Barriers and enablers of concordance with long term compression therapy; a scoping literature review

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Declaration of Financial Interests or Relationships

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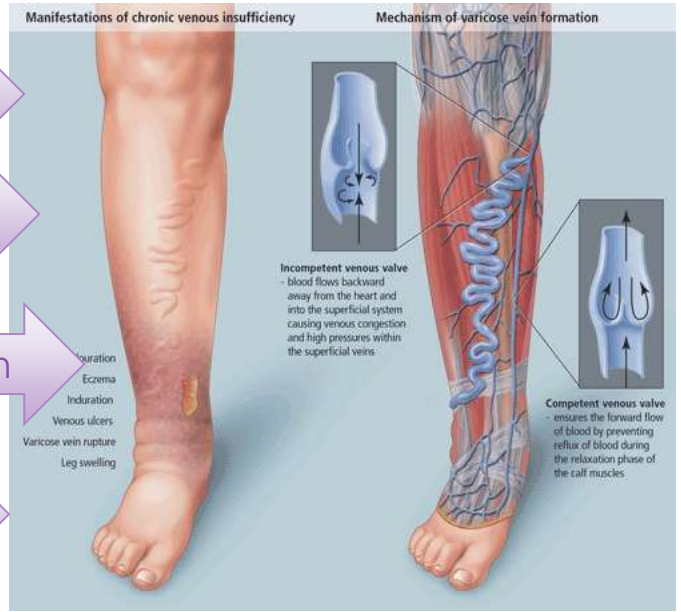
I have no financial interest or relationship(s) to disclose

Background
Chronic Venous Insufficiency

CVI is categorised by an insufficient return of blood to the heart. This can be in relation to an obstruction, valvular dysfunction or fluid retention, usually in relation to renal impairment or congestive cardiac failure.

This leads to elevation in the blood pressure within the veins, called venous hypertension causing an inflammatory response, and vicious cycle.

- Hypertension
- Oedema
- Fluid Retention
- Decreased ROM
- Inflammation
- Pain
- Skin Discolouration
- VLU



