3D: a new educational framework to improve care for patients with leg ulcers

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This article is based on a symposium held online at the Wounds UK annual conference on 9th November 2020, sponsored by Urgo Medical. The symposium introduced the 3D framework, a new educational framework to improve clinical outcomes and quality of care for patients living with leg ulcers (Bianchi et al, 2020). Caroline Dowsett and Joanne Nichols introduced the principles of the framework and provided guidance for translating evidence-based theory into practice.

THE EVOLUTION OF LEG ULCER CARE

To set the scene, Dr Caroline Dowsett highlighted how leg ulcer care has evolved and where we are now. Her background is in vascular and district nursing, so she has a wealth of experience in caring for this cohort of patients. Over the years, evidence-based practice and guidelines have developed exponentially. Historically, patients with venous leg ulcers (VLUs) would be admitted to hospital and put on bed rest for 12 weeks, because compression therapy was not available on prescription. Over time, a vast array of evidence-based compression therapy products have been developed to treat patients with VLUs. Despite the wide availability of these products, there is still unwarranted variation in care delivery.

VLUs affect approximately 1% of people in western countries; this rises to 3% in older patients, which is relevant as we have an ageing population (Posnett et al, 2009). Care can be suboptimal and there is not always adherence to the evidence-based guidelines, or accurate diagnosis made (WUWHS, 2020). The Burden of Wounds study (Guest et al, 2015) estimated there were 730,000 leg ulcers in the UK, equating to 1.5% of the adult population having a leg ulcer during the study year; whereas the number of diagnosed VLUs was estimated at 278,000.

THE IMPACT OF VLUs

The physical, psychological and social implications of VLUs can be 'devastating' for patients and their families. If not managed, VLUs can have a significant impact on quality of life, including continuous pain, depression and lack of sleep. Patient-centred care, which focuses on the individual and their needs, is key.

Non-healing VLUs also increase health care professionals' (HCPs) workload and incur high costs of care, resulting in a substantial financial burden for healthcare providers. A new approach is needed in order to implement evidence-based practice and, crucially, improve outcomes. Guest et al (2017) demonstrated the extent of suboptimal care and lack of accurate diagnosis: only 22% of patients with a leg ulcer had an ankle-brachial pressure index (ABPI) documented, with 30% of wounds lacking a differential diagnosis; only 46% of patients were treated with appropriate compression therapy; and a lack of continuity of care was found to result in poor patient concordance. According to the VENUS IV study (Ashby et al, 2014), up to 80% of clinicians acknowledged that treatment for patients with leg ulcers could be improved.

3 ESSENTIAL DIMENSIONS OF CARE

The 3D framework has been developed to incorporate three essential underpinning principles:

- Patient-centred Diagnosis
- Evidence-based treatment Decisions
- Inclusive Dialogue.

PATIENT-CENTRED DIAGNOSIS

Leg ulcer assessment should be comprehensive and person-centred. It is important to remember when carrying out a patient-centred diagnosis that appropriately identifying the underlying cause is essential to successful treatment. The first principle of the 3D framework encourages clinicians to consider three key factors when carrying out a leg ulcer assessment:

