

WOUND ASSESSMENT

PART 1: HOW TO MEASURE A WOUND

Wound measurement is an essential part of wound assessment. It should be recorded on initial presentation, and at regular defined intervals as part of the reassessment process. Changes in dimensions are a key indicator and can even predict healing. There are various methods available to measure wounds and it is important to use the same method each time, with the patient in the same position. Continuous monitoring of changes in wound size is an important way of evaluating response to treatment.

This issue sees the start of a new series examining the basic elements of a wound assessment. Wound assessment is an essential skill for providing wound care (Dowsett, 2009). Over the next few issues we will consider wound measurement, exudate, infection, the surrounding skin, wound bed appearance, odour and pain.

The most widely used format for recording wound assessment information is in a chart. Charts vary in design and can be in either paper form or, increasingly, in electronic form within the patient's electronic health record, but all will contain an accepted set of parameters (Fletcher, 2010). A chart helps with continuity of care (Fletcher, 2010; Benbow, 2011) and has been shown to improve the amount and consistency of documentation (Hon and Jones, 1996; Sterling, 1996). A chart can also act as a prompt, guiding clinicians through a logical process (Brown, 2006). It brings all relevant wound information together in one place so that progress becomes

more evident, but it still relies on the clinician to interpret the information (Maylor, 2003). Each of these parameters will therefore be examined over the coming issues. The series starts with a discussion of why and how to measure a wound.

Wound size is usually the first criterion on a wound assessment chart. Despite this, studies have shown relatively poor recording of this information. Documentation audits have shown dimensions being recorded in only 15% of patient records (Hon and Jones, 1996), and in 41% of records (Stewart et al, 2009). An audit of community electronic patient records (which excluded leg ulcers) showed only 59.6% had a record of length × width, and only 44.2% recorded depth (Nichols, 2012).

Why should wounds be measured?

There are many reasons why wounds should be measured (see *Box 1*). Measurements are indicators of whether the wound is healing, deteriorating, or static

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(Rivolo, 2015). It is probably the most significant wound parameter when monitoring healing progress (Keast et al, 2004; Barber, 2008). Measuring a wound at first presentation is essential in order to provide a baseline to monitor progress against. Knowing the rate of healing will help with care planning, setting short- and long-term goals and determining the appropriate treatment, as well as monitoring the effectiveness of that treatment. It can also be used to identify patients who are likely to heal with conventional treatment and those who might benefit from more expensive therapies (Gethin, 2006).

A percentage change in wound surface area of 30% or greater over 4 weeks has been shown to be a robust predictor of healing (Kantor and Margolis, 2000; Sheehan et al, 2003). The initial size and duration of the ulcers did not influence this. Gethin (2006), therefore, advocates 4 weeks as a good guide for clinicians in determining treatment strategies. She suggests treating for 4 weeks, providing there are no adverse effects, and then evaluating the effectiveness of the treatment by calculating surface area reduction, and using that information to plan the next stage of treatment.

Box 1: Reasons to measure wounds (Gethin, 2006).

- ▶▶ Monitor healing progress
- ▶▶ Monitor rate of healing
- ▶▶ Can predict which wounds are unlikely to heal with conventional treatment
- ▶▶ Can help set wound care goals
- ▶▶ Monitor effectiveness of treatment
- ▶▶ Identify delayed healing/static wounds and prompt reassessment of the patient
- ▶▶ Provide positive feedback to the patient, helping with motivