HONG KONG ENTEROSTOMAL THERAPISTS ASSOCIATION
香港造瘻治療師學會

紫荊瘻訊 NEWSLETTER

Volume 33

Case study

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THE IMPACT OF EARLY APPLICATION OF THREE-LAYER TUBULAR BANDAGE AS COMPRESSION THERAPY TO VENOUS LEG ULCER PATIENTS IN PRIMARY CARE SETTING

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Acknowledgements: This research was supported by Chief of Service (COS), Department Operations Manager (DOM), doctors and nurses from Department of Family Medicine and General Out-patient Clinic in Kowloon Central Cluster and Central Nursing Division, Queen Elizabeth Hospital.

Abstract

Objectives: To compare venous leg ulcer patients' wound size, wound pain, ankle circumference and treatment compliance before and after application of 3-layer (3L) tubular bandage compression therapy in primary care setting

Methodology: This non-experimental prospective cohort study was conducted from 1 September 2020 to 30 April 2024 at 10 General Out-patient Clinics (GOPCs) in Kowloon Central Cluster (KCC) in Hong Kong. 70 patients were recruited and 65 of them completed both pre-and post-evaluation for patients educated to apply the 3L tubular bandage compression therapy with 15-20 mmHg pressure. The patients' wound size, wound pain level, ankle circumference and treatment compliance were assessed by trained nurses using wound measuring ruler, pain intensity numeric rating scale (NRS) and self-developed treatment compliance tool at week 0, week 2 and/or week 4, to monitor the progress among time series.

Result: 89.47% (n=51) of the patients had optimal treatment compliance which applied 3L tubular bandage compression therapy for more than 8 hours per day. The mean ankle circumference was decreased significantly from 23cm to 19.52cm (diff = -3.48cm, $p<0.001$) at week 4. 31.25% (n=20) of the patients with venous leg ulcer healed within 4 weeks after the 3L tubular bandage compression therapy. The mean wound size (length*width) was decreased significantly from 7.08cm^2 to 2.78cm^2 (diff = -4.3cm^2, $p<0.01$). The mean wound pain level in terms of NRS was decreased significantly from 4.72 to 2.03 (diff = -2.69, $p<0.001$). Compared with those venous leg ulcer patients of hypertension, those without hypertension were of more improvement in pain intensity NRS (diff = -2.14 vs – 3.54, $p<0.05$).

Conclusion: The finding suggested, with an early application of the 3L tubular bandage at initial GOPC dressing attendance, the ankle circumference, wound size and wound pain level were significantly improved and the patient treatment compliance of 89.47% over the 4-week study period were substantiable. Ankle-brachial Pressure Index (ABPI) measurement performed at an initial visit to GOPC by primary care nurses enable early screening for suitability of 3L tubular bandage compression therapy. High patient compliance suggested 3L tubular bandage compression therapy was tolerable and convenient for venous ulcer patients and of lower cost in compared with traditional compression therapy.

Keywords: Venous ulcer, venous leg ulcer, chronic venous leg ulcers, compression therapy, compression bandages, compression stockings, compression hosiery, multicomponent high compression, single or two components high compression, multicomponent system incorporating elastic bandage, multicomponent inelastic bandage system, three-layer tubular bandage, compliance, primary care setting, out-patient department, out-patient clinic

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Introduction

Venous leg ulcer

Venous leg ulcer accounts for 70% of the leg ulcers (Olin et al. 1999). According to Browse (1983), it was resulted from the failure in the efficient work of the calf muscle pump, leading to damage of valve within the superficial, perforating or deep veins of the lower limb. The valvular damage leads to influx of blood from the larger veins into smaller capillaries based on the pressure gradient, resulting in cell death and ulceration. It brings huge challenge to health care professionals due to its high prevalence, long duration and high recurrent rate.

Prevalence

Prevalence of venous leg ulcer is 0.3 – 3.0 per 1,000 people in UK or Australia (Gray, 2018) and for people of age or above 65, 4% of people in England had venous leg ulcer (London & Donnelly, 2000) whereas incidence of venous leg ulcer in USA people of age 65 or above is 1.7% (Takahashi et al., 2010).

A local study conducted in community settings indicated that leg ulceration scores 0.128 in point prevalence (Wong, Lee & Thompson, 2005). The recurrence rate demonstrated 26-69% within 12 months after wound healing as reported in a previous study (Nelson, Bell-Syer & Cullim, 2000). Venous leg ulcer poses a threat to patients' psychosocial wellbeing. Researches indicated that patients with venous leg ulcers may experience altered body image, depression and malodorous ulcer preventing them from social interaction (Ebbeskog & Ekman, 2001; Isaac & Watson, 2014).

Factors contributing to wound healing

In addition to compression therapy, there are some identified factors affecting wound healing, including co-mobility, medication, smoking and drinking status, and obesity. In diabetic people, high blood glucose level slows wound healing process. In haemostasis phase, platelet-derived growth factor receptor expression is affected, delaying transition to inflammation (Singer & Clark 1993). Moreover, inflammatory phase is prolonged because of increased number of wound-activated macrophages and prolonged expression of inflammatory cytokines (Genc, et al 2005; Wetzler, et al 2000). Non-steroidal anti-inflammatory drugs (NSAIDs) can impact normal healing process by affecting proliferation on blood vessel and skin (Krischak, et al. 2007) although it can decrease inflammatory reaction (Kaushal, Kutty & Rao 2006; Chen et. al, 2010). Another medication glucocorticoids also prolongs wound healing via decreased collagen production and inhibition of fibroblast proliferation (van Anholt, Sobotka & Meijer 2006). Steroids impede wound contraction and decrease tensile strength (Kaushal, Kutty & Rao 2006). Nicotine in cigarette causes vasoconstriction, further reduces cutaneous blood flow and suppresses immune response which may increase risk of wound infection (Pignataro, et al 2012). Also, it slows collagen production and weakens scar tissue, and interrupts the wound healing process (Tchaikovski, et al 2009). People with alcohol drinking are found with higher blood glycemic level and increased insulin resistance (Markuson, Hanson & Anderson 2009). If people with obesity, and avascularity of the surrounding adipose tissue, it leads to a decrease of blood supply to the wound bed, and results in reducing oxygen supply and increasing risk of infection (Goldman 2009; Kranke, et al 2012). All of these factors may prolong wound healing.

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3L tubular bandage

A systematic review (O'Meara et al. 2012) reviewing 48 RCT studies concluded that the rate of ulcer healing was increased with compression bandages when compared with no compression. It also found that multiple component systems were more effective than single-component systems. SIGN (2010) made grade A recommendation about "high compression multicomponent bandaging should be routinely used for the treatment of venous leg ulcers". In addition, systems with elastic bandages were more effective than inelastic systems. Among various types of compression bandaging therapy, 3L tubular bandage was one of the treatments to promote wound healing of venous leg ulcers. This bandage exerts 15-20mmHg of pressure to the leg. Weller and her colleagues (2012) in a multi-center, open-label, parallel-group, randomized controlled trial of 45 cases, indicated that the proportion of healed ulcers was 17/23 (74%) in 3L tubular bandage group and 10/22 (46%) in short-stretch bandage group ($p = 0.05$). Reported bandage tolerance at all treatment visits was 21 (91%) in 3L tubular bandage group vs. 17 (73%) in short-stretch bandage group ($p = 0.10$). There was no difference between the groups in adverse events. Costs were substantially less in 3L tubular bandage group. Additionally, from clinical observation, patients prefer application of tubular bandage to compression bandage not only because of its easier application by themselves, but also because they can remove it for daily skin care. Bale and Harding (2003) also advised that tubular bandages were useful for patients who cannot tolerate other therapeutic forms of compression therapy. As observed, their compliance was found higher in tubular bandages. In order to enhance healing of venous leg ulcer in primary care setting, earlier application of 3L tubular bandage are considered.

To promote earlier application of 3L tubular bandage compression therapy, adequate patient education is of importance. Health promotion activities have been shown to be effective in chronic disease management (Zwar 2006). Brown (2012) supported this by his systematic review and identified that key components of patient education include the use of compression therapy and the need for physical activity, mobility, and leg elevation. These components should be emphasized when facilitating patient engagement in self-care. Gonzalez (2017) also examined the effectiveness of a home-based patient education program on disease and self-care knowledge by means of visual aids, a brochure, and a handout addressing important aspects of care and activity. The researcher confirmed patient education improves disease and self-care knowledge scores.

GOPC serves as a major wound care provider in community setting. Average wound dressing attendance was around 4 attendances until wound healed. However, patients with leg ulcer required mean attendances of 10.5 in general wound dressings before being referred to second tier wound clinics in GOPCs. Venous leg ulcer accounted for about 12.1% of all wound types, according to the wound clinic statistics of Leung Kau Kui GOPC in Jan-Oct 2018.

For the sake of earlier venous leg ulcer wound management, nurses should enhance knowledge on basic care of venous leg ulcer to facilitate early application of compression therapy by using 3L tubular bandage in primary care setting. Afterwards, the nurses may empower patients with related wound care knowledge to enhance self-care. In this study, the effectiveness of early application of 3L tubular bandage will be evaluated in terms of clinical outcomes, including ankle circumference, wound size, pain level, and patients' compliance in a four-week study period.

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Methodology

Design

This was a non-experimental prospective cohort study. Target population was patients with venous leg ulcer who attended "General Dressing Service" in the 10 GOPCs under Department of Family Medicine and General Out-patient Clinic (FM&GOPC), Kowloon Central Cluster, Hospital Authority of Hong Kong.

Sample size calculation

Sample size was estimated by paired t-test with a power of 80%, and a significance level of 0.05. Estimated sample size was greater than or equal to 63. Taking 10% dropout rate into consideration, total sample size was 70.

Target Subjects

Inclusion criteria

Patients with venous leg ulcer attending general wound care service in the 10 KCC GOPCs; age of 18 years old or above; patient is mentally sound; patient can be communicated by either Cantonese or Putonghua or English; diagnosed as venous leg ulcer in Clinical Management System (CMS); and ABPI between 0.9-1.3 (i.e. within normal range).

Exclusion criteria

Patients with the following medical conditions were excluded: acute wound infection, cellulitis or vasculitis, acute deep vein thrombosis (DVT), malignant or atypical ulceration, arterial insufficiency; acute congestive heart failure or pregnancy; ABPI was less than 0.9 or greater than 1.3; and patients who were receiving other wound care appointment such as podiatrists' care, wound clinics in Specialty Out-patient Clinic (SOPC).

Procedure

Patients of venous leg ulcers were recruited by triage nurses of 10 GOPCs under Department of Family Medicine and General Out-patient Clinic (FM&GOPC), KCC at their first visits or as new case to "General Dressing Service". There was one triage nurse in every GOPC. They were all trained on the use of standardized electronic ABPI measuring device and did not have any direct or indirect care relationship with patients

GOPC nurses who work under "General Dressing Service" used the four instruments to measure and document patients' wound condition (including wound size, wound pain, ankle circumference and treatment compliance); and provide general wound care and teach venous leg ulcer patients in applying 3L tubular bandage in their daily life.

Instruments

Four instruments were used to measure the outcome of venous leg ulcer. These instruments were usual assessments of all venous leg ulcer patients. They were wound measuring ruler for wound size, pain intensity NRS for wound pain, measure tape for ankle circumference and self-developed treatment compliance tool.

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Wound size
Venous leg ulcer wound measurement in terms of wound length and width was collected. The wound was measured by same band of wound measuring ruler in centimetre (cm) with 1 decimal point. Length (i.e. "head-to-toe" at the longest point) and width (side-to-side at the widest point which was perpendicular to the length) of the wound would be measured at week 0 and week 4. Wound healing would be determined by a decrease in wound size measurement (i.e. length and width).

Wound pain
Pain intensity NRS was adopted as a tool for wound pain screening and data would be retrieved from record. NRS is widely implemented in primary care to identify clinically significant pain. Pain intensity is a 0-10 pain intensity scale. "0" score represents no pain. "1-3" scores represent mild pain. "4-6" scores represent moderate pain. "7-10" scores represent severe pain. "10" score represents the worst possible pain exists. Wound pain was measured on week 0 and week 4.

Ankle circumference
Ankle circumference was measured in cm with 1 decimal point. Measurement point is located at the narrowest part above medial malleolus, which is the current practice in KCC GOPCs for venous leg ulcer patients. Ankle circumference was measured on week 0 and week 4.

Treatment compliance
A self-developed compliance tool was adopted to assess patients' treatment compliance to 3L tubular bandage. Self-reporting treatment compliance on patients' average number of hours in applying 3L tubular bandage per day in the reporting period. There were 4 levels of compliance: (a) apply 3L tubular bandage in greater than 8 hours per day; (b) apply 3L tubular bandage in greater than 4 hours and less than 8 hours per day; (c) apply 3L tubular bandage in less than 4 hours per day; and (d) never apply 3L tubular bandage. Treatment compliance was collected at week 2 and week 4.

Statistical analysis

The SPSS software was used for statistical analysis. The Paired samples t-test was used to compare the variables.