Significance

CVI 1-2% of population

Up to 40% Female

Up to 20% Male

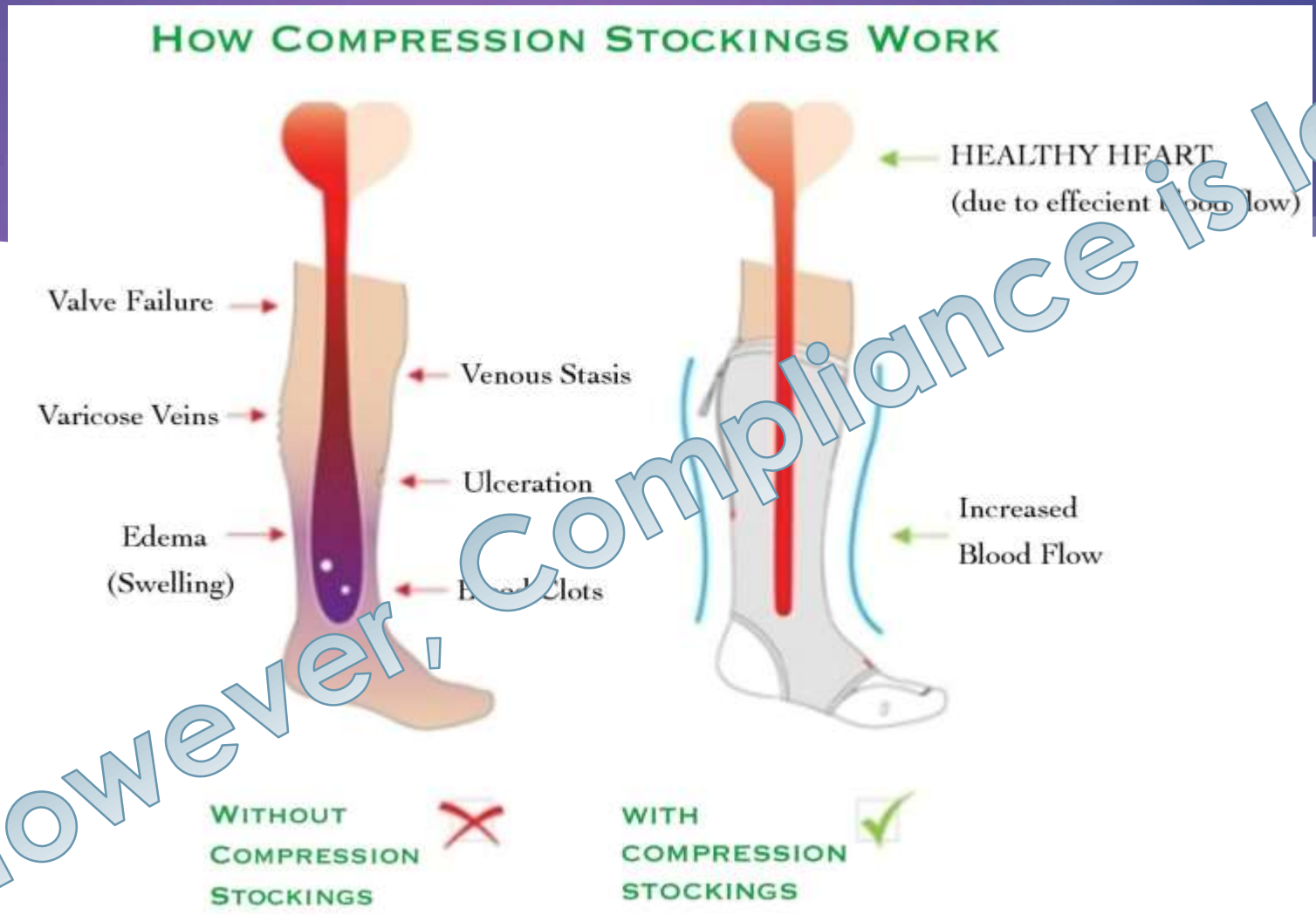
VLU 90% of wound

+4 episodes in a lifetime (69% reoccur)

(in 2013)

$400-$500 million on VLU Treatment in Australia alone

What motivates you?



However, Compliance is low

Theoretical Framework

Health Belief Model

Maslow's Hierarchy of Needs

Forced Compliance Theory

Research Question

What are the **enablers and hinders** of patient **concordance** in people that wear **compression therapy** to heal or prevent venous leg ulcers.

[Image] Global Compression Therapy Market Value. Retrieved: https://www.findmarketresearch.org/2018/06/compression-therapy-market-will-likely-expand-at-a-steady-5-4-cagr-du

Method:
Search Strategies & Databases

Databases: CINAHL; Medline; EMBASE; Scopus; PubMed; Cochrane; JBI

Search Words:

Related to compliance: compliance, OR concordance, OR adherence, OR willingness, OR non-willingness

AND

Related to barriers: "challeng* ",OR "heal*",OR "non heal*", OR "factor* that affect", OR "factor*", OR "variables", OR "predictors", OR "behaviour*", OR "barrier*", OR "facilitator*"