1. General assessment of the patient
2. Specific lower limb assessment
3. Wound assessment.

A general patient assessment should include

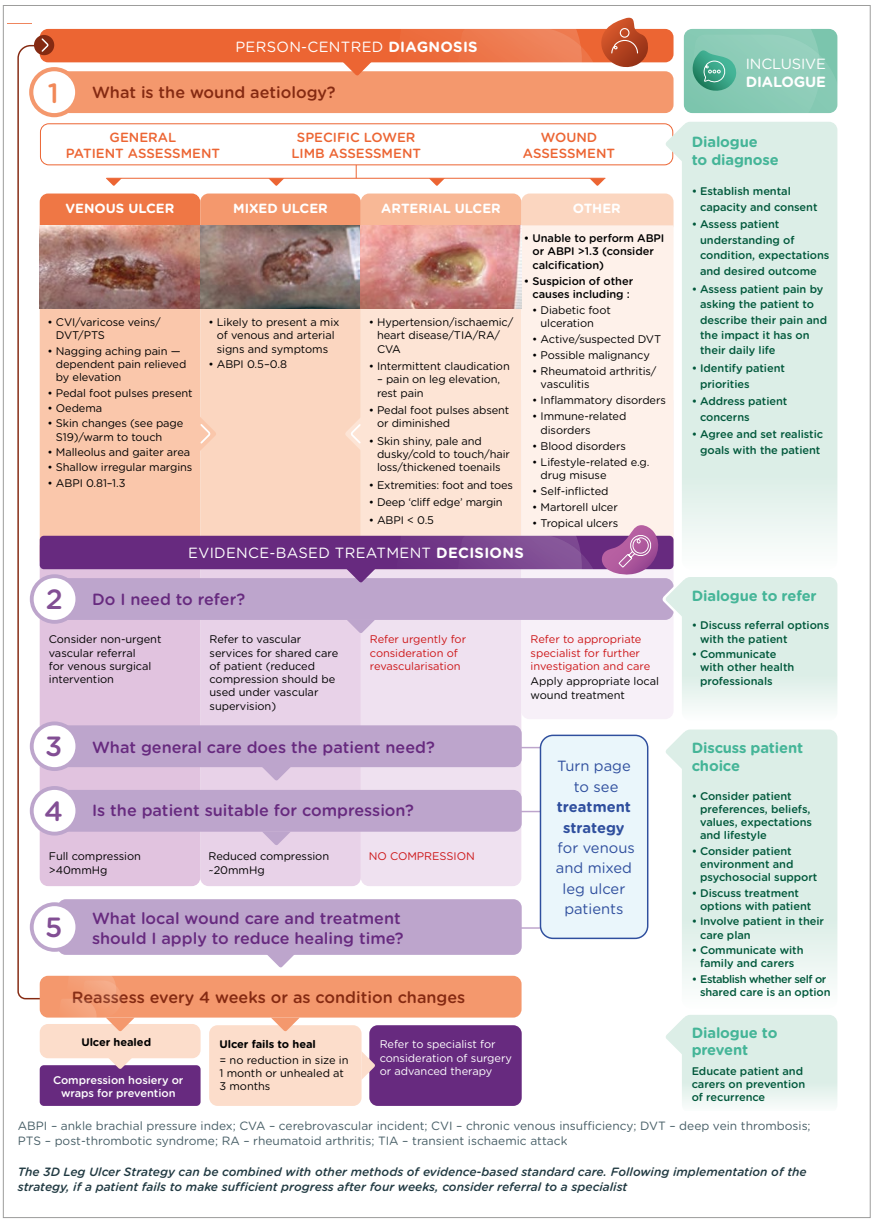

Figure 1. The 3D Leg Ulcer Strategy

past medical history, underlying comorbidities, medication, mobility/dexterity, nutrition and hydration, pain levels (general and wound-specific), the psychological and social impact of the ulcer and the environment of care. The assessment must consider the patient's perspective, as this can be an opportunity to:

- Assess the patient's condition and understanding of treatment
- Consider the patient and family's ability and willingness to be involved in care
- Explore the prospect of self or shared care — particularly during the COVID-19 pandemic where self and shared care models are being encouraged in managing patients with lower limb wounds.

Specific lower limb assessment should involve a measurement of the ABPI and ankle circumference, as this will give the clinician the necessary information to decide on the appropriate therapeutic level of compression required to reverse venous hypertension and heal the ulcer without causing the patient any adverse effects.

Clinicians should examine the leg shape, as some patients may not have a 'standard' leg shape. For example, muscle wastage of the calf may make the limb very thin, or a steep gradient between a narrow ankle and prominent calf muscle may resemble an inverted champagne bottle. In these cases, it may be necessary to reshape the limb using padding or wool bandaging, so that graduated compression can be applied successfully. The presence of oedema will also dictate the type of compression — compression bandages may need to be used to reduce oedema before an alternative product can be used (for example, compression hosiery).