Ethical consideration

The research was on a voluntary basis and the subject had the right to withdraw from the research at any time during the research without reason. Triage nurses (co-investigators) briefed the subjects about the 3L tubular bandage compression therapy; research aims and objectives; confidentiality of the research before obtaining patients' written consent. Written consent was obtained from all subjects prior to recruitment to research. Hence, an information sheet containing the purpose and confidentiality of the research was also given to subjects as an attachment to the consent. All data was used for this research only and would be shredded thereafter. This study was complied with ICH-GCP.

Funding

The research team did not apply any funding.

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Primary outcomes

Primary outcomes of this study were wound size, wound pain, ankle circumference and treatment compliance.

Results

A total of 70 patients joined the study and 65 of them completed both pre- and post-evaluations (baseline and week 4). Table 1 shows the patients' demographics characteristics. Half of the respondents were female (55%). The mean age of the patients was 68.86 years (range from 31 to 90 years) and the mean body mass index (BMI) was 25.76 (range from 15.20 to 36.39). All but one patient had co-morbidities (n=64).

Table 1 Demographic characteristics

N=65	n (%)		n (%)
Hospital		**Employment Status**	
CKHC	1 (1.54%)	Employed	24 (36.92%)
EK	1 (1.54%)	Unemployed	7 (10.77%)
HH	7 (10.77%)	Retired	34 (52.31%)
LKK	6 (9.23%)	**Co-morbidities (can select more than one)**	
LKMD	6 (9.23%)	DM	7 (10.77%)
LPC	4 (6.15%)	HT	38 (58.46%)
RB	10 (15.38%)	IHD/ CHF	3 (4.62%)
WTH	13 (20.00%)	Obesity	8 (12.31%)
WYY	7 (10.77%)	Previous DVT	2 (3.08%)
YMT	10 (15.38%)	Varicose Vein	53 (81.54%)
Gender		PVD	1 (1.54%)
Male	29 (44.62%)	Previous Leg Surgery	12 (18.46%)
Female	36 (55.38%)	Others	8 (12.31%)
Age (Mean ± SD)	68.86 ± 13.86	**Co-morbidities**	
BMI (Mean ± SD)	25.76 ± 3.76	No	1 (1.54%)
Smoking Status		Yes	64 (98.46%)
Non-smoker	52 (80.00%)	**Total number of Co-morbidities (Mean ± SD)**	2.03 ± 1.02
Ex-smoker	8 (12.31%)	**Leg**	
Smoker	5 (7.69%)	Left	37 (56.92%)
Educational Level		Right	28 (43.08%)
Never	7 (10.77%)		
Primary	21 (32.31%)		
Secondary	31 (47.69%)		
Tertiary	1 (1.54%)		
Missing	5 (7.69%)		

CKHC: Central Kowloon Health Centre; LKK: Shun Tak Fraternal Association Leung Kau Kui Clinic; EK: East Kowloon General Out Patient Clinic; HH: Hung Hom General Out-patient Clinic; LKMD: Lee Kee Memorial Dispensary; LPC: Li Po Chun General Out-patient Clinic; RB: Robert Black General Out-patient Clinic; WTH: Wang Tau Hom General Out-patient Clinic; WYY: Wu York Yu General Out-patient Clinic; YMT: Yau Ma Tei Jockey Club General Out-patient Clinic

Table 2 shows the frequency of treatment compliance at week 2 and week 4. For treatment compliance, 57 patients completed both pre- and post-evaluations. 89.47% of the patients had treatment compliance more than 8 hours per day at week 2 and week 4.

Table 2 Treatment compliance

n (%)	Pre (Week 2)	Post (Week 4)
< 4 hours per day	0 (0.00%)	1 (1.75%)
4 – 8 hours per day	6 (10.53%)	5 (8.77%)
> 8 hours per day	51 (89.47%)	51 (89.47%)

Table 3 shows the comparison of ankle circumference, wound size and pain intensity NRS between baseline and week 4. For ankle circumference, 65 patients completed both pre- and post-evaluations. The mean value was 23cm at baseline and 19.52cm at week 4. A significant decrease was found after the intervention using paired samples t-test (diff = -3.48cm, $p<0.001$). For wound size (length*width), 64 patients completed both pre- and post-evaluations. 31.25% of the patients healed within 4 weeks. The mean value was 7.08cm^2 at baseline and 2.78cm^2 at week 4. A significant decrease was found after the intervention using Paired samples t-test (diff = -4.30 cm2, $p < 0.01$). For pain intensity NRS, 61 patients completed both pre- and post-evaluations. The mean score was 4.72 at baseline and 2.03 at week 4. A significant decrease was found after the intervention using Paired samples t-test (diff = -2.69, $p<0.001$).

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Table 3 Ankle circumference, Wound size and Pain intensity NRS

Mean ± SD (Median)	Pre (Week 0)	Post (Week 4)	Difference (Post - Pre)	P-value
Ankle Circumference (cm) (n=65)	23.00 ± 2.63 (22.50)	19.52 ± 7.67 (21.00)	-3.48 ± 7.61 (-0.50)	**<0.001
Wound Size (n=64)				
Length (cm)	2.40 ± 2.42 (2.00)	1.21 ± 1.64 (0.90)	-1.18 ± 1.87 (-1.00)	**<0.001
Width (cm)	1.85 ± 1.75 (1.50)	0.92 ± 1.10 (0.70)	-0.93 ± 1.08 (-0.70)	**<0.001
Length * Width (cm^2)	7.08 ± 19.92 (2.70)	2.78 ± 8.23 (0.57)	-4.30 ± 12.24 (-1.23)	**0.007
Wound healed (n=64)				
No	64 (100.00%)	44 (68.75%)		
Yes	0 (0.00%)	20 (31.25%)		
Pain intensity NRS (n=61)	4.72 ± 2.15 (5.00)	2.03 ± 1.81 (2.00)	-2.69 ± 2.20 (-2.00)	**<0.001

** p<0.01, * p<0.05

Table 4 shows the comparison of ankle circumference between baseline and week 4 by demographic characteristics. Using general linear model, there was no significant relationship between change of ankle circumference and the demographic variables.

Table 4 Ankle circumference by demographics

Mean ± SD (Median) in cm	Pre (Week 0)	Post (Week 4)	Difference (Post - Pre)	P-value
Hospitals				0.80
CKHC	25.00 ± NA (25.00)	24.00 ± NA (24.00)	-1.00 ± NA (-1.00)	
EK	24.00 ± NA (24.00)	23.00 ± NA (23.00)	-1.00 ± NA (-1.00)	
HH	22.07 ± 2.96 (20.50)	21.29 ± 3.09 (20.00)	-0.79 ± 0.76 (-0.50)	
LKK	22.83 ± 3.25 (21.25)	22.33 ± 3.14 (21.00)	-0.50 ± 0.32 (-0.50)	
LKMD	25.17 ± 4.25 (24.50)	19.58 ± 9.84 (22.50)	-5.58 ± 13.01 (-0.25)	
LPC	23.25 ± 0.29 (23.25)	22.63 ± 1.11 (23.00)	-0.63 ± 0.95 (-0.25)	
RB	23.30 ± 2.63 (22.75)	18.25 ± 9.86 (21.00)	-5.05 ± 8.84 (-1.25)	
WTH	22.92 ± 1.89 (23.00)	18.54 ± 8.40 (21.00)	-4.38 ± 8.38 (-1.00)	
WYY	23.14 ± 3.00 (23.50)	15.91 ± 10.97 (21.00)	-7.23 ± 10.12 (-1.50)	
YMT	21.75 ± 1.81 (22.00)	19.60 ± 7.20 (21.75)	-2.15 ± 6.40 (-0.25)	
Gender				0.32
Male	24.10 ± 2.61 (24.00)	21.67 ± 6.49 (23.00)	-2.43 ± 5.98 (-1.00)	
Female	22.11 ± 2.31 (21.75)	17.79 ± 8.18 (20.75)	-4.32 ± 8.70 (-0.50)	
Smoking Status				0.70
Non-smoker	22.77 ± 2.41 (22.25)	19.03 ± 7.78 (21.00)	-3.74 ± 7.92 (-0.75)	
Ex-smoker	23.69 ± 3.80 (23.25)	20.19 ± 8.74 (23.25)	-3.50 ± 8.18 (-0.50)	
Smoker	24.30 ± 2.73 (24.00)	23.60 ± 3.21 (24.00)	-0.70 ± 0.84 (-0.50)	
Educational Level				0.67
Never	21.57 ± 0.98 (22.00)	15.57 ± 10.70 (21.00)	-6.00 ± 10.29 (-0.50)	
Primary	22.67 ± 2.18 (23.00)	17.92 ± 9.17 (20.50)	-4.74 ± 8.60 (-0.50)	
Secondary	23.87 ± 2.92 (23.50)	21.18 ± 6.08 (22.00)	-2.69 ± 6.91 (-1.00)	
Tertiary	25.00 ± NA (25.00)	24.00 ± NA (24.00)	-1.00 ± NA (-1.00)	
Employment Status				0.95
Employed	23.98 ± 3.05 (23.50)	20.13 ± 8.12 (22.00)	-3.85 ± 8.55 (-1.00)	
Unemployed	23.14 ± 2.69 (24.00)	19.49 ± 8.98 (21.00)	-3.66 ± 7.43 (-0.10)	
Retired	22.28 ± 2.08 (22.00)	19.10 ± 7.28 (21.00)	-3.18 ± 7.15 (-0.50)	
Co-morbidities				
DM				0.26
Yes	23.29 ± 3.05 (23.00)	22.91 ± 2.69 (23.00)	-0.37 ± 0.55 (-0.10)	
No	22.97 ± 2.60 (22.25)	19.11 ± 7.98 (21.00)	-3.85 ± 7.98 (-1.00)	
HT				0.78
Yes	22.97 ± 2.84 (23.00)	19.72 ± 7.14 (21.00)	-3.25 ± 7.62 (-0.50)	
No	23.04 ± 2.34 (22.00)	19.24 ± 8.49 (21.50)	-3.80 ± 7.74 (-0.50)	
IHD/CHF				0.37
Yes	22.33 ± 2.52 (22.00)	15.00 ± 13.23 (20.00)	-7.33 ± 11.02 (-2.00)	
No	23.03 ± 2.65 (22.75)	19.74 ± 7.41 (21.25)	-3.29 ± 7.49 (-0.50)	
Obesity				0.83
Yes	24.25 ± 2.24 (24.25)	20.24 ± 8.43 (23.75)	-4.01 ± 8.51 (-0.55)	
No	22.82 ± 2.64 (22.00)	19.42 ± 7.63 (21.00)	-3.40 ± 7.56 (-0.50)	
Previous DVT				0.13
Yes	24.00 ± 1.41 (24.00)	12.50 ± 17.68 (12.50)	-11.50 ± 16.26 (-11.50)	
No	22.97 ± 2.65 (22.50)	19.74 ± 7.35 (21.00)	-3.22 ± 7.31 (-0.50)	
Varicose Vein				0.69
Yes	23.12 ± 2.70 (22.50)	19.83 ± 7.47 (21.00)	-3.29 ± 7.56 (-0.50)	
No	22.46 ± 2.28 (22.50)	18.17 ± 8.70 (21.25)	-4.29 ± 8.11 (-1.00)	
PVD				0.65
Yes	22.00 ± NA (22.00)	22.00 ± NA (22.00)	0.00 ± NA (0.00)	
No	23.02 ± 2.64 (22.75)	19.48 ± 7.72 (21.00)	-3.53 ± 7.66 (-0.50)	
Previous Leg Surgery				0.55
Yes	23.00 ± 2.50 (22.50)	20.71 ± 6.96 (21.50)	-2.29 ± 6.73 (-0.50)	
No	23.00 ± 2.68 (22.50)	19.25 ± 7.86 (21.00)	-3.75 ± 7.83 (-1.00)	
Others				0.87
Yes	21.25 ± 2.55 (20.00)	18.19 ± 7.63 (20.00)	-3.06 ± 6.88 (-0.75)	
No	23.25 ± 2.56 (23.00)	19.71 ± 7.72 (21.50)	-3.54 ± 7.76 (-0.50)	
Co-morbidities				0.52
No	22.00 ± NA (22.00)	22.00 ± NA (22.00)	0.00 ± NA (0.00)	
Yes	23.02 ± 2.64 (22.75)	19.48 ± 7.72 (21.00)	-3.53 ± 7.66 (-0.50)	
Leg				0.96
Left	22.76 ± 1.86 (22.00)	19.24 ± 7.86 (22.00)	-3.52 ± 7.71 (-0.50)	
Right	23.32 ± 3.40 (22.75)	19.89 ± 7.54 (20.75)	-3.43 ± 7.62 (-0.75)	
Age				0.24
BMI				0.61

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*Significant relationship between change of ankle circumference and demographics by General Linear Model (** p<0.01, * p<0.05)

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Table 5 shows the comparison of wound size (length * width) between baseline and week 4 by demographic characteristics. Using general linear model, there was no significant relationship between change of wound size and the demographic variables.