AND

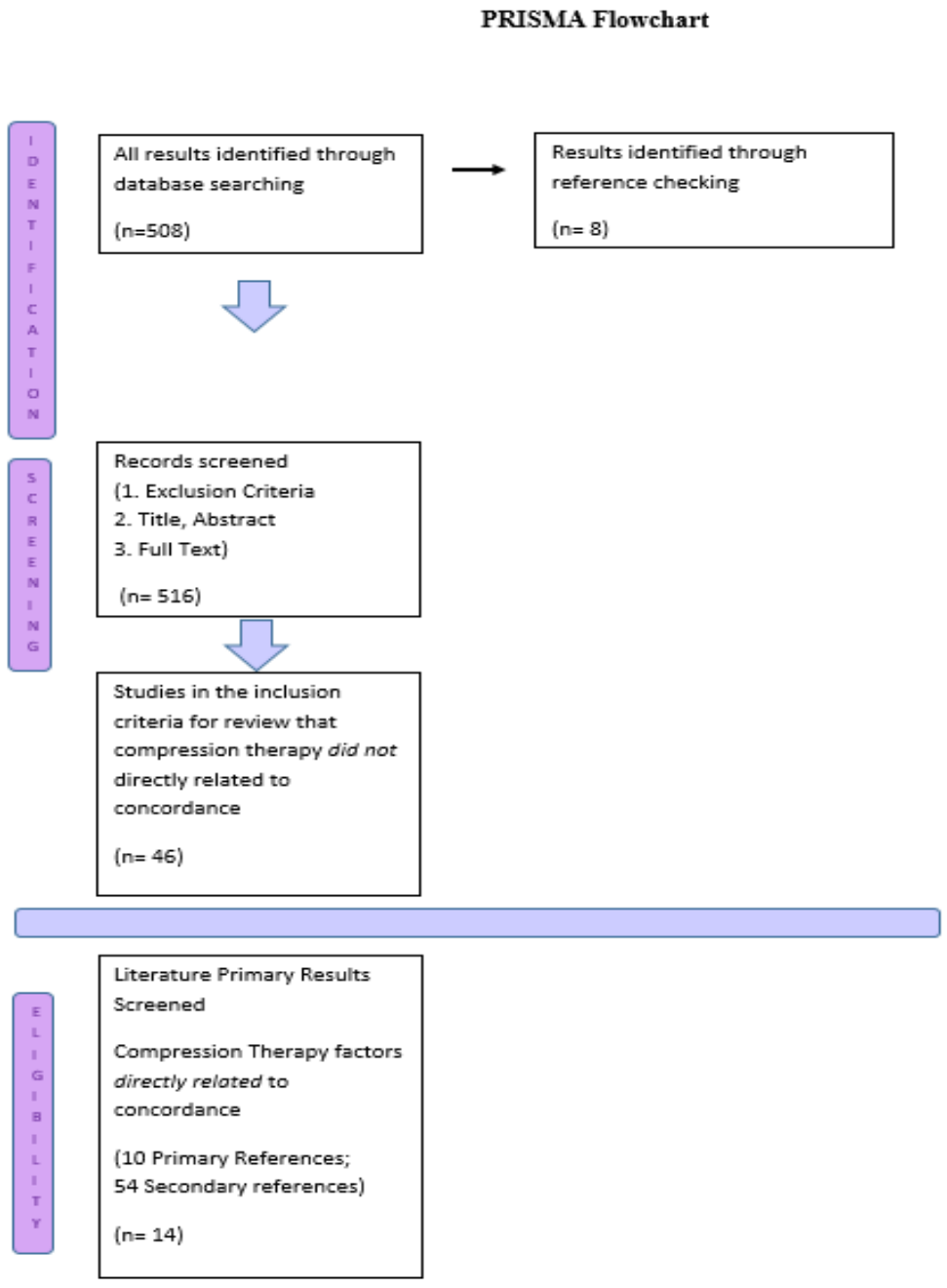
Related to Compression: “compression garment*”,OR “compression hosiery”, OR “compression therap*”, OR “compression stocking*”,OR “compression bandag*”, OR “tubular bandag*, OR “tubular stocking*”,OR “four layer bandag*”, OR “class 2 compression”,OR “class 3 compression”, OR “intermittent pneumatic device*”,OR “elastic stocking*”, OR “elastic bandag*”

Inclusion and Exclusion Criteria

Screening: Inclusion / Exclusion Criteria

Area	Include	Exclude	COMMENTS
Study design	• Peer-reviewed journal articles (qualitative, quantitative +mixed methods) • Primary data studies	• Protocols, conference papers, editorials, theses, magazine articles, letters • Secondary data analysis studies • Guidelines • Opinion Pieces	
Language	• English	• Any other language	
Population	• Patients with mixed or venous lower leg ulcers (VLU)	• Acute Wounds • Already healed patients • Lymphedema Patients • Diuretic related studies • Arterial Wounds • Diabetic Ulcer • Anticoagulant/thrombin related studies	Lower leg undefined in most studies so will accept VLU/ Mixed, not arterial Preferably not studies looking at healed wounds, want to capture wounds just healed, not looking at maintenance therapy looking at the first 12
			months post healing not after
Field	• Health • Compression therapy • Venous Leg Ulcers • Lower Leg Ulcer	• Non-health-related	
Topic	• Studies that address the research topic and research questions.	• Studies assessing lymphedema • Studies assessing CCF • reoccurring wounds • effectiveness of compression	