Assessment of the wound should include wound history, location and duration, size, depth and dimensions, wound tissue type, signs of infection, exudate level and type, condition of the wound edges and periwound skin. It is important to assess and document the wound and to set treatment goals accordingly, in order to monitor ongoing progress.

The 3D framework features a '3D Leg Ulcer Strategy' *(Figure 1)* which helps clinicians to establish the wound aetiology for patients presenting with a wound on the lower limb, in order to commence an appropriate evidence-based care pathway. Following a full holistic assessment, clinicians should be able to make a differential diagnosis, including whether the ulcer is of venous, arterial or mixed origin. The strategy highlights that, for more uncommon causes of ulceration, such as pyoderma or suspected malignancy, patients should be referred to a relevant specialist.

EVIDENCE-BASED TREATMENT DECISIONS

Once the clinician has identified the cause of the ulceration, it is important to make evidence-based treatment decisions, which should consider the available relevant clinical evidence, the health

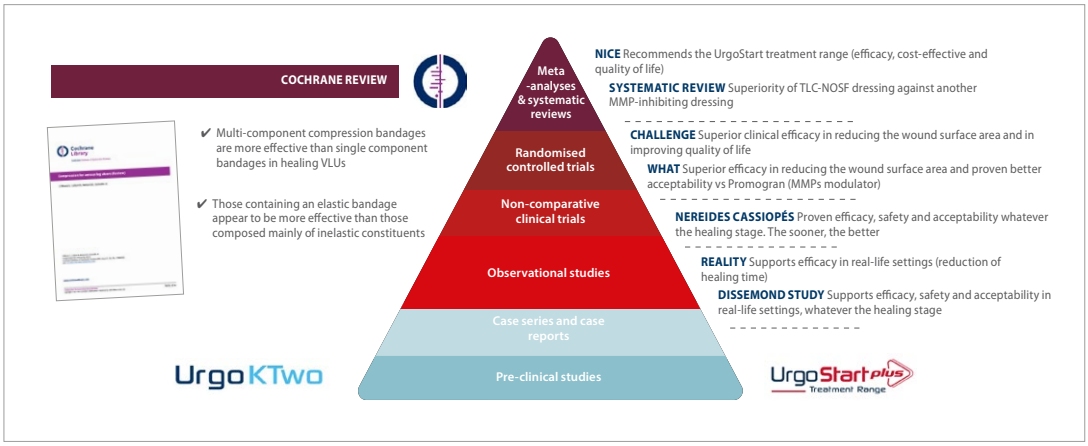

Figure 2. Pyramid of evidence

professional's experience and clinical judgement, and the patient's individual needs.

In appraising clinical evidence to support decision-making, clinicians may want to consider using the hierarchy of evidence pyramid. The evidence pyramid is a useful visual representation of the internal validity of different study designs; designs of low internal validity are at the base of the pyramid and designs of high internal validity are at the top (WUWHS, 2020) — see *Figure 2*. The evidence pyramid provides a simple overview of study designs that may have high internal validity (e.g. randomised control trials [RCTs], meta-analyses and systematic reviews) and, as such, may impact or change clinical practice where a clear relationship is found between a treatment and clinical outcome (WUWHS, 2020), helping to reduce variations in care, and consequently improving the treatment of patients.

A wide array of evidence has demonstrated that compression therapy is the 'gold standard' of treatment for VLUs (WUWHS, 2008; O'Meara et al, 2012; Harding et al, 2015). As such, the 3D framework provides guidance on selecting the most appropriate form of compression. With more sophisticated types of bandages, wraps and hosiery now available, selecting the most appropriate compression therapy system will depend on the presentation of the leg, wound and individual patient. Factors that may influence this choice include:

- Leg shape (normal/distorted)
- Presence of oedema
- Deep skin folds
- Fragile surrounding skin
- Size of ulcer
- Exudate levels
- Mobility
- Fixed ankle joint
- Ability and willingness to self-care
- Availability of a suitable carer (Bianchi et al, 2020).