Table 5 Wound Size by demographics

Mean ± SD (Median) in cm²	Pre (Week 0)	Post (Week 4)	Difference (Post – Pre)	P-value
Hospitals				0.10
CKHC	1.40 ± NA (1.40)	0.25 ± NA (0.25)	-1.15 ± NA (-1.15)	
EK	NA	NA	NA	
HH	3.85 ± 4.24 (2.80)	0.70 ± 0.78 (0.40)	-3.15 ± 3.78 (-2.40)	
LKK	33.99 ± 60.72 (6.88)	12.75 ± 24.10 (2.78)	-21.24 ± 36.81 (-5.15)	
LKMD	7.42 ± 13.60 (1.90)	4.22 ± 8.28 (0.98)	-3.20 ± 5.36 (-0.73)	
LPC	6.53 ± 3.72 (7.05)	3.75 ± 3.71 (3.13)	-2.78 ± 1.67 (-2.38)	
RB	2.73 ± 3.49 (1.23)	0.42 ± 0.94 (0.00)	-2.31 ± 3.45 (-1.02)	
WTH	4.68 ± 3.99 (3.24)	3.04 ± 3.75 (1.12)	-1.64 ± 3.66 (-1.00)	
WYY	2.55 ± 2.70 (1.30)	1.07 ± 1.61 (0.42)	-1.48 ± 1.79 (-1.02)	
YMT	4.46 ± 4.82 (2.55)	0.50 ± 0.56 (0.30)	-3.95 ± 4.73 (-2.48)	
Gender				0.24
Male	10.64 ± 29.29 (3.00)	4.29 ± 12.04 (0.86)	-6.35 ± 17.59 (-1.88)	
Female	4.32 ± 5.86 (2.30)	1.62 ± 2.61 (0.48)	-2.70 ± 5.02 (-1.11)	
Smoking Status				0.07
Non-smoker	4.85 ± 6.82 (2.50)	1.85 ± 3.57 (0.50)	-2.99 ± 4.82 (-1.15)	
Ex-smoker	22.36 ± 54.11 (2.75)	8.65 ± 21.49 (0.88)	-13.71 ± 32.64 (-1.58)	
Smoker	5.48 ± 2.75 (4.40)	2.90 ± 4.42 (0.00)	-2.58 ± 1.83 (-3.00)	
Educational Level				0.63
Never	1.92 ± 2.03 (1.00)	1.65 ± 3.70 (0.00)	-0.27 ± 2.46 (-0.40)	
Primary	11.39 ± 34.21 (3.00)	4.44 ± 13.63 (0.60)	-6.95 ± 20.80 (-1.75)	
Secondary	5.88 ± 8.04 (2.85)	2.37 ± 4.30 (0.84)	-3.52 ± 5.04 (-1.36)	
Tertiary	1.40 ± NA (1.40)	0.25 ± NA (0.25)	-1.15 ± NA (-1.15)	
Employment Status				0.37
Employed	11.11 ± 31.55 (2.11)	4.07 ± 12.52 (0.57)	-7.04 ± 19.33 (-1.18)	
Unemployed	3.56 ± 3.12 (3.00)	2.19 ± 3.54 (0.50)	-1.36 ± 1.15 (-0.80)	
Retired	4.91 ± 6.63 (2.60)	1.98 ± 4.04 (0.72)	-2.93 ± 4.12 (-2.00)	
Co-morbidities				
DM				0.44
Yes	2.22 ± 1.63 (2.00)	1.31 ± 2.11 (0.42)	-0.91 ± 1.82 (-0.94)	
No	7.68 ± 21.04 (2.80)	2.97 ± 8.68 (0.70)	-4.72 ± 12.91 (-1.25)	
HT				0.07
Yes	4.21 ± 6.10 (2.50)	2.29 ± 4.23 (0.50)	-1.93 ± 3.21 (-1.00)	
No	11.02 ± 29.70 (3.00)	3.47 ± 11.77 (0.70)	-7.55 ± 18.17 (-2.25)	
IHD/CHF				0.99
Yes	4.58 ± 5.16 (3.00)	0.33 ± 0.58 (0.00)	-4.25 ± 4.60 (-3.00)	
No	7.21 ± 20.38 (2.60)	2.90 ± 8.41 (0.64)	-4.30 ± 12.52 (-1.20)	
Obesity				0.58
Yes	5.00 ± 3.84 (4.30)	2.96 ± 4.36 (0.86)	-2.04 ± 4.16 (-1.53)	
No	7.38 ± 21.25 (2.60)	2.76 ± 8.67 (0.48)	-4.62 ± 12.99 (-1.23)	
Previous DVT				0.95
Yes	5.38 ± 7.04 (5.38)	0.50 ± 0.71 (0.50)	-4.88 ± 6.33 (-4.88)	
No	7.14 ± 20.22 (2.70)	2.86 ± 8.35 (0.57)	-4.28 ± 12.42 (-1.23)	
Varicose Vein				0.77
Yes	7.24 ± 21.66 (2.83)	2.72 ± 8.68 (0.67)	-4.52 ± 13.45 (-1.14)	
No	6.40 ± 9.77 (2.55)	3.05 ± 6.22 (0.20)	-3.35 ± 4.26 (-1.80)	
PVD				0.40
Yes	15.00 ± NA (15.00)	0.45 ± NA (0.45)	-14.55 ± NA (-14.55)	
No	6.96 ± 20.05 (2.60)	2.82 ± 8.29 (0.64)	-4.14 ± 12.27 (-1.20)	
Previous Leg Surgery				0.08
Yes	16.93 ± 43.97 (3.85)	7.11 ± 17.48 (1.06)	-9.82 ± 26.79 (-0.90)	
No	4.81 ± 6.70 (2.60)	1.79 ± 3.51 (0.48)	-3.03 ± 4.65 (-1.31)	
Others				0.74
Yes	4.01 ± 4.26 (2.70)	1.09 ± 2.19 (0.05)	-2.93 ± 3.28 (-2.28)	
No	7.52 ± 21.22 (2.73)	3.03 ± 8.74 (0.71)	-4.50 ± 13.04 (-1.18)	
Co-morbidities				0.80
No	1.20 ± NA (1.20)	0.00 ± NA (0.00)	-1.20 ± NA (-1.20)	
Yes	7.18 ± 20.06 (2.80)	2.83 ± 8.29 (0.64)	-4.35 ± 12.34 (-1.25)	
Leg				0.36
Left	4.76 ± 6.00 (2.60)	1.71 ± 2.82 (0.48)	-3.05 ± 5.09 (-1.18)	
Right	10.08 ± 29.37 (3.00)	4.16 ± 12.01 (0.67)	-5.91 ± 17.65 (-1.68)	
Age				0.60
BMI				0.79

CKHC: Central Kowloon Health Centre; LKK: Shun Tak Fraternal Association Leung Kau Kui Clinic; EK: East Kowloon General Out Patient Clinic; HH: Hung Hom General Out-patient Clinic; LKMD: Lee Kee Memorial Dispensary; LPC: Li Po Chun General Out-patient Clinic; RB: Robert Black General Out-patient Clinic; WTH: Wang Tau Hom General Out-patient Clinic; WYY: Wu York Yu General Out-patient Clinic; YMT: Yau Ma Tei Jockey Club General Out-patient Clinic

*Significant relationship between change of wound size and demographics by General Linear Model (** p<0.01, * p<0.05)

The impact of early application of three-layer tubular bandage as compression therapy to venous leg ulcer patients in primary care setting

Table 6 shows the comparison of pain intensity NRS between baseline and week 4 by demographic characteristics. Using general linear model, there was no significant relationship between change of pain intensity NRS and the demographic variables, except patients with hypertension. Compared with the group with hypertension, the pain intensity NRS had shown more improvement in the group without hypertension (diff = −2.14 vs −3.54, $p<0.05$).

Table 6 Pain intensity NRS by demographics

Mean ± SD (Median)	Pre (Week 0)	Post (Week 4)	Difference (Post - Pre)	P-value
Hospitals				0.19
CKHC	2.00 ± NA (2.00)	0.00 ± NA (0.00)	-2.00 ± NA (-2.00)	
EK	2.00 ± NA (2.00)	0.00 ± NA (0.00)	-2.00 ± NA (-2.00)	
HH	5.29 ± 1.25 (5.00)	1.57 ± 2.15 (0.00)	-3.71 ± 2.29 (-5.00)	
LKK	4.17 ± 3.06 (3.50)	3.50 ± 1.64 (3.50)	-0.67 ± 1.63 (0.00)	
LKMD	5.50 ± 1.97 (6.00)	2.17 ± 2.14 (2.00)	-3.33 ± 1.97 (-3.00)	
LPC	3.25 ± 0.96 (3.50)	2.00 ± 1.83 (2.00)	-1.25 ± 0.96 (-1.50)	
RB	5.44 ± 2.55 (5.00)	1.56 ± 1.42 (1.00)	-3.89 ± 2.47 (-5.00)	
WTH	5.18 ± 2.23 (5.00)	2.18 ± 2.09 (2.00)	-3.00 ± 2.32 (-2.00)	
WYY	4.71 ± 2.21 (5.00)	2.43 ± 1.27 (3.00)	-2.29 ± 1.80 (-2.00)	
YMT	4.11 ± 1.76 (4.00)	1.78 ± 1.79 (2.00)	-2.33 ± 2.29 (-3.00)	
Gender				0.12
Male	3.89 ± 1.87 (4.00)	1.68 ± 1.70 (1.50)	-2.21 ± 2.17 (-2.00)	
Female	5.42 ± 2.14 (5.00)	2.33 ± 1.87 (3.00)	-3.09 ± 2.18 (-3.00)	
Smoking Status				0.95
Non-smoker	4.79 ± 2.25 (5.00)	2.13 ± 1.86 (2.00)	-2.67 ± 2.18 (-2.00)	
Ex-smoker	4.50 ± 1.85 (4.50)	1.88 ± 1.46 (2.00)	-2.63 ± 2.13 (-3.00)	
Smoker	4.40 ± 1.82 (5.00)	1.40 ± 1.95 (0.00)	-3.00 ± 3.00 (-2.00)	
Educational Level				0.98
Never	4.83 ± 1.33 (5.00)	1.83 ± 0.98 (1.50)	-3.00 ± 0.89 (-3.00)	
Primary	4.84 ± 2.41 (5.00)	2.16 ± 1.95 (3.00)	-2.68 ± 2.36 (-2.00)	
Secondary	5.07 ± 2.03 (5.00)	2.30 ± 1.88 (2.00)	-2.77 ± 2.42 (-2.00)	
Tertiary	2.00 ± NA (2.00)	0.00 ± NA (0.00)	-2.00 ± NA (-2.00)	
Employment Status				0.51
Employed	5.23 ± 2.37 (5.00)	2.23 ± 2.00 (2.50)	-3.00 ± 2.39 (-2.00)	
Unemployed	6.00 ± 2.16 (7.00)	2.86 ± 1.07 (3.00)	-3.14 ± 2.54 (-4.00)	
Retired	4.09 ± 1.80 (4.00)	1.72 ± 1.76 (1.00)	-2.38 ± 2.01 (-2.00)	
Co-morbidities				
DM				0.29
Yes	4.14 ± 2.61 (3.00)	2.29 ± 2.14 (1.00)	-1.86 ± 1.57 (-2.00)	
No	4.80 ± 2.10 (5.00)	2.00 ± 1.78 (2.00)	-2.80 ± 2.26 (-2.00)	
HT				*0.014
Yes	4.24 ± 2.07 (4.00)	2.11 ± 1.82 (2.00)	-2.14 ± 2.07 (-2.00)	
No	5.46 ± 2.08 (5.00)	1.92 ± 1.82 (2.00)	-3.54 ± 2.17 (-4.00)	
IHD/CHF				0.28
Yes	3.33 ± 3.21 (2.00)	2.00 ± 1.73 (3.00)	-1.33 ± 3.06 (-2.00)	
No	4.79 ± 2.09 (5.00)	2.03 ± 1.83 (2.00)	-2.76 ± 2.16 (-2.00)	
Obesity				0.38
Yes	4.71 ± 2.75 (5.00)	2.71 ± 0.95 (3.00)	-2.00 ± 3.11 (-2.00)	
No	4.72 ± 2.09 (5.00)	1.94 ± 1.88 (2.00)	-2.78 ± 2.08 (-2.00)	
Previous DVT				0.44
Yes	3.00 ± 2.83 (3.00)	1.50 ± 2.12 (1.50)	-1.50 ± 4.95 (-1.50)	
No	4.78 ± 2.13 (5.00)	2.05 ± 1.81 (2.00)	-2.73 ± 2.13 (-2.00)	
Varicose Vein				0.11
Yes	4.92 ± 2.22 (5.00)	2.02 ± 1.77 (2.00)	-2.90 ± 2.17 (-2.00)	
No	3.82 ± 1.54 (4.00)	2.09 ± 2.07 (3.00)	-1.73 ± 2.20 (-1.00)	
PVD				0.55
Yes	4.00 ± NA (4.00)	0.00 ± NA (0.00)	-4.00 ± NA (-4.00)	
No	4.73 ± 2.16 (5.00)	2.07 ± 1.80 (2.00)	-2.67 ± 2.21 (-2.00)	
Previous Leg Surgery				0.45
Yes	4.50 ± 2.35 (4.00)	2.25 ± 1.91 (3.00)	-2.25 ± 2.70 (-1.50)	
No	4.78 ± 2.11 (5.00)	1.98 ± 1.80 (2.00)	-2.80 ± 2.08 (-2.00)	
Others				0.06
Yes	5.43 ± 1.72 (5.00)	1.29 ± 1.89 (0.00)	-4.14 ± 1.95 (-5.00)	
No	4.63 ± 2.19 (5.00)	2.13 ± 1.79 (2.50)	-2.50 ± 2.18 (-2.00)	
Co-morbidities				0.29
No	5.00 ± NA (5.00)	0.00 ± NA (0.00)	-5.00 ± NA (-5.00)	
Yes	4.72 ± 2.16 (5.00)	2.07 ± 1.80 (2.00)	-2.65 ± 2.20 (-2.00)	
Leg				0.96
Left	4.85 ± 2.13 (5.00)	2.18 ± 1.75 (2.50)	-2.68 ± 2.03 (-2.50)	
Right	4.56 ± 2.19 (4.00)	1.85 ± 1.90 (1.00)	-2.70 ± 2.45 (-2.00)	
Age				0.15
BMI				0.57