PRISMA Flowchart



				Characteristics		
nnells, O'Neill, & lowers (2008)	AUS	To describe and explore the reasons for non-use of CT in district nurses.	Qualitative study	N= 22 *M* Age: 42 years *M*: 5 years' nursing experience	Compression compliance was increased if; clinician had expertise in CT; the patient was motivated; the wound was healing Compression with compliance was decreased if (from the nurses' perspective of the patient); there was a past negative experiences with CT; nil belief in CT efficacy; pain/discomfort; skin problems; cost incurred; dementia comorbidity; mobility and safety problems; loss of independence; hygiene and soiled bandages with CT.	Adherence to CT increased with clinician's CT expertise, a motivated patient, and wound healing. Adherence to CT decreased with patient's past negative experience with CT, disbelief in CT efficacy, pain/discomfort, skin problems, cost incurred, dementia, mobility and safety problems, loss of independence, and hygiene issues.
rooks et al. (2004)	UK	Test effect of a nurse-led education programme on CT concordance and VLU recurrence	Quasi experimental	N= 49 patients from district nursing (n=19 control, usual care; n=21 intervention, education program) *M* Age: 80 years old/ F:75%	The control group wore the compression for a mean of 21/24 hours, and the experimental group wore CT for 16.7/24 hours; a difference that was not statistically significant.	CT adherence did not increase with nurse -led education.
haby et al. (2013)	France	To identify the clinical characteristics associated with complete healing.	Cohort Study	N= 94 from dermatological departments *M* Age: 74 years/ F:71%	Week 4 follow up (healed 87% adherence vs non-healed 76%) Week 24 follow up (healed 88% adherence vs non-healed 59%)	CT adherence was higher for patients with heale ulcers compared to those with non-healed ulcer.
ereure, Vin, azareth & Bohbot 005)	France	To evaluate the concordance rates in ambulatory patients.	Prospective observational study	N= 1397 from a general practice.	Approximate wound severity score, CT never=22.4, CT <5days a week=23, CT 5 days a week=22.9; CT 6 days a week=21.9; CT daily=21.4. Approximate peri wound severity score, CT never=18, CT <5days a week=18.1, CT 5 days a week=17; CT 6 days a week=16; CT daily=15.8. Statistically significant correlation (Spearmen's rho result not reported) between CT concordance and greater severity of ulcer and peri-wound severity score.	Association between lower CT adherence and greater severity of (1) the ulcer and (2) the peri-ulcer.
nlayson, Edwards Courtney (2010)	AUS	To determine the relationship between self-efficacy, depression,	Cross sectional	N= 122 VLU patients from 2 metro outpatient hospitals	Significant associations between CT adherence and socioeconomic index (SEIFA index) (Spearman's p=0.21, p=0.021), SF-12 Physical Component Score (Spearman's p=0.28, p=0.002), SF-12 Mental Component Score (Spearman's	Higher socioeconomic status, physical and mental functioning, self-efficacy, knowledge of aetiology, being a primary carer, and attending