A Cochrane systematic review of all RCTs evaluating the effects of compression bandaging and stockings on VLU healing highlighted that multi-component bandages are more effective than single-component bandages (O'Meara et al, 2012). Additionally, elastic bandaging appears to be more effective than bandages composed of inelastic elements (O'Meara et al, 2012).

When selecting an appropriate bandaging system, it is vital to consider patient safety and comfort, effectiveness, ease of application and efficiency. UrgoKTwo, for example, is a dual compression system that combines the benefits of elastic and inelastic bandaging to ensure continuous, consistent, and comfortable pressure (Young et al, 2013). In an assessment of patient acceptability, 95% of patients found UrgoKTwo comfortable during the day, and 92% of patients found UrgoKTwo comfortable at night — helping patients to sleep better, thus improving concordance with treatment (Benigni et al, 2007).

LOCAL WOUND TREATMENT

In addition to selecting the most appropriate compression therapy system, localised wound treatment should also be carefully considered. Local wound care objectives should be based on the characteristics of the wound and peri-wound skin. Considerations should include: cleansing

Figure 3. 3D reference document

and debridement, moisture balance, treatment of infection, and appropriate dressing selection.

A dressing should be selected that meets local wound treatment objectives and conforms to the anatomical location. There is evidence that some modern dressings and procedures that inhibit matrix metalloproteinases (MMPs) may be effective in improving healing rates (Franks et al, 2016); a study by Dissemond et al (2020) demonstrated that MMP-inhibiting wound dressings improve healing time and healing rates in a variety of wound types. Dressings containing TLC-NOSF (UrgoStart treatment range) have robust clinical evidence to support their use in practice. Based on clinical and economic evidence from pooled data analysis, clinical studies, RCTs and double-blind RCTs, this supporting evidence would be considered to be of a high level on the pyramid (Wounds UK, 2019; see *Figure 2*). Ultimately, dressing selection should be based on the highest level of evidence.

Because of this high level of evidence, NICE recommend adopting UrgoStart dressings to treat diabetic foot ulcers and venous leg ulcers in the NHS, because they are associated with increased wound healing compared with non-interactive dressings (NICE, 2019).

INCLUSIVE DIALOGUE

It is key, throughout each step of the assessment process and during treatment, to maintain an inclusive dialogue with the patient, their family and the wider healthcare team, ensuring that the patient's needs are fully considered. Clinicians have a vital role to play in empowering patients to make autonomous, informed decisions regarding their leg ulcer care. Care should be collaborative, giving patients the confidence to discuss the best course of action for them as individuals and agreeing realistic goals together.

Establishing effective communication and teamwork between all clinicians involved in a patient's care can help to improve continuity and consistency, and thereby optimise patient outcomes (Bianchi et al, 2020). Effective dialogue reduces the risk of patient harm, improves the patient's care experience, enhances concordance with their treatment/care plan, and leads to better patient outcomes.

Leg ulcer management can be complex and requires a multidisciplinary approach. Many complaints made by patients and their families are often due to poor communication between health professionals and the patient. However, clinicians should be encouraged to reflect on their own communication skills and those of team members, and work towards improving dialogue to support their patients and their families better. There are a number of tools available to clinicians within the 3D framework to support day-to-day clinical practice.

These include the fully referenced and internationally endorsed 3D reference document *(Figure 3)*, which includes a leg ulcer strategy written by clinicians for clinicians. Handy hints and tips cards for each dimension of care can be carried on a keyring or in the clinicians bag to be referred to at the point of care. The cards aim to support and improve clinicians knowledge and skills to deliver evidence-based leg ulcer care from novice to expert level.