CKHC: Central Kowloon Health Centre; LKK: Shun Tak Fraternal Association Leung Kau Kui Clinic; EK: East Kowloon General Out Patient Clinic; HH: Hung Hom General Out-patient Clinic; LKMD: Lee Kee Memorial Dispensary; LPC: Li Po Chun General Out-patient Clinic; RB: Robert Black General Out-patient Clinic; WTH: Wang Tau Hom General Out-patient Clinic; WYY: Wu York Yu General Out-patient Clinic; YMT: Yau Ma Tei Jockey Club General Out-patient Clinic

*Significant relationship between change score and demographics by General Linear Model (** $p<0.01$, * $p<0.05$)

The impact of early application of three-layer tubular bandage as compression therapy to venous leg ulcer patients in primary care setting

Discussion

This non-experimental prospective cohort study was to examine the impact of early application of 3L tubular bandage compression therapy on patients of venous leg ulcer in primary care setting. In the past, patients of venous leg ulcer had wound dressing at General Dressing Service in clinic over 4 weeks would be referred to wound clinic as a second-tier level for compression therapy consideration. In this study, the application of 3L tubular bandage compression therapy commenced at the initial clinic visit and the waiting time for compression therapy shortened from 4 weeks to day 0. It significantly improved in ankle circumference (diff = -3.48 cm, $p<0.001$); wound size (diff = -4.30 cm^2, $p<0.01$); patients' pain intensity (NRS) (diff = -2.69, $p<0.001$); and of a sustainable treatment compliance of 89.47%. Therefore, it suggested this approach can be sustained to provide an early & effective wound management to venous leg ulcer patients at the first tier wound management level.

Limitation

Limited to no historical record, no comparison can be made between 3L tubular bandage compression therapy and traditional compression therapy. Follow up study for cross cluster/centre analysis was suggested.

Conclusion

The study finding suggested, with early application of the 3L tubular bandage at initial GOPC dressing attendance, patients' ankle circumference, wound size and wound pain level were significantly improved and they achieved a good compliance in applying the 3L tubular bandage. With the thorough assessments from primary care nurses and provision of patient self-care instructions, the commencement of 3L tubular bandage compression therapy at their initial visit to GOPC was possible. This method was comparably tolerable and convenient for venous leg ulcer patients and was lower in cost compared to traditional compression therapy in local community setting.

The impact of early application of three-layer tubular bandage as compression therapy to venous leg ulcer patients in primary care setting

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Technical Evidence

convatec – forever caring –

Beraldo S et al., Journal of Wound Care, 2025

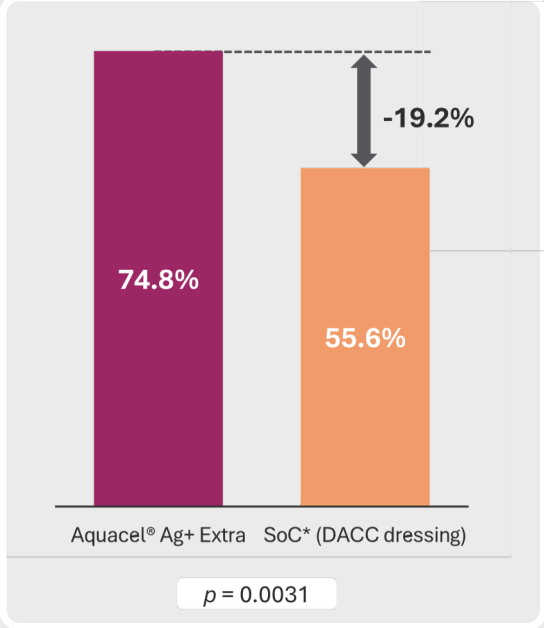
Effectiveness of an enhanced silver-containing dressing in hard-to-heal venous leg ulcers: a randomised controlled trial

Overview

- Hard-to-heal wounds, such as venous leg ulcers (VLUs), are a major challenge to healthcare systems globally
- Compression therapy with good wound care practices is the standard of care for VLUs, however, there is a need for additional therapies to address the challenge of hard-to-heal wounds
- Biofilm has long been implicated in hard-to-heal wounds
- Aquacel® Ag+ Extra is a gelling fiber dressing with antibiofilm properties
- A randomized controlled trial was conducted across Colombia, Germany and the UK to evaluate the efficacy and safety of Aquacel® Ag+ Extra vs Standard of Care (DACC dressing) in hard-to-heal VLUs
- 203 patients with VLUs were enrolled 1:1 to receive either Aquacel® Ag+ Extra or Standard of Care (DACC dressing) with therapeutic compression at 30–40 mmHg for 2–4 weeks

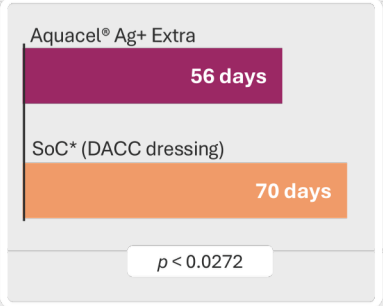
Results

PRIMARY ENDPOINT:
COMPLETE WOUND CLOSURE



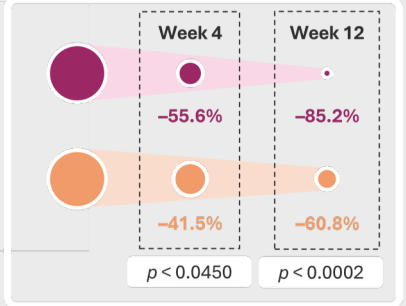
Aquacel® Ag+ Extra was associated with a statistically significant increased rate of complete wound closure at week 12 compared to SoC* (DACC dressing). There was a 35% increased likelihood of achieving complete wound closure with Aquacel® Ag+ Extra (risk ratio: 1.35).

TIME TO COMPLETE WOUND CLOSURE



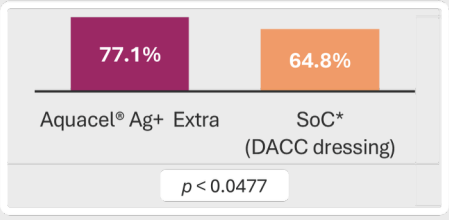
VLUs treated with Aquacel® Ag+ Extra achieved complete wound closure faster than those treated with SoC* (DACC dressing) (median 56 vs 70 days).

PERCENT REDUCTION IN WOUND AREA



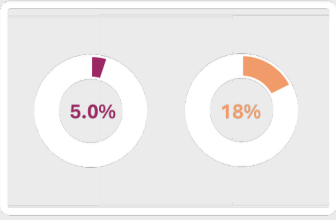
Least square mean percent reduction was significantly lower with Aquacel® Ag+ Extra vs SoC* (DACC dressing) at both weeks 4 and 12.

SATISFACTORY CLINICAL PROGRESS



A greater proportion of Aquacel® Ag+ Extra-treated VLUs achieved satisfactory clinical progress (40% reduction in wound area) at week 4 compared to SoC* (DACC dressing)-treated VLUs.

ADVERSE EVENTS



A smaller proportion of patients in the Aquacel® Ag+ Extra arm experienced an AE.

Conclusion

- Management of VLUs with Aquacel® Ag+ Extra vs SoC* (DACC dressing) was associated with a statistically significant increased rate of and faster time to complete wound closure
- A significant decrease in mean wound area and a significant increase in percentage of VLUs with satisfactory clinical progress with Aquacel® Ag+ Extra were also observed
- This the first published data for Aquacel® Ag+ Extra from a randomized controlled trial setting, significantly adding to the evidence base and potentially shifting the standard of care for VLUs

SCAN TO READ FULL ARTICLE

*SoC – Standard of Care

 AP-72519-HKG-ENG-v1

USE OF VIRTUAL REALITY TO REDUCE PAIN DURING WOUND CARE

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Introduction

Pain management is one of the major issues when performing wound care procedures, such as vigorous cleaning or conservative sharp wound debridement (CSWD). While pharmacological approaches are commonly used for pain control, they are not always effective or sufficient. Nonpharmacological treatments have been utilized, e.g. physical therapy, occupational therapy, acupuncture / acupressure, music therapy and spiritual healing (Niruthisard, Ma & Napadow, 2024). Virtual reality (VR) has gained widespread attention in the medical field. VR is a technology that immerses a person into a computer generated or simulated environment that can be viewed through a headset (Park, Oakes, Lin, Chahal & Clarkson, 2023; Garrett, Taverner, Masinde, Gromala, Shaw & Negraeff, 2014). In the systematic review with meta-analysis of Mazaheri, Crooijmans, Vereen and Corten (2023), it demonstrated that a VR significantly reduces pain during wound care and improves patient experiences. Selection of the right patients with the use of the right VR at the right time were suggested in this review.

Wound management involves a decision making process, TIME framework, and its more recent iteration, TIMERS, provides the clinicians or wound care specialists with structured approaches for wound bed preparation (Atkin et al, 2019; Schultz et al., 2004; Schultz et al., 2003). CSWD is one of the methods for the wound bed preparation. In our clinical practice, we often undergo CSWD during wound management. This procedure may induce procedural pain. Some patients take painkillers before their clinic sessions to manage this discomfort. Therefore, this pilot randomized controlled study would like to explore the effectiveness of VR in decreasing pain and anxiety level during CSWD procedure in wound care.

Primary and secondary outcomes

The primary outcome was to compare the pain level when using VR, tablet video and usual care (no media intervention), during CSWD procedures in wound care at Wound Care Nurse Clinic (WCNC) in Tseung Kwan O Hospital (TKOH). The secondary outcome was to compare the anxiety level among them.

Sample size estimation

Since it was the pilot randomized controlled trial, we estimated there was approximately 20 participants per group. A total of 60 participants were expected to be included in the study.

Use of virtual reality to reduce pain during wound care

Methodology

The randomised controlled trial was designed and the study participants were recruited in WCNC, TKOH, from August 2023 to July 2024. Patients were eligible if they were >/= 18 years old, whom the wounds need CSWD during wound care at WCNC in TKOH. Patients with cognitive impairment, visual or hearing impairment, wound location impacting the ability to use the VR device, claustrophobia, inability to read Traditional Chinese, dizziness, drowsiness or history of psychiatric illness were excluded in the study.

The participants who attended the WCNC were assessed the eligibility of the study. They were invited to join the study and signed the consent form if agreed. Computer-generated randomization list was generated through an online randomization list generator by the one who was not involved in the study. They were randomly allocated to control or intervention group by sequentially numbered, opaque, sealed envelopes.

Intervention and control groups

In the interventional groups, participants watched the video topic: Meditation – Uganda "The Pearl of Africa" via VR machine available on the market (Oculus Meta Quest 2) or tablet (iPad). The video was licenced and a standardized medicated theme video. Its length was about 15 minutes which could continuously loop the video during the wound care procedure. In the control group, the wound care procedure proceeded as usual.

Before the study began, a briefing session was arranged to WCNC nurses on the use of Oculus Meta Quest 2 and the case report form. No calibration of the VR equipment was necessary. The study procedure was also explained to them to ensure the accuracy and avoid the bias.

Outcome measures

Pain

Pain intensity was assessed by Numerical Rating Scale (NRS). It is simple to use in a verbal or written format. Both test-retest reliability and construct validity yielded satisfactory result in the study of Rothaug et al. (2013). The scale ranges from 0-10. 0 indicates "no pain" whereas 10 indicates "worst possible pain".

Subjective Unit of Distress Score (SUDS)

SUDS is a scale to assess the intensity of the emotional stress to an individual (Wolpe, 1969). It ranges from numerical scale of 0-10, the higher the number is, the more anxiety or discomfort the individual he or she suffers.

Use of virtual reality to reduce pain during wound care

Study procedure

All participants performed wound management and CSWD during the study. General information, including participants' vital signs, pain level by NRS, SUDS, and painkiller usage, was documented prior to the commencement of wound care. Each participant in VR group was assisted to wear the VR goggle to adjust the image clearness and sharpness. Another group of participants that was assigned watching videos by tablets adjusted the angle and height of the tablet. During and after the wound care and CSWD, they were asked about pain level and SUDS. After the wound care, they were asked if they had any discomforts using VR equipment or tablets, and to complete the Procedure Focused Patient Satisfaction Survey.

