

Background

The Capital and Coast District Nursing service serves an approximate population of 318,000 in the lower part of the North Island of New Zealand. The nursing service faces a burgeoning aging population within the region—the projected increase in the elderly by 2030 is that one in six individuals will be aged over 70. Furthermore, increasing numbers of complex Venous Leg Ulcers (VLUs) are impacting on the nurses' wound care workloads, resources, service costs and patients' Quality of Life. Previous venous leg ulcer (VLU) audits identified an average healing time of 33 weeks and re-current VLUs on average 1.7 times longer to heal (45wks).

The Clinical Audit Research Project (2017 - 2018)

Objective

To present a picture of all newly referred VLU to establish whether early intervention in the first six weeks showed a decrease in time to heal, a reduction in chronicity, and to identify healing rates for new VLUs over recurring VLUs within the new model framework.

Our Response

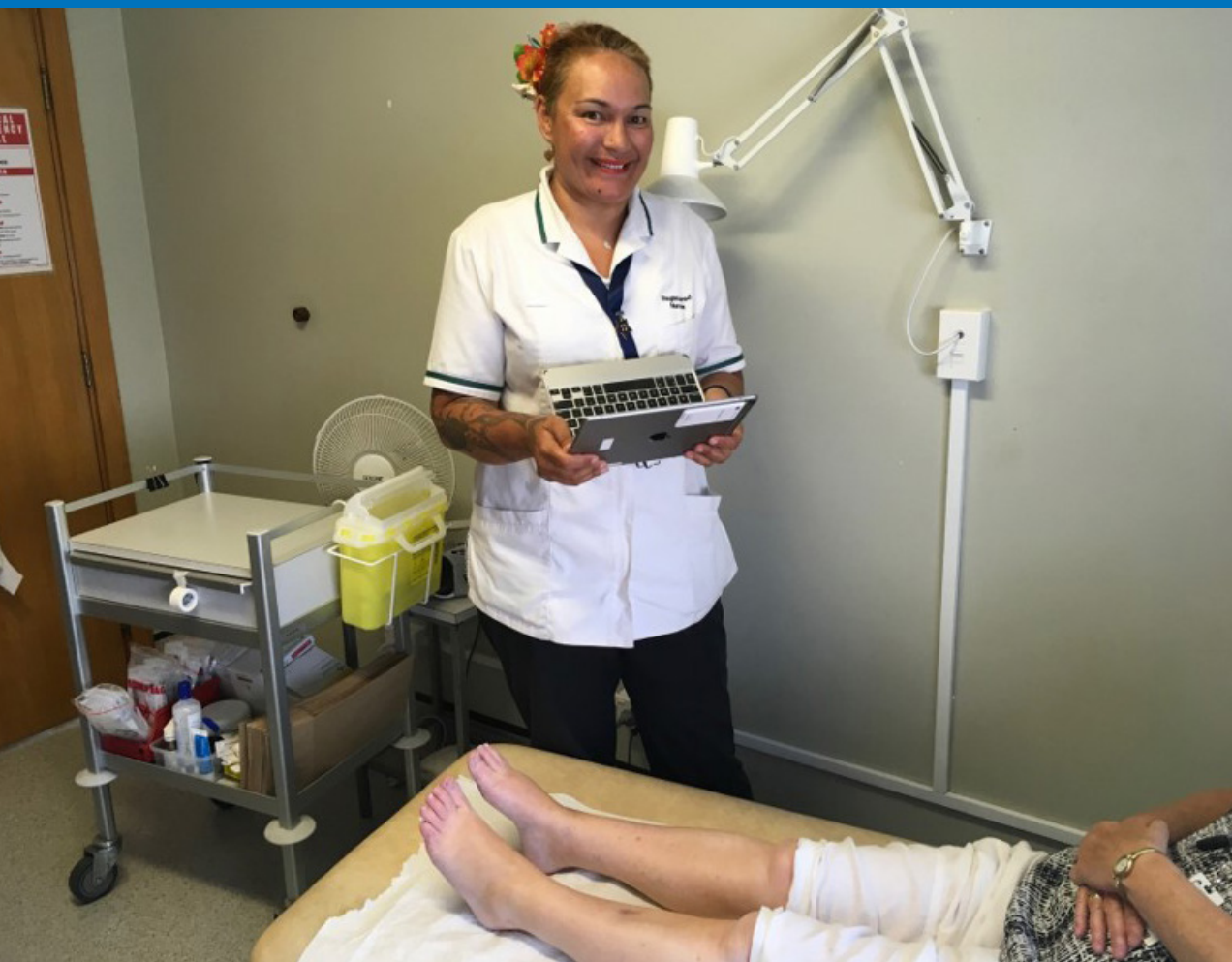
We acknowledged there needed to be a service response to preventing long term VLU in the community setting; a new specialized early assessment and Intervention model of wound care was developed, so we implemented a team of expert nurses working in advanced wound care practice with an aim to reduce chronicity of VLU and support clinical wound practice for 60 district nurses across the community service. Intense Doppler nurses Training program of 20 (1/3) Wellington district nurses.