PRINCIPLES OF 3D IN PRACTICE

Joanne Nichols discussed how she turned around the local challenges faced in her practice prior to introducing the principles included within the 3D framework. These challenges included:

- Delayed measurement of ABPI and holistic leg ulcer assessment
- Lack of time, increasing caseloads and staff shortages
- Lack of continuity of care
- Patient concordance issues.

Introducing the principles of 3D in practice — person-centred diagnosis, with early leg ulcer assessment (including an ABPI), evidence-based decision-making, following NICE guidance, and including patients in their treatment plans to improve concordance — has been found to transform these issues in practice.

CASE STUDY

A 76-year-old male with type 2 diabetes, who had been on dialysis daily for three years, presented with a leg ulcer after three weeks of caring for the wound himself. The patient was seen by the practice nurse, who referred him to the Bellingham practice for a leg ulcer assessment. Antibiotics were given to treat the infected wound.

Early evidence-based diagnosis can reduce healing time; therefore, measurement of the ABPI and a full holistic assessment were carried out. The patient had described his wound as 'a small scratch' but it was a significant wound that was locally infected. The wound was diagnosed as a VLU. The

Figure 4. Initial assessment

Figure 5. Week 2

Figure 6. Week 3

Figure 7. Week 5

Figure 8. Fully healed

diagnosis was discussed with the patient, along with the most suitable treatment options, including types of compression therapy. The patient was initially reluctant to try compression, stating that he would prefer 'a simple dressing'. However, with further education and reassurance the patient felt confident that the treatment option would help his leg ulcer to heal and, as a result, treatment with compression bandaging commenced. Joanne was available to provide support — offering to speak to him at any point if he had trouble with the treatment and agreeing to follow up with him the next day.

Figure 4 shows the wound at initial assessment; as the wound appeared locally infected, UrgoCleanAg was initiated for local wound treatment, UrgoKTwo (40mmHg) was applied to the limb in accordance with the treatment plan.

At week 2 *(Figure 5)*, the wound had in fact increased slightly in size and appeared to be wetter; however, the patient reported a decrease in pain and leg swelling had reduced. On discussion, it was agreed to continue with the current treatment plan and to review at the next visit.

By week 3, infection had resolved, and the wound significantly improved *(Figure 6)*. Joanne decided to show photographs and measurements to the patient, which helped to inspire him to continue with treatment. As infection had resolved, the UrgoStart Plus dressing could now be initiated as per NICE guidance, in order to expedite healing. As he could see the wound was improving, he agreed to continue with compression therapy.