Data analysis

In the study, SPSS software version 28.0 was performed. The demographic data and vital signs were expressed in mean and standard deviation.

To check the normality in the dependent variables (pain score and SUDS), Shapiro-Wilk test was performed. It showed that two dependent variables were deviated significantly from normality (pain before treatment: W=0.764, p-value <0.001; pain after treatment: W=0.844, p-value 0.002; SUDS before treatment: W= 0.778, p-value <0.001; SUDS after treatment: W=0.562, p-value <0.001). Therefore, the non-parametric data was computed in Friedman test and Kruskal-Wallis H test. The p-value was set at <0.05 with 95% confidence level. The intention-to-treat principle was used in the analysis.

Results

A total of 24 participants was recruited in the study from August 2023 to July 2024 in WCNC, TKOH and randomized into control group (n = 6), tablet video (n = 8) and VR (n = 10). The age ranged from 39 to 82 years, 12 were male while 12 were female. Table 1 showed the sample characteristics in the three intervention groups, e.g. blood pressure and respiratory rate.

Table 1. Participants characteristics

	VR (n = 10)	Tablet (n = 8)	Control (n = 6)	Total	P-value
Gender (N)					0.532*
Male (%)	5	3	4	12 (50%)	
Female (%)	5	5	2	12 (50%)	
Age in years					0.436*
50 or below (%)	1	0	1	2 (8.3%)	
51-60 (%)	2	2	0	4 (16.7%)	
61-70 (%)	1	4	3	8 (33.3%)	
71-80 (%)	5	2	2	9 (37.5%)	
81 or older (%)	1	0	0	1 (4.2%)	
SBP, mmHg (Mean ± SD)					
Baseline	143 ± 17.26	150 ± 22.64	140 ± 10.48		0.609*
Post	137 ± 13.15	149 ± 22.94	140 ± 11.17		0.226*
DBP, mmHg (Mean ± SD)					
Baseline	82 ± 9.51	74 ± 8.42	79 ± 10.37		0.609*
Post	83 ± 5.24	75 ± 9.29	78 ± 7.31		0.226*
Pulse, bpm (Mean ± SD)					
Baseline	81 ± 8.90	68 ± 13.51	86 ± 17.35		0.609*
Post	77 ± 9.37	68 ± 15.27	84 ± 17.20		0.226*
Respiratory rate, rate/min (Mean ± SD)					
Baseline	16 ± 2.91	16 ± 5.86	17 ± 3.01		0.609*
Post	17 ± 2.99	14 ± 1.63	16 ± 3.10		0.226*

*Fisher'-Freeman-Halton Exact Test
P-value <0.05 means statistically significant

Use of virtual reality to reduce pain during wound care

The mean wound care procedure time was 17.5 minutes (range 10 - 32 minutes; SD: 5.6 minutes). The total media playing time ranged from 7 to 32 minutes. 7 out of 24 participants took the analgesia before wound care procedure.

Pain

In the pain level within the groups, the participants using tablet and VR showed a decrease pain level during wound care procedure. The mean pain level using tablet group decreased from 2 to 1.75, while VR group decreased from 2.7 to 2.2. Three groups did not show statistically significant ($p > 0.05$) (Table 2).

Table 2. Summary of pain level differences within three intervention groups

Measurement	N	Mean	Mean Rank	SD	$\chi 2$	df	P-value
Control					0.2	1	0.655
Before treatment	6	1.17	1.42	1.472			
After treatment	6	1.83	1.58	1.941			
Tablet					0	1	1.00
Before treatment	8	2	1.5	2.268			
After treatment	8	1.75	1.5	1.165			
VR					0.667	1	0.414
Before treatment	10	2.7	1.6	3.743			
After treatment	10	2.2	1.4	2.936			

In comparing the pain level difference between groups, the results did not show statistically significant in pain level ($p > 0.05$) among them (Table 3).

Table 3. Summary of pain level differences between three intervention groups

Pain level in treatment	N	Mean	SD	Kruskal-Wallis H	df	P-value
Before treatment	24	2.08	2.812	0.342	2	0.843
After treatment	24	1.96	2.156	0.052	2	0.974

SUDS

In the emotional stress before and after the wound care procedure, three groups showed a decrease in the mean SUDS within the intervention. Only VR group showed a statistically significant result of SUDS between before and after wound care ($p = 0.025$) (Table 4). There were also no difference ($p > 0.05$) in SUDS difference between the interventions (Table 5).

Table 4. Summary of anxiety level (SUD) differences within three intervention groups

Measurement	N	Mean	Mean Rank	SD	$\chi 2$	df	P-value
Control					1.8	1	0.18
Before treatment	6	1.5	1.75	1.225			
After treatment	6	0.17	1.25	0.408			
Tablet					1.8	1	0.18
Before treatment	8	2.75	1.69	3.412			
After treatment	8	1	1.31	1.414			
VR					5	1	0.025
Before treatment	10	3	1.75	3.59			
After treatment	10	1	1.25	2.211			

Table 5. Summary of anxiety level (SUD) differences between three intervention groups

Anxiety level in treatment	N	Mean	SD	Kruskal-Wallis H	df	P-value
Before treatment	24	2.54	3.05	0.31	2	0.856
After treatment	24	0.79	1.641	1.116	2	0.572

Satisfaction survey

To evaluate the satisfaction among participants, they completed a satisfaction survey after the wound care procedure. Most of the participants (n = 23) agreed that the wound care nurses comforted them when they had worries about their wound care condition, as well as did the best to relieve their pain during wound care procedure. Overall, all of the participants (n = 24) were satisfied with the treatment service provided (Table 6).

Table 6. Response of satisfaction survey from the participants % (N)

	Strongly disagree 1	2	3	4	Strongly agree 5
1 Were you given enough information about your condition or treatment?	0	0	4.2 (1)	4.2 (1)	91.7 (22)
2 Whenever you got worries or fears about your condition and/ or treatment, did a member of staff discuss/comfort you about your condition?	0	0	4.2 (1)	8.3 (2)	87.5 (21)
3 Did the health care professional try the best to relieve your pain?	0	0	0	12.5 (3)	87.5 (21)
4 How would you rate the care you received from the nurses?	0	0	0	8.3 (2)	91.7 (22)
5 Overall, how would you rate your experience on treatment service?	0	0	0	8.3 (2)	91.7 (22)

Adverse effects

No adverse effects (nausea, dizziness, vomiting or shivering) were reported in the groups of watching video in tablet or VR.

Discussion

Wound care often involves procedural pain, particularly during special procedures such as CSWD. This pain is subjectively unpleasant and may be associated with potential tissue damage (Dieu et al., 2021). In this study, we aimed to evaluate whether VR can be an alternative method in reducing pain or anxiety level during the wound care procedures. Although our findings did not demonstrate a pain reduction with VR use, there was a notable decrease in anxiety levels among patients. These results are inconsistent with previous studies (Spyrka, Rojczyk, Brela, Sieroń, & Kucharzewski, 2024; Bermo, Patterson, Sharar, Hoffman, & Lewis, 2020), which reported different outcomes regarding pain and anxiety management.

Limitation

One limitation of the study was the small sample size. The sample size recruitment was interrupted due to a licensing issue of the medicated video and the concurrent conduct of another study in the Wound care nurse clinic. While this was a pilot study, the small sample size may affect the precision and generalizability of the results. Future studies should focus on increasing the sample size to provide more robust evidence regarding the efficacy of VR in wound care settings.

Conclusion

Pain in wound care can significantly affect patient experience and healing outcomes. VR technology offers an innovative way to reduce pain and anxiety through an immersive environment. Further research is needed to explore how VR can be effectively integrated into wound care practices.

Use of virtual reality to reduce pain during wound care

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SIMPLER TIMES

Simpler wound management, without compromise

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For moderately to highly exuding wounds

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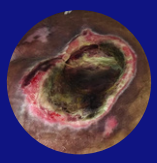
For slightly to moderately exuding wounds

- Debriding gel
- Absorbent alginate
- Antimicrobial enzyme system

The TIMES concept promotes a holistic approach to patient well-being in wound care and contributes to identifying barriers to healing and guides the plan of care to remove them.

T — TISSUE



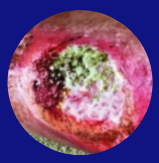
Assess
Is the tissue viable?

Action
Remove devitalised tissue

Outcome
Clean, viable wound bed. The wound bed is prepared for dressing application to prevent infection and biofilm formation.

✓ Flaminal continuously debrides the wound

I — INFECTION



Assess
Are there signs of infection such as redness oedema, heat and pain?

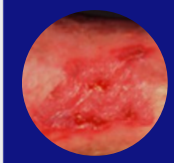
Action
Disrupt bacterial bioburden and prevent recurrence

Outcome
Bacterial balance and reduced inflammation.

Pain reduction, reduced exudate levels and odour. The wound is on a healing trajectory

✓ Flaminal offers antimicrobial protection & reduces bacteria released from a biolfilm

M — MOISTURE



Assess
Is there a lack-of or an excess of exudate?

Action
Apply moisture-balancing management strategy with optimal dressing and change frequency

Outcome
Moisture balance ensuring wound is conducive to healing. Protease levels are balanced. Patient quality of life is improved

✓ Flaminal keeps the wound moist

E — EDGE OF WOUND

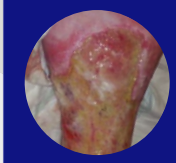
Assess
Is there undermining, tunnelling and maceration?

Action
Identify and treat causative issues such as excess moisture and infection

Outcome
Advancing wound edges as migration of epithelial cells commence progressing to maturation and full wound closure

✓ Flaminal is safe for skin & protects wound edges

S — SURROUNDING SKIN



Assess
Is there dry, flaky skin or signs of excoriation?

Action
Cleanse and apply emollient if dry or address moisture levels and protect from further damage if skin excoriated

Outcome
Viable skin. Maintaining good skin health and integrity overall reduces risk of breaks to the skin and infection

✓ Flaminal does not damage surrounding skin

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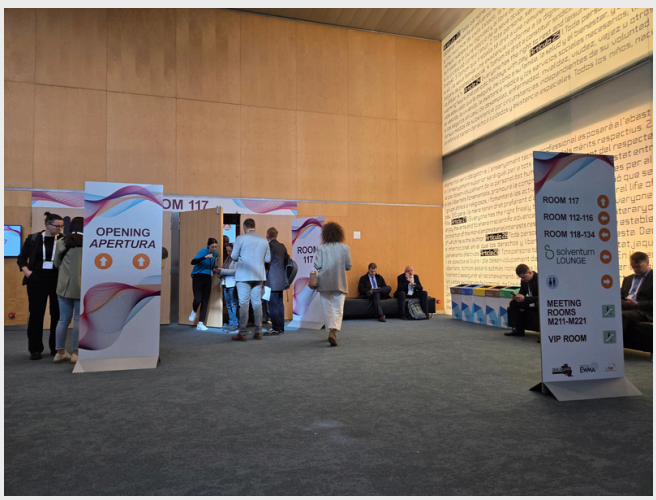
EWMA 2025 HIGHLIGHTS

HO WAI SZE KRISTIE

THE 35TH CONFERENCE OF THE EUROPEAN WOUND MANAGEMENT ASSOCIATION (EWMA)

The 35th EWMA Conference was successfully held from March 26-28, 2025, in Barcelona, Spain. This year's event was organized in collaboration with GNEAUPP, the Spanish Advisory Group for the Study of Pressure Ulcers and Chronic Wounds, and SEHER, the Spanish Wounds Society.



EWMA 2025 HIGHLIGHTS

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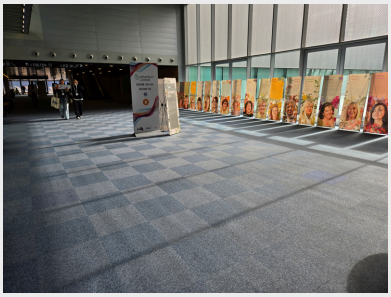
The theme of the EWMA-GNEAUPP 2025 Conference was "**Moving Towards Excellence in Wound Management by Breaking Frontiers and Silos.**" Over 6,000 participants from 90 nationalities gathered to share their commitment to achieving high-quality and sustainable wound care services. The abstracts reviewed and accepted by the EWMA scientific committee resulted in 1,547 e-posters and 850 presentations during the event.

As I walked through the three-day conference, I was impressed by the diverse insights, practical knowledge sharing, and new initiatives presented by participants. Notably, there was a significant emphasis on the integration of advanced technology in wound care and patient empowerment.



Managing atypical wounds has long posed challenges. Scientific and clinical updates on diagnosing and treating these wounds were extensively discussed. With precise early diagnosis, a holistic assessment, and a multidisciplinary care plan, we can achieve cost-effective management and prevent recurrence. In conjunction with the treatment of leg ulcers, the upfront management of leg edema was highlighted. Key sessions also addressed fistula and peristomal skin disorders. Among these, I was particularly enlightened by a project focused on pressure injury (PI) prevention in the operating theatre, which illustrated a comprehensive protocol and systematic management for preventing PI in the prone position, yielding positive outcomes. Other sessions covered advanced wound imaging technology, the development of lower limb exoskeletons to enhance mobility, and home care wound management with a focus on client empowerment.