		support and adherence on CT.			Significant association between lower CT adherence and higher GDS score (depression) (Spearman's p=-0.22, p=0.021). High CT concordance among those with knowledge of the cause of the condition (Mann-Whitney U= 827, p=0.001), primary carers (Mann-Whitney U= 417, p=0.041) and participants attending 3 or 6 month preventative care visits versus none (F= 3.53, p=0.01). No CT adherence differences found for type of health professional clinic providing active or preventative ulcer care. Reasons given for CT non-concordance included; difficulty in applying/ removing CT, for reasons such as, weakness/arthritis in hands, hernias, joint mobility problems (31%); nil belief in CT efficacy (32%); aesthetics of CT (11%); ability to wear normal shoes, time spent applying CT, inconvenience on hygiene (nil percentage reported).	CT concordance was associated with lower depression scores. Self-reported barriers to adherence to CT were; application/ removal difficulties including dexterity issues, nil belief in CT efficacy, aesthetics, and time spent in applying CT, inconvenience to hygiene, and ability to wear normal shoes.
Finlayson et al. (2014)	AUS	To understand the long term self-care activities to prevent recurrence.	Cohort Study	N=80 Outpatient Wound Clinic patients *M* Age: 75 years / F: 58%	Significant association between lower CT adherence and higher GDS score (depression) (F= 6.83, p<0.001), diagnosis of osteoarthritis (F= 3.58, p= 0.026), <2 follow up preventative ulcer care visits (F= 2.83, p=0.043), history of >1 previous leg ulcer (F= 2.92, p=0.04). Nil significant association between CT adherence and social support and self-efficacy. Statistically significant decrease in adherence with time from point of healing (5.1 days/week) to 12 months post healing (3.4 days/week) (F=9.08, p<0.001).	Lower CT adherence found with higher depression scores, diagnosis of osteoarthritis, <2 follow up preventative ulcer care visits, a history of >1 previous leg ulcer, and over 12 months post healing. Nil association between CT adherence and social support and self-efficacy.
Harper et. al. (1996)	UK	To compare the effectiveness of class 2 and class 3 CT.	RCT	N= 300	The non-concordance patients were 25% increased risk of ulcer reoccurrence. The relative risk of reoccurring without compression therapy was 2.58, 95% confidence interval 1.33 to 5.01	Patient-reported compliance rates were reported there was significantly higher compliance with medium-compression than with high-compression hosiery. Therefore, the type of compression hosiery was a factor in patient concordance. However both Harper and Franks report that not wearing compression hosiery was associated with high recurrence rates and this is indirect evidence that compression prevents ulcer incidence.
Kapp, Miller & Donohue (2014)	AUS	To evaluate the use of a device to apply/remove CT	Cross-sectional (within RCT)	N=100 patients receiving domiciliary nursing. *M* Age: 78.7 years/ F: 71.7%	Type of device did not influence adherence to CT nor did the type of user of the device (patient, informal carer, formal carer).	CT concordance did not differ from the type of device used or the user applying the device.

Kapp, Miller & Donohue (2013)	AUS	To investigate effect on level of compression on reoccurrence rate	RCT	N= 93 *M* Age: 78.7 years/ F= 71.3%	Adherence was significantly higher in people that wore moderate compression treatment (23-32mmHg) (65.8% of recommended wear time) compared to high compression treatment (34-36mmHg) (43.7% recommended wear time) (t (91) = 2.940, P= .004).	CT adherence was higher using moderate compression compared to high compression.
Mayberry, Moneta, Taylor & Porter (1991)	USA	The effects of comorbidities on CT, in a 15 year study on ambulatory patients.	Cohort Study	N= 113 vein and vascular clinics	Adherence to CT decreased over time (baseline= 102/113 compared to 30 months= 58/113).	CT adherence was negatively associated with time.
Morgan & Moffatt (2008)	UK	To examine the factors associated with patient's labelled as non-healing and non-concordance.	Qualitative study	N= 4 focus groups with community nurses (between 3-7 people per group)	Concepts identified from the findings related to CT adherence included patient's efficacy with treatment, and patient's motivation to concord with CT. CT adherence decreased with increased reliance on nursing service, peripheral issues, obesity, or non-participation in health promotion programs.	Adherence to CT was decreased when patient reliant on nursing service, if patient had peripheral issues, was obese, or did not participate in prevention programs. Adherence to CT was increased in motivated patients and with patient self-efficacy.
Mudge, Holloway, Simmonds & Price (2006)	UK	To identify the issues around adherence in people living with VLU	Focus Groups	N= 6 *M* Age: 80 years/ F:75%	Four main themes; frustration with the healthcare system; feeling of complacency with healthcare teams; functional limitation. *"I kept my bandages on for the week, and never slept for the whole week, it was terrible."*	Factors influencing adherence to CT negatively impacts sleep hygiene.
Van de Glinds, Heinen, Evers, & Achterberg (2015)	Netherlands	To evaluate the effect of nurse-led lifestyle counselling on health behaviour change.	Pre-post study	N= 71 *M* Age: 66 years/ F: 57% VLU Aetiology: 32%	20/ 40 non-adherent patients set a specific goal targeted at adherence with CT. 15/20 achieved behaviour change. Goals with respect to adherence with compression therapy were categorised in: starting to wear the stockings; wearing them for a longer period of time, ordering stockings in the right size and/or degree of compression; using an aid or getting personal help with putting on the stockings; and dealing with eczema or skin problems related to compression therapy.	Adherence to CT increased following goal setting associated with adherence to CT.
Van Hecke, Grypdonck, Belle, Vanderwee & Defloor (2011)	Belgium	To examine the changes associated with adherence to CT post educational nursing interventions	Mixed method, pre and post study	N= 26 patients from community nursing *M* Age: 79 years/ F:15/26	Self-reporting diary was kept by the patient Week 1: 13.8/24 hours CT worn Week 2: 13.7/24 hours CT worn Week 3: 13.3/24 hours CT worn No statistical significants recorded	CT adherence did not differ over 3 weeks following nurse-led education.