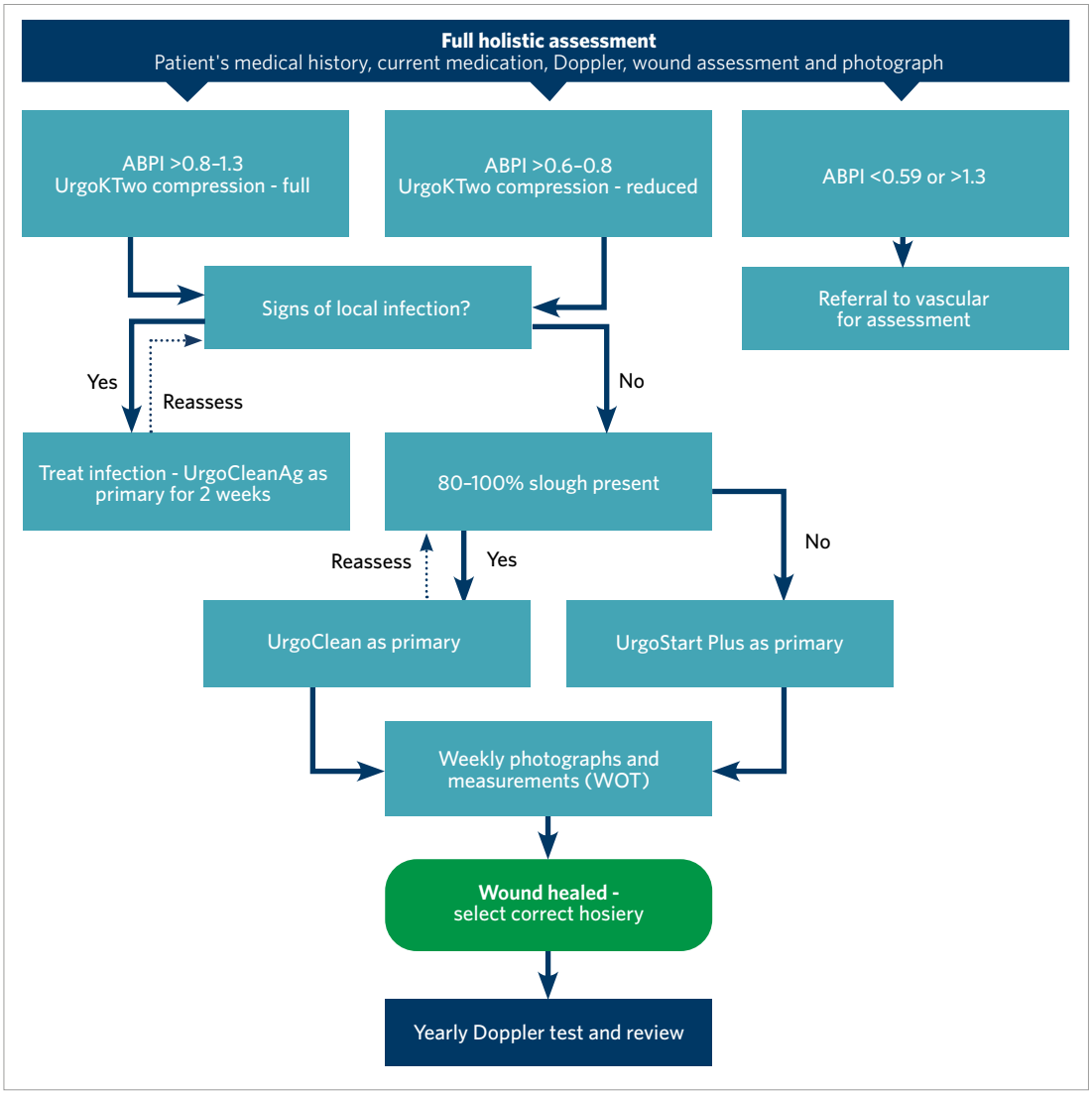

Figure 9. The Bellingham District Nurses Leg Ulcer Pathway

The idea of lifelong compression was declined by the patient at week 3, but by week 5 *(Figure 7)* a trusting relationship had been built between clinician and patient, and he agreed to try compression once the wound had healed. By week 7, the wound had fully healed *(Figure 8)*, and the patient was thankful to the clinician for advising him to carry on with the treatment plan. He now continues to wear compression stockings and the wound has remained healed.

THE BELLINGHAM DISTRICT NURSES LEG ULCER PATHWAY

Following this positive case study, the Bellingham District Nurses Leg Ulcer Pathway was developed, to enable colleagues to follow the same treatment principles *(Figure 9)*. Essentially, it allows for a defined treatment route for all patients, ensuring a consistent, evidence-based approach, which has worked successfully for the team, including new staff.

The team worked with Urgo Medical to record results using a Wound Outcome Tracker. Initial results showed that 74% of patients healed at 12 weeks and 100% healed at 26 weeks, which led to substantial savings in the last year. Sharing these results with neighbouring teams has also led to positive feedback and improvements in practice.

CONCLUSION

National figures have shown that care can be suboptimal for patients with lower leg wounds, resulting in increased burden on healthcare systems and potentially devastating effects on patients living with chronic wounds. The 3D framework aims to enable consistent, evidence-based practice, focusing on patient-centred diagnosis, evidence-based treatment decisions and inclusive dialogue.

Implementing the principles of the framework in practice will help to empower clinicians to deliver evidence-based care and for patients to be involved in care decisions, thus reducing practice variations, increasing concordance and improving outcomes. WUK

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