EWMA 2025 HIGHLIGHTS

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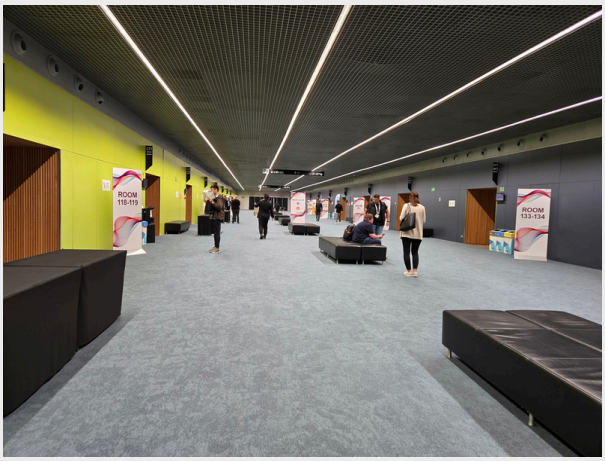
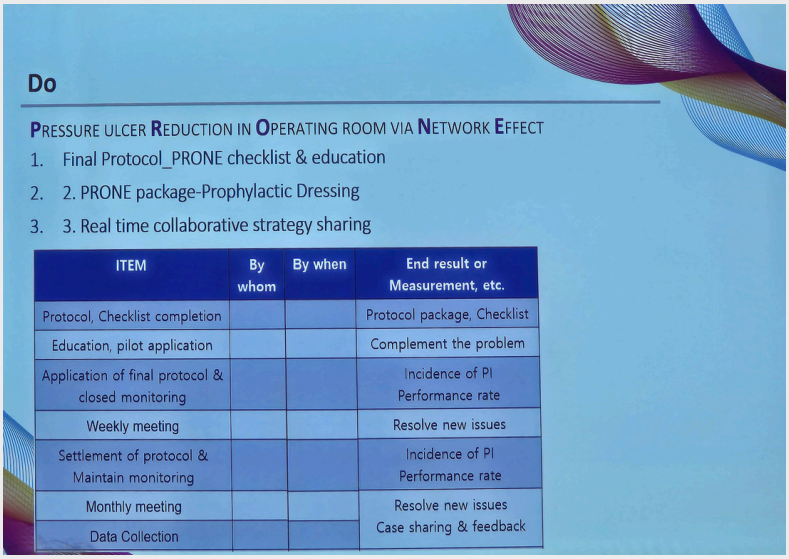
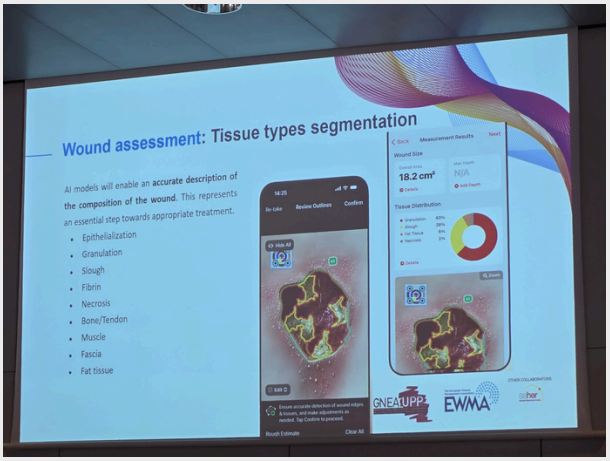
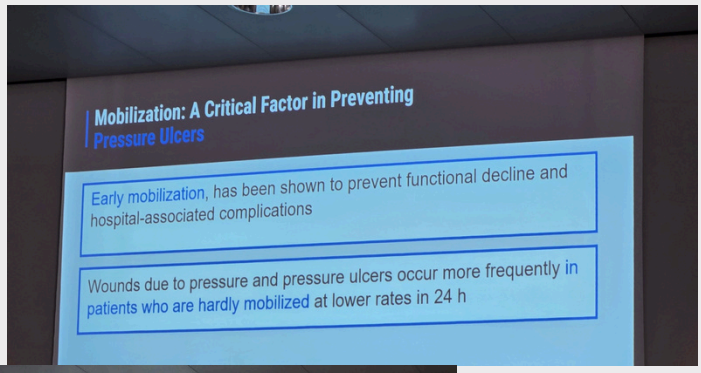
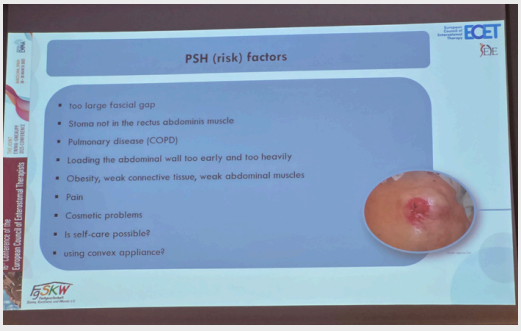
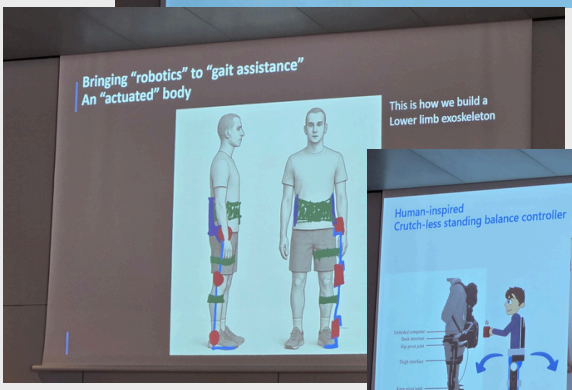


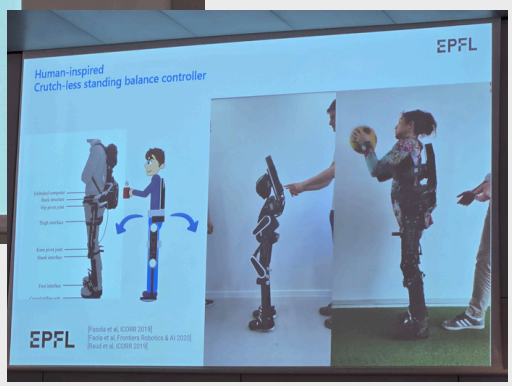


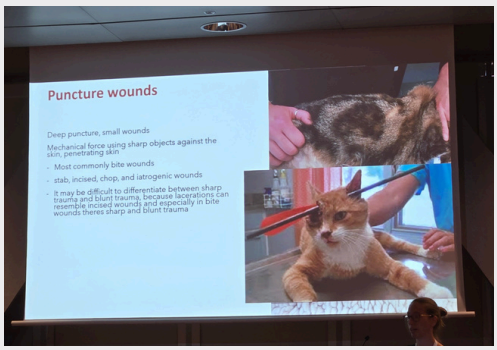












Moreover, the 35th EWMA Conference featured contributions from the Veterinary Wound Healing Association (VWHA). Veterinary professionals shared fundamental wound management practices, challenges, and insights across various wound types in animals.

EWMA 2025 HIGHLIGHTS

HO WAI SZE KRISTIE

Interactive workshops added to the conference experience:

- **Clinical Photography and Thermography:** Non-invasive techniques to assess skin temperature distribution, tissue viability, peripheral circulation, and treatment response.

- **Painting Wounds on Skin:** Systematic skills for painting specific wounds, such as skin tears and wound undermining.

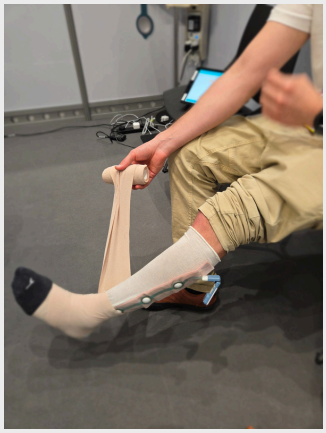
EWMA 2025 HIGHLIGHTS

HO WAI SZE KRISTIE

The conference also included a vibrant industry exhibition featuring 143 exhibitors, showcasing a variety of newly launched devices and wound care products. User-friendly product designs promoting patient empowerment and the concept of client-healthcare professional partnerships in health management were prominently demonstrated.

Portable NPWT devices:

Wearable pressure-sensing device with user-friendly mobile app remotely monitors sub-bandage pressure - enabling guided re-application and patient self-management for consistent maintenance of targeted compression therapy.



EWMA 2025 HIGHLIGHTS

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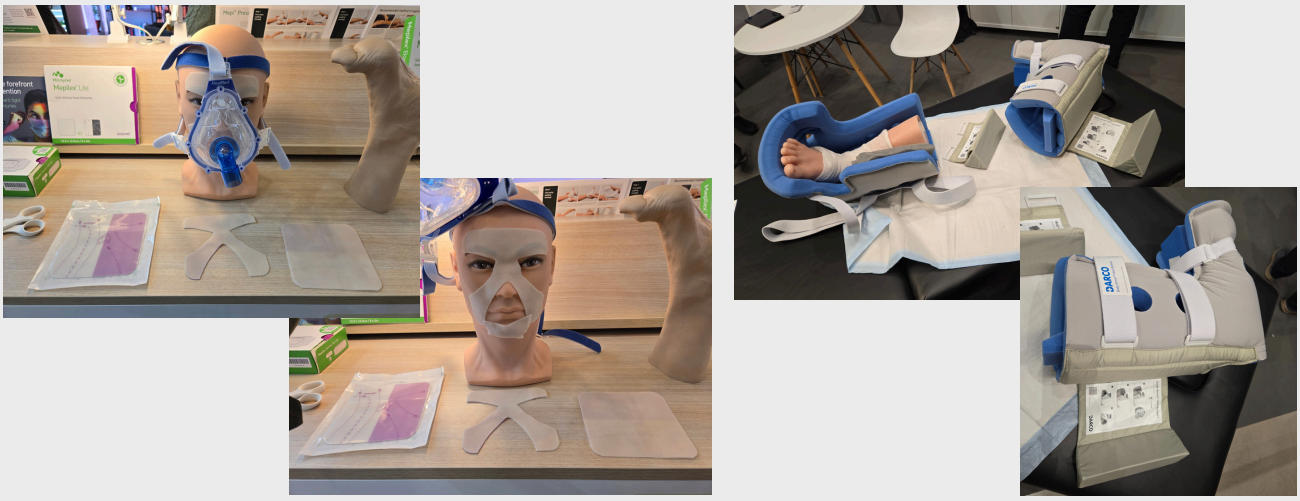
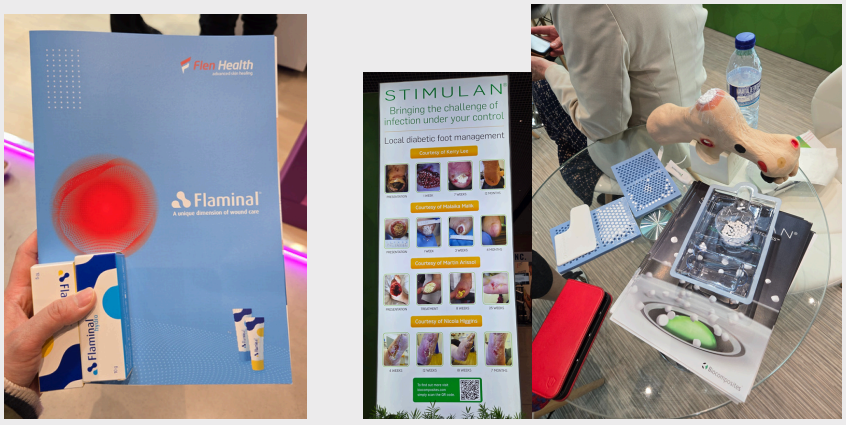
Adjustable compression device for the decongestion of phleboedema (calf wrap, ankle foot wrap, toe cap); fashioned compression stockings

Prophylactic dressings of Pressure Injury / Customizable pressure redistributing devices:



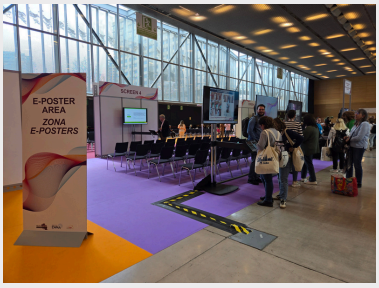
Enzyme alginogel / Absorbable calcium sulfate antibiotic carrier for antibiotics mixing:

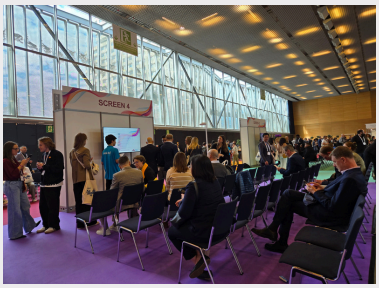


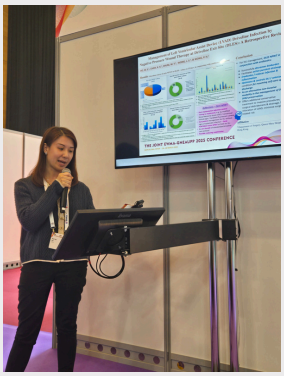
EWMA 2025 HIGHLIGHTS

HO WAI SZE KRISTIE

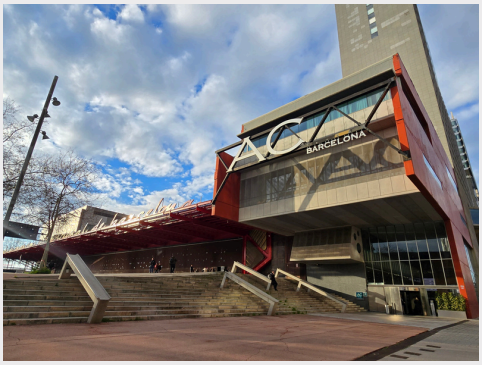
I was honored to have my abstract accepted for an e-poster oral presentation titled "Management of Left Ventricular Assist Device (LVAD) Driveline Infection by Negative Pressure Wound Therapy at Driveline Exit Site (DLES): A Retrospective Review." This experience provided me with unique insights compared to my previous on-stage presentation at the European Council of Enterostomal Therapy Conference in 2017. Throughout the e-poster sessions, numerous inspiring initiatives and projects were shared by presenters from diverse backgrounds, enabling enthusiastic knowledge exchange.







