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PREDICTING THE LIKELIHOOD OF DELAYED HEALING: A VENOUS LEG ULCER RISK ASSESSMENT TOOL

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Objectives

- ❖ To identify the current evidence in the literature on risk factors for delayed healing in venous leg ulcers
- ❖ To evaluate any risk assessment tools that have previously been developed
- ❖ To analyse a large database from patients with venous leg ulcers to identify predictors of failure to heal after 24 weeks of treatment
- ❖ To devise a scoring system and develop a risk assessment tool that can reliably assess with good validity and generalisability



Literature Review

❖ Physiological Factors

- Increasing age
- Longer ulcer duration
- Larger wound area
- Lack of high compression
- History DVT



❖ Psychosocial Factors

- Social isolation
- Socio-economic status
- Depression / anxiety

❖ Risk assessment tools



Methods – Study One

- ❖ Secondary analysis was conducted on data from a sample of 247 patients from outpatient clinics and community nursing services
- ❖ Clinical, venous, ulcer, healing, health and psychosocial data collected prospectively for 24 weeks in previous studies
- ❖ Inclusion Criteria
 - Ulcers of primarily venous aetiology
 - ABPI ≥ 0.8 and < 1.3
- ❖ Exclusion Criteria
 - Patients with cognitive impairment



Study 1 Results – Generalised Linear Mixed Model

Independent Variable	Coefficient	95% CI	p
Age	0.016	-0.015 - 0.047	0.302
Lives Alone	0.932	0.069 – 1.794	0.034 *
Any venous surgery (study leg)	0.723	-0.252 – 1.698	0.145
Any DVT (study leg)	0.446	-0.600 – 1.492	0.401
Rheumatoid Arthritis	0.523	-0.829 – 1.876	0.447
Compression Category	1.481	0.604 – 2.357	0.001 *
PUSH score	-0.243	-0.386 - 0.100	0.001 *
< 25% area reduction in 2 weeks	-1.882	-2.744 - 1.019	<0.001 *

Akaike Corrected: 1,099.813
Accuracy: 82.7%

Methods – Study Two

- ❖ Development of Risk Assessment Tool
 - Evidence in literature
 - Significant predictors of non-healing from data analysis
 - Expert Wound Advisory Group

- ❖ Retrospective validation of Risk assessment Tool
 - Area Under the ROC Curve (AUC)
 - Model coefficients used to determine item points in RAT



Risk Assessment Tool

Risk Assessment Tool Venous Leg Ulcers		Participant Code No. Date:	
At First Visit or Assessment			
Health, medical & social history			Score
1. Age (years)	<70 = 0	70 -79 = 1	≥80 = 2
2. Ulcer Duration (weeks)	<24 = 0	24 - 51 = 1	≥52 = 2
3. History of previous Deep Vein Thrombosis in study ulcer leg	No = 0	Unknown = 0	Yes = 1
4. Client lives alone?	No = 0	Yes = 2	
Sub TOTAL			
On clinical examination			
5. Uses an aid to mobilise?	No = 0	Yes = 1	
6. Wound bed mainly slough and/or necrotic tissue?	No = 0	Yes = 1	
7. Ulcer area ≥25cm ² ?	No = 0	Yes = 3	
8. Treatment at present time with no, low or moderate level compression systems (<30mmHg)	No = 0	Yes = 3	
Sub TOTAL			
TOTAL SCORE O/A =			
<i>≥10 = High Risk of Non-Healing; 4 - 9 = Moderate Risk; < 4 = Low Risk</i>			
2 weeks after admission or first assessment			
9. 25% ulcer area reduction in 2 weeks	Achieved = 0	Not achieved = 6	
10. 2cm or more decrease in calf circumference in 2 weeks	Achieved = 0	Not achieved = 4	
TOTAL SCORE at 2 weeks after initial assessment =			
<i>≥17 = High Risk of Non-Healing; 10 - 16 = Moderate Risk; ≤9 = Low Risk</i>			

Results - Study 2

Retrospective validation of risk assessment tool

- ❖ The model had excellent discrimination and goodness-of-fit in predicting non-healing of venous leg ulcers at 24 weeks

Total score: ROC 0.84 (95% CI, 0.74-0.94) $p < 0.001$

- ❖ Random sample of 200 patients

Total score: ROC 0.86 (95% CI, 0.73-0.99) $p < 0.001$



Where to from here

- ❖ Tool will be tested and validated in a multi-site prospective study across six clinical sites with a sample of 360 patients
- ❖ Incorporate validated tool into an updated care pathway for VLU



Conclusion

- ❖ Despite advances in wound care, healing of chronic venous leg ulcers in a timely manner often remains difficult

- ❖ The identification of risk factors for delayed healing would offer an opportunity for clinicians to:
 - ❖ be able to determine realistic outcomes for their patients
 - ❖ prompt and guide early referrals and tailored adjuvant interventions for those identified at high risk in the first 2 weeks of treatment

Thank You



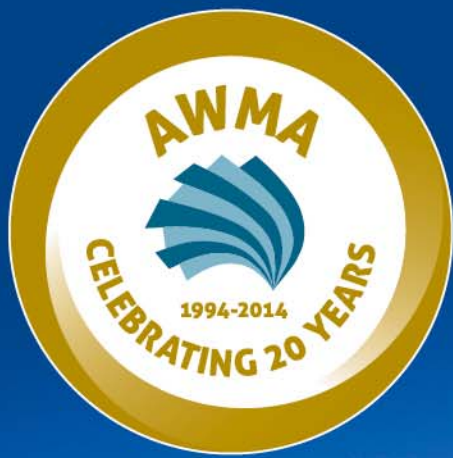
Princess Alexandra Hospital
Health Service District



Royal Brisbane and Women's Hospital
Health Service District

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