Key: ***Bold:*** *Secondary Resources*

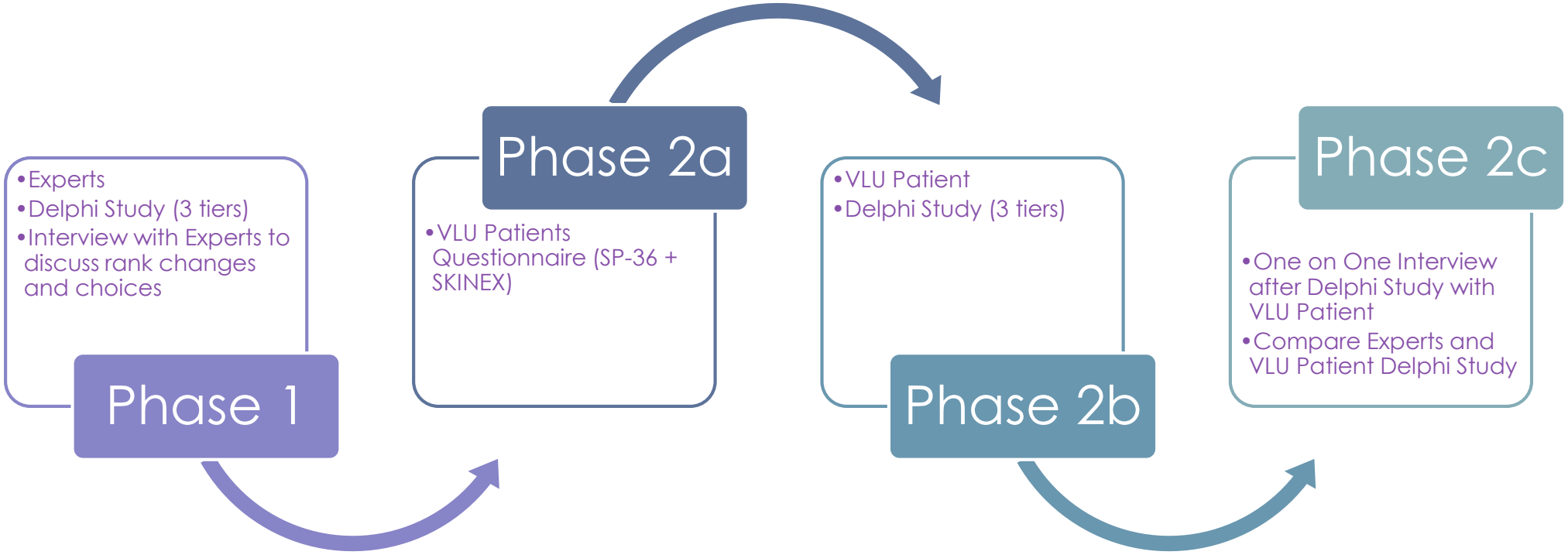
Results directly impacting concordance with CT

Author	Factor Influencing Concordance
Finlayson et al. (2012) Kapp, Miller & Donohue (2013) Mayberry et al. (1991)	**Time since ulceration**
Finlayson et al. (2012) Finlayson, Edwards & Courtney (2010)	**High Geriatric Depression Score**
Finlayson et al. (2014)	**Having <2 follow up appointments in 1 year**
Kapp, Miller & Donohue (2013) Harper et al. (1995)	**The type of compression therapy**
Kapp, Miller & Donohue (2014)	**The type of device used to don compression therapy**
Chaby et al. (2013)	**If the patient had an active or healed ulcer**
Dereure et al. (2005)	**The severity of the ulcer**
Dereure et al. (2005)	**The peri-ulcer severity (surrounding skin severity)**
Glinds, Heinen, Evers, & Achterberg (2015)	**The patient's age**
Morgan & Moffatt (2008)	**The patient belief in their ability to heal**
Morgan & Moffatt (2008)	**The patient belief in the compression therapy efficacy**