Additionally, I was grateful for the opportunity to attend a masterclass focused on atypical wound management. The class was interactive, engaging, multidimensional, and informative. Experts presented the best available knowledge on atypical wounds, such as pyoderma gangrenosum, calciphylaxis and Martorell ulcer, aiming to increase awareness of their clinical presentation, diagnosis, and treatment while providing practical advice on common challenges.



In conclusion, my experience at the conference enlightened me about the importance of incorporating advanced technology in wound and stoma care, promoting health management in partnership with clients, and emphasizing client empowerment. At the same time, the fundamental elements of compassion and empathy in nursing care remain essential.

APETNA 2025 HIGHLIGHTS

The APETNA 2025 conference “Creating Connection: Building Bridges Together“ in Penang was successfully held in July. This was a vibrant celebration of innovation and collaboration. The participants mingled in a warm atmosphere, exchanging ideas and insights that sparked creativity.

The 4-day conference was filled with inspiring keynote lectures, engaging sessions, and interactive workshops that left participants buzzing with enthusiasm. It emphasised the importance of nurses to get connected to each other and influences to our nursing practice. Some updated information including Pressure Injury Guideline 2025 has also been released in this conference.

We were truly honoured to have 5 speakers, Mr. Leo Cheung, Ms. May Ng, Ms. Ng Shuk Ching, Ms. Pang Yuk Kam and Dr. Sit Tin Yan Cecilia in the conference to provide a wonderful and inspiring sharing. Several Hong Kong colleagues were selected in oral and poster presentations. One of the poster presentations from Ms. Kam Sin Yu, who also won the second prize for her outstanding work and dedication.

In the closing ceremony, after APETNA 2027 Organising Chairman Mr. Chong received the APETNA flag from Mrs. Mariam, the Organising Chairman of APETNA 2025, we are pleased to announce the next APETNA will be held in Hong Kong.

APETNA 2025 HIGHLIGHTS

HKETA members work together as one, striving for the best. We also introduce Hong Kong to people from different parts of the world, inviting them to join us in APETNA 2027.

APETNA 2025 HIGHLIGHTS

WCET President Laurent O. Chabal (Middle)

Ms Carol Stott (Middle)

Professor Keryln Carville (Third from the left)

APETNA 2025 HIGHLIGHTS

Invited Speaker: Mr Leo Cheung

Invited Speaker: Ms Ng Shuk Ching

APETNA 2025 HIGHLIGHTS

Invited Speaker: Ms Pang Yuk Kam

Invited Speaker: Dr Sit Tin Yan Cecilia

APETNA 2025 HIGHLIGHTS

Invited Speaker: Ms May Ng

Poster presentation (Second prize): Ms Kam Sin Yu

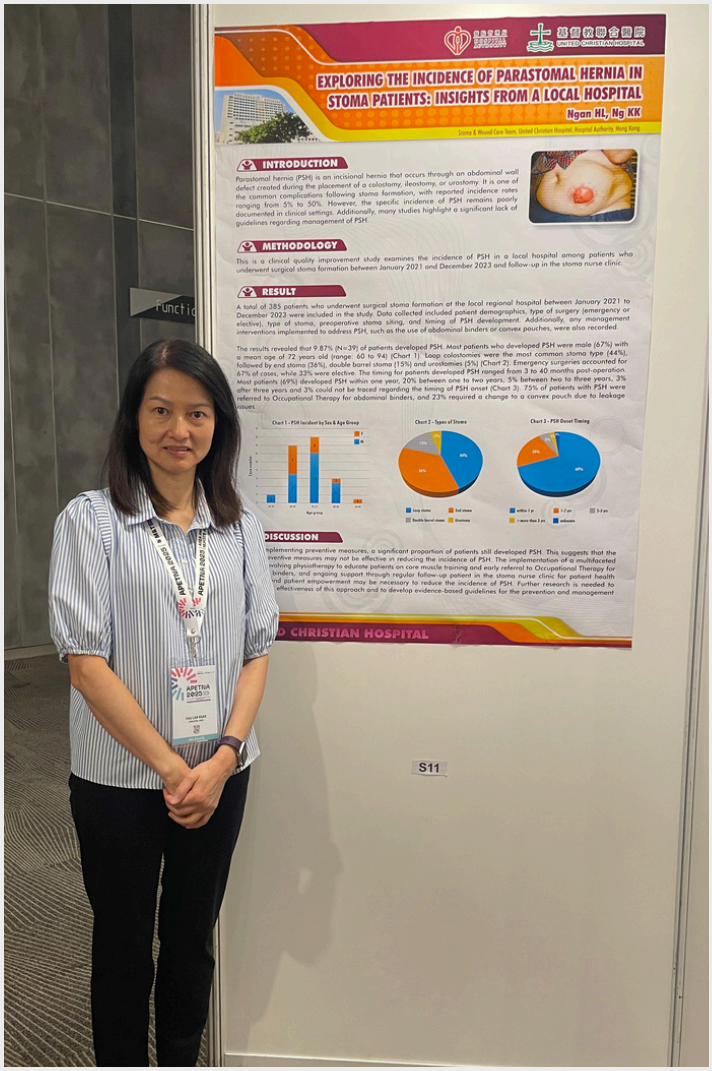
APETNA 2025 HIGHLIGHTS

Poster presentation: Mr. Chong Hin Moon

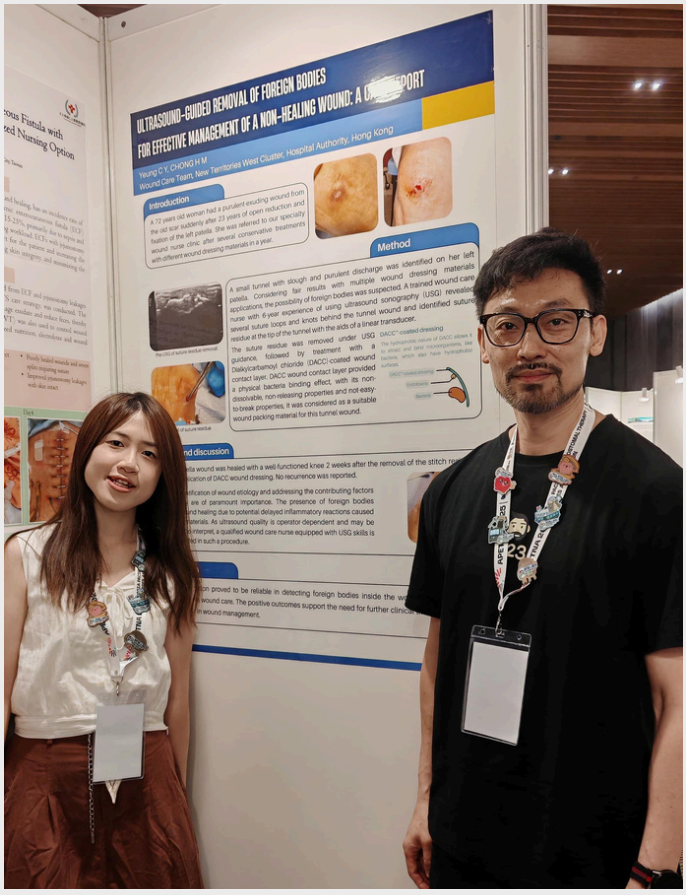
Poster presentation: Ms. Hau Annie

APETNA 2025 HIGHLIGHTS

Poster presentation: Ms. Kwok Suen Tung Katherine

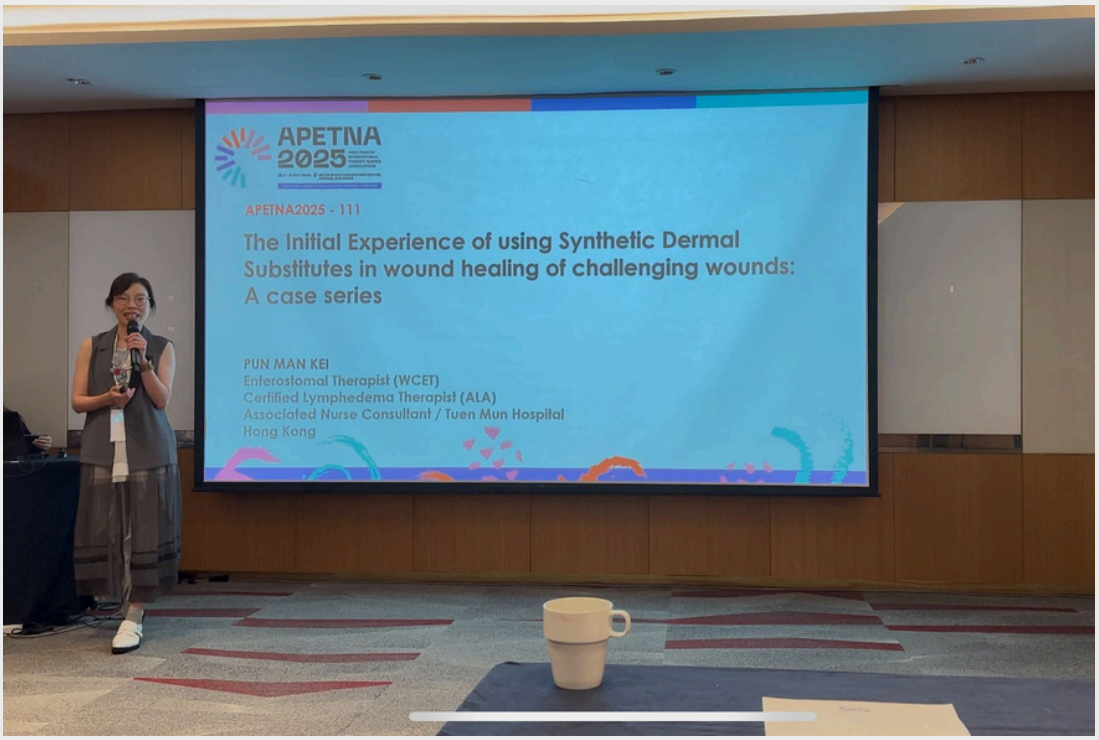


Poster presentation: Ms Ngan Hau Lan



Poster presentation: Ms Yeung Ching Yin

APETNA 2025 HIGHLIGHTS



Oral presentation: Ms Pun Man Kei

Oral presentation: Ms Lee Hoi Kei Alvina

APETNA 2025 HIGHLIGHTS

Oral presentation: Ms Tong Mei Hoi

Oral presentation: Mr Cheung Chi Yeung Antares

APETNA 2025 HIGHLIGHTS

The Flag Parade started in the Day 1 opening ceremony

Mr. Chong, APETNA 2027 Organizing Chairman, received the flag from current APETNA 2025 Organizing Chairman

WOUND CARE TRAINING 2025

HKETA has consistently organized specialty-related courses over the years, and this year was no exception. A workshop related to incontinence associated dermatitis and skin tear management, as well as a comprehensive 6-day wound care course took place in February and May, attracting over 250 participants in the courses. They covered the essential and popular topics, including pressure injury management, leg ulcers care, and the management of surgical wounds and fistulas. The engaging interaction between speakers and participants fostered a rich exchange of insights and ideas, and enhancing the overall learning experience.

Don't miss out and stay tuned for the upcoming courses in the future.

IAD & SKIN TEAR WORKSHOP

EVALUATION FOR WOUND CARE COURSE 2025

Evaluation	Rating / Percentage
Your learning objective is achieved	4.7 / 5
The course enhanced your professional knowledge	4.7 / 5
The course is useful for your work	4.6 / 5
Your overall satisfaction to the course	4.6 / 5
Length of the course - Just Right - Too short / a bit short - Too long / a bit long	 71% 8% 21%
Overall administrative support (Zoom arrangement/ Sharing of speakers' lecture notes)	4.5 / 5
Will recommend this course to your friends or colleagues	91%

Very informative and detailed, thanks for the preparation

Good to have case sharing, learnt a lot!