Study Design

- A Retrospective observational study using an existing database was submitted as a District Health Board Audit. The study involved using current best practice guidelines.
- Lower limb ulceration was identified by coding as determined by the visiting nurse in the home or in the clinics (excluded cancers and arterial etiology).

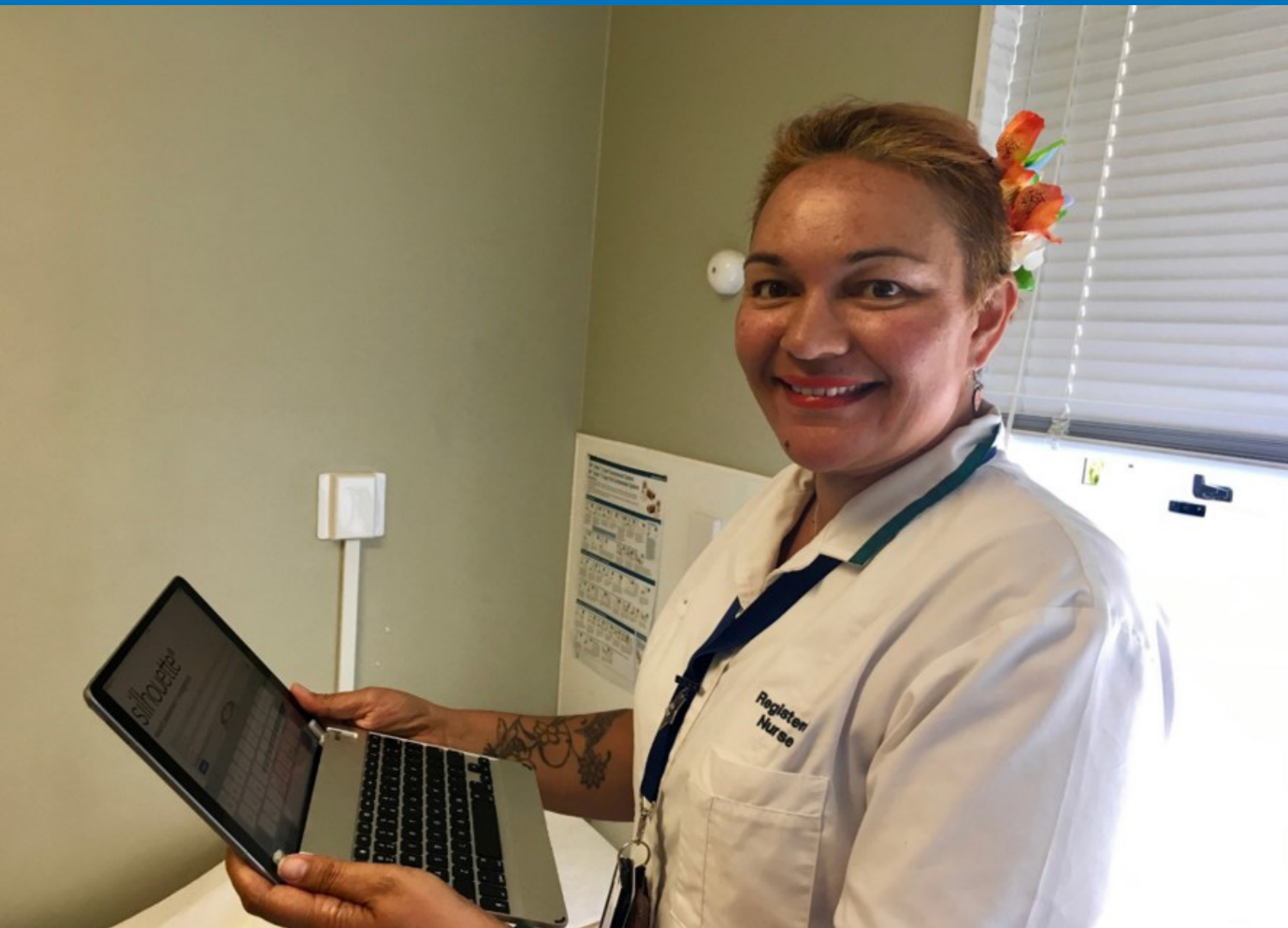
The Measures We Audited

- **Compression bandaging.** Compression bandages were applied upon Doppler ABPI result. Compression was determined both by compression bandaging, and the use of compression hosiery and compression wap garments.
- **Wound size and appearance.** Silhouette® - a wound imaging, measurement and patient record system was used for all wound measurements on initial visit, 4 weeks, 6 weeks, and upon clinical judgement following. The image below shows the SilhouetteLite+ sensor, which enables accurate measurements, attached to devices.