Other Trends

Other Discussed Trends
-The ability to reach ones toes - Cost - Pain and discomfort - Skin problems (too hot, skin irritations) - Co morbidities (dementia) - Mobility and safety problems - Loss of independence - Clinician expertise (the ability to identify aetiology of the wound, application and education of compression therapy, the education of the clinician in venous leg ulcers) - Aesthetic of the patient (the patient's body image, perception of others)

Research Design



Research Plan

- Identify a definitive list of factors (Lit Review)

- Delphi Study (Experts vs VLU Patients)

- Post-doctoral interventional study of correlating factors
- Decrease the burden of disease and reoccurrence of VLU

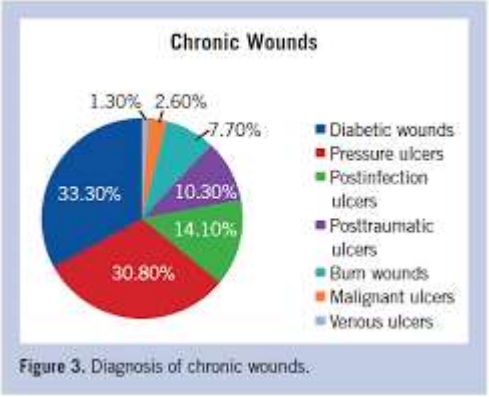
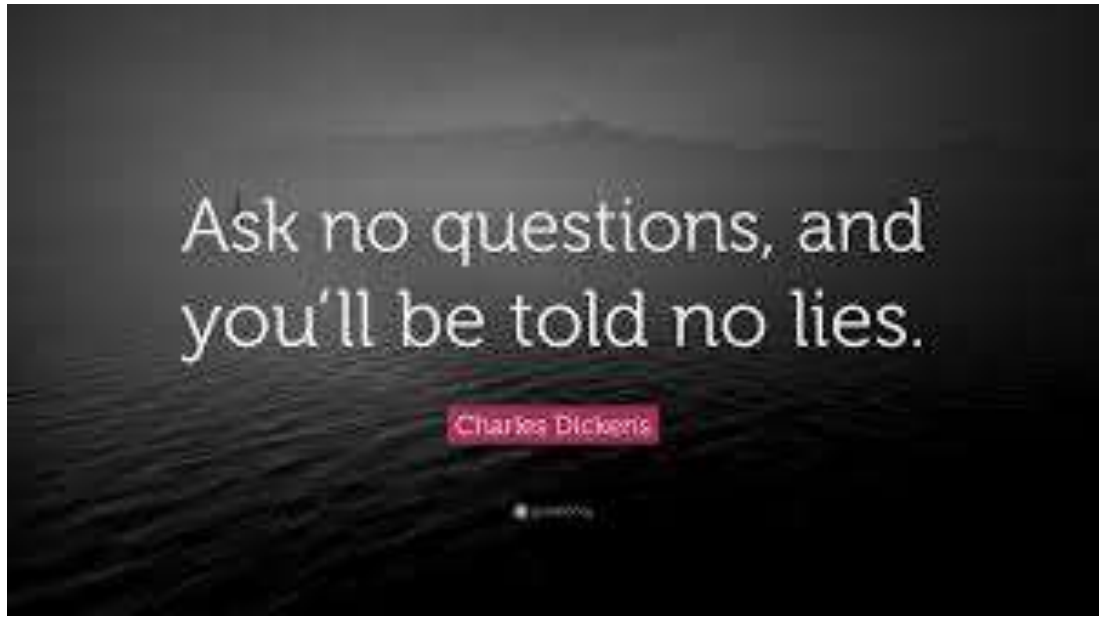


Figure 3. Diagnosis of chronic wounds.

Questions



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