, EDGE MIGRATION, RENEWAL, SALVAGE

9) WHICH OF THESE WOULD YOU DEEM TO BE VENOUS?

A)

B)

C)

D)

10) WHICH OF THESE WOULD YOU NOT ADMIT TO HOSPITAL?

A)

B)

C)

D)

11) WHICH OF THE FOLLOWING IS NOT IMORTANT IN MANAGING THIS WOUND ?

- A) CALLUS REMOVAL
- B) OFFLOADING FOOTWEAR
- C) VENOUS DUPLEX SCAN
- D) PODIATRIST
- E) BGL MONITORING

12) NAME THE PULSES ?

A POSTERIOR TIBIALIS B DORSALIS PEDIS C POPLITEAL D) FEMORAL




13) COBAN FULL APPLIES 40MMHG COMPRESSION

- A) TRUE
- B) FALSE

THE END

Scores

- EVALUATION FORM please