The Measures We Audited cont.

- **CEAP venous classification tool.** This tool was used for early identification of patients at risk for slow healing.
- **Doppler/lower limb assessment.** We measured the time taken for patients to receive Doppler and Lower Limb assessment from entry into service (set at 4-6 weeks or earlier if previous ulceration).



- **A new leg ulcer clinic.** We established a separate clinic in a low socio-economic area for patients with high health needs to enable easy access to expert wound care. Patients eligible for Radio frequency Ablation (RFA) were referred to the Vascular service for treatment.



Statistical Analysis

- The relationship between time to receive Doppler assessment and time to heal was investigated using the non-para-metric Spearmans' Rho statistical test. The results showed a medium positive correlation between the two, ($r=0.190$, $N=111$, $p=0.046$).
- Continuous variables analysis was measured by means of variance (ANOVA) and independent students test. SPSS statistical software package version 25 provided statistical analysis.
- A one-way between group analysis of variance conducted to explore difference in age and ethnicity There was significant difference at the $p<0.05$ level in age difference between NZ European and NZ Māori and Pasifika. NZ European average age 76yrs, Asian 65 yrs, NZ Māori 64 yrs and Pasifika 49yrs.

Characteristics of the Patient Population

FACTOR	Number (%)	Mean Age (SD)
Total = 247		72.02 (17.1)
GENDER		
- Male	118 (47.2%)	67.5 (4.5)
- Female	129 (52%)	73.9 (15.9)
ETHNICITY		
- NZ European / European	191 (77.3%)	76.15 (14.3)
- NZ Māori	26 (10.5%)	64.35
- Pasifika	20 (8.1%)	49.15
- Asian	10 (4.0%)	65.70

Results

- **Average time to heal VLUs from date of referral received was 9.70 weeks SD 7.12.**
- 219/247 (82%) VLU patients healed at 24 weeks.
- NZ Māori and Pasifika are presenting with a VLU at a much younger age compared with NZ European ($P<0.05$). In order to address the inequality in health shown, our service needs further work on addressing the implications of having leg wounds at a younger age for Māori and Pasifika.
- Time for Doppler completed was an average of 3.94 weeks from date of referral. Earlier than recommended by the Australian and NZ Venous Leg Ulcer Guidelines for prevention of Leg Ulcers.
- 49% patients received compression therapy within first 6 weeks admission to community service.
- VLU recurrence rates 51.8% have similar heal time to those new to the service compared to former audit where re-current VLUs on average took 1.7 times longer to heal.

Conclusions

- **Investing resources into an innovative wound specialist team enabled evidenced based wound practice with improved VLU healing outcomes and cost-effective practice.**
- **District Nurses advanced their Doppler and compression bandaging skills in clinical practice resulting in excellent healing outcomes.**
- **Introducing a robust evidenced based wound measurement system enabled monitoring - time to heal VLU; non healing alert via graph; patient PDF capability to compliment patient referrals to Specialists (vascular, dermatology, infectious diseases, or plastics); and Nurses VLU assessment skills increased.**
- **Māori and Pasifika are presenting with VLU at a younger age which will have long term effects in terms of recurrence of VLU and needs addressed.**
- **Early intervention of nursing assessment in the first 6 weeks improves overall healing outcomes and reduces chronicity.**

The Aims of the New Model of Wound Care

- **To reduce VLU chronicity through educating both nurses and patients.**
- **All VLU patients referred for doppler if previous ulceration or < 25% cm² wound reduction in wound size at 4 weeks and compression therapy commenced as per Doppler ABPI result.**
- **All VLU referred to specialist wound team for review if healing less than 25% at 4 weeks.**
- **Increase healing rates for current and recurrent VLUs through patient education and provision of 1st pair of compression stockings once healed.**
- **Examine and gain understanding on VLU data results for Māori and Pasifika population situated in lower socio-economic areas of high health needs.**