Thanks for the product introduction by the companies

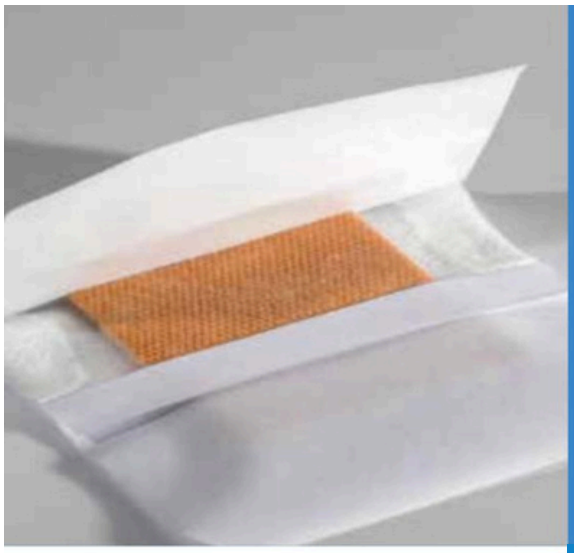
The sound quality was not good enough on the first 2 days

Suggest face to face course next time; & introduce pre & post RT wound care

THANK YOU FOR YOUR COMMENTS

MEDCu

The world's first and only FDA and CE cleared Copper-based antibacterial wound dressings

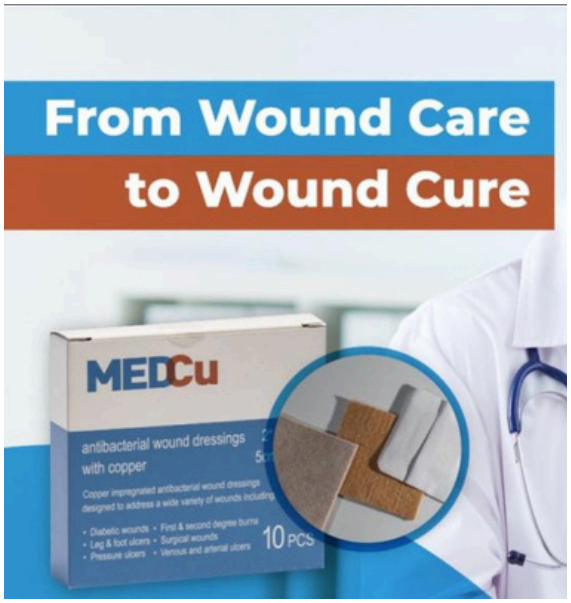


A New Standard in Wound Care

Innovative Copper-Based Dressings

Suitable for acute, critical and chronic wounds

- Diabetic wounds
- Leg and foot Ulcers
- Pressure Ulcers
- 1st & 2nd Degrees Burns
- SurgicalWounds



Efficient, Rapid and Sustained Results

Case studies of the proven effect of copper-based dressings

78 year old diabetic female patient

Suffered from sepsis bacteremia and necrotizing fasciitis emanating from midfoot Charcot-neuroarthropathy, deformity, ulceration and necrotizing fasciitis. Underwent deep debridement, including necrotic dorsalis Pedis artery.

Wound condition post-operation

Beginning of treatment with MedCu copper oxide dressings after 3 days of Milton treatment

8 days of treatment with MedCu copper oxide dressings resulted in significant granulation despite lack of dorsal foot artery

12 days of treatment with MedCu copper oxide dressings. Intense encouraging granulation tissue can be seen

46 years old insulin-dependent diabetes mellitus (IDDM) female patient

Following Trans-Metatarsal Amputation treated with MedCu copper oxide wound dressings instead of vacuum-assisted closure (VAC) sessions.

Beginning of treatment with MedCu copper oxide dressings after trans-metatarsal amputation

5 weeks of treatment with MedCu copper oxide dressings

12 weeks of treatment with MedCu copper oxide treatment

21 weeks after treatment with MedCu copper oxide dressings, wound has closed

Getz Healthcare

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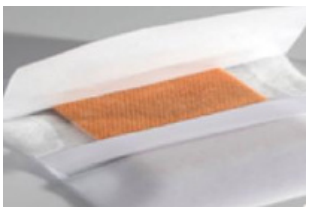
SCAN ME



與APETNA 2027 籌委會成員對話系列

大家都知道，HKETA很榮幸可以投得APETNA2027之主辦權，並於香港舉行。大家終於可以留在香港參加這個兩年一度的盛會了。

為了讓大家走得最前線並掌握最新資訊，由今期開始Editorial subcommittee會訪問APETNA2027籌委會的不同骨幹成員，使大家對整個籌備過程有更深刻的了解。千萬不要錯過我們為大家預備的一連串精彩訪問。最重要的是，各位記得一起參與這次極具意義的event.

首先今次打響頭炮的星級訪問對象，就是鍾献滿先生，Chris sir。他是HKETA 2024-2026副主席之外，亦是APETNA2027的籌委會主席。他紮根於傷口造口界18年，其勇於創新的性格亦為很多人所讚賞。

Alvina **Chris**

CHRIS SIR, 你好。我十分榮幸可以和你做這次訪問。第一條問題想問你，為什麼HKETA想舉辦APETNA2027？

(深思熟慮了一陣之後...) 其實香港自WCET2006 CONFERENCE之後，就鮮有舉辦類似的大型國際學術交流活動。有份參與WCET2006 CONFERENCE籌備的前輩，大部分都已不在HKETA COMMITTEE 裡。而現任的HKETA COMMITTEE裡，對如何舉辦那麼大型的國際學術交流活動的經驗十分有限，因此希望可以透過這次去吸取經驗，並"一生人點都要攪返一次啦"既心態就豁出去。再者，WCET2006 CONFERENCE已相隔現在大約有20 年了。我覺得我們是時候為香港ET業界負起一些責任，讓國際知道香港在業界所付出的努力。

好有抱負啊。我們一定在背後全面支持！！那APETNA2027的主題是什麼呢？並將於何時何地舉行呢？

我們的主題好有深度呢，就是“SUSTAINABILITY IN ET: A VISION FOR TODAY AND BEYOND”，並將於2027年11月12-14日在香港科學園舉行。

距離2027年還有兩年多的時間，你對我們HKETA members或者各同行，於APETNA2027有沒有什麼期望呢？

現在完成ENTEROSTOMAL THERAPY 和 PRCC STOMA AND WOUND 的同學仔都開始不斷增加，希望透過這個比較大型的研討會，可以凝聚大家的力量，一起去參與這個有意義的學術交流活動。而且，研討會讓大家有一個平台去彼此學習，建立一個屬於自己及大家的本地及國際人際網絡。最後，我更期望大家可以走出自己的醫院，除了將自己學到的專業知識貢獻給自己醫院外，並可以衝出香港，走出國際。

這個都是大家對這個專業的堅持和遠景 。我們要一齊去建立和實踐 。多謝CHRIS SIR 今天寶貴的時間 。你們要努力啊 。

大家咁話 。

APETNA 2027 OFFICIAL MASCOTS

GG (粒粒)
GG is representing granulation. She is an energetic character.

Peipei (皮皮)
Peipei is presenting an epithelial cell. She is an optimistic character.

Ar Si (阿士)
Ar Si is presenting slough. He is acting as a grim reaper.

Mr Black (黑先生)
Mr Black is a funny guy, representing eschar in a wound. He is a comedian who always hides his true characteristics.

APETNA 2027 THEME AND LOGO

APETNA logo design concept
APETNA logo is characterized by 5 components in 4 colors.

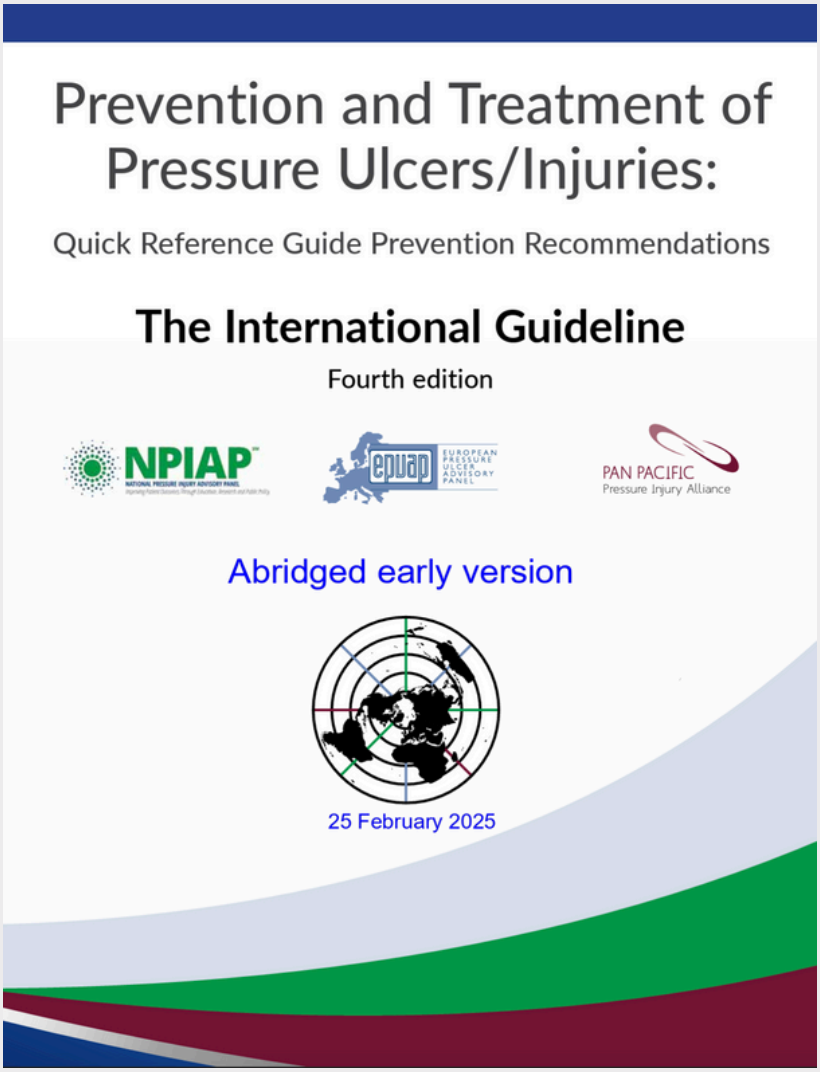
STOMA	WOUND	CONTINENCE	ENTEROSTOMAL THERAPIST	HONG KONG

The theme of APETNA 2027

Sustainability in Enterostomal Therapy: A Vision For Today and Beyond

Mascots & logo designed by: Cake

PREVENTION AND TREATMENT OF PRESSURE ULCERS/INJURIES: CLINICAL PRACTICE GUIDELINE (4TH ED.)



FREE ACCESS with Online Living Guideline

Updated guideline can be downloaded in the following website:
https://internationalguideline.com/

HONG KONG ENTEROSTOMAL THERAPISTS ASSOCIATION

HKETA SYMPOSIUM CUM 26th AGM

WOUND CARE EXCELLENCE FROM PREVENTION TO HEALING

26 JULY 2025 14:00-17:00

Venue: The Ballroom, 7/F, Cordis Hong Kong

555 Shanghai Street, Mong Kok

Skin Intergity Complication in Wound Care: Prevention is the Key

Ms Aiwei FOSTER
Wound Nurse Practitioner
Wound Nurse Consultant &
Lymphoedema Practitioner
The Royal Melbourne Hospital
Australia

Effective Strategies & Protocol of Care to Support Hard to Heal Wounds

Professor Kevin WOO
PhD, RN, NSWOC WOCC(C)
Queen's University
School of Nursing & School of Rehabilitation in Kingston
Canada

Knowledge and Visual Differentiation: IAD vs PI

Mr Kelvin CHAN
Nurse Consultant
(Stoma & Wound Care)
Yan Chai Hospital
Kowloon West Cluster
Hospital Authority
Hong Kong

Registration and Booth Start at 13:30
Registration fee is non-refundable

Deadline for Application
23 July 2025

CNE: 2 points
Fee: HKD$50
(Coffee Coupon HKD$50 for members who attended AGM)

REGISTER NOW

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UPCOMING CONFERENCES 2025-26

WCET - NSWOCC 2026 Join Congress: In It Together

Picture credit to: https://wcetn.org/events/EventDetails.aspx?id=1897758

Date: 24-28 April 2026
Venue: Vancouver Convention Centre, Canada
Website: https://www.wcet-nswocc2026.com/

36th Conference of the European Wound Management Association

Picture credit to: https://ewma.org/ewma2026/

Date: 06-08 May 2026
Venue: Bremen, Germany
Website: https://ewma.org/ewma2026/

CONTENTS SUBMISSION INVITATION

WE WANT YOU!

WELCOME TO SUBMIT

Research/ Case study/
New advanced technique/
Highlights of education event/
Daily work of stoma & wound nurse

FOR PUBLISHING ON HKETA NEWSLETTER

Please contact HKETA through email for any enquiry
Content submission through email: hketnurse@gmail.com

HONG KONG ENTEROSTOMAL THERAPISTS ASSOCIATION

香港造瘻治療師學會

聯絡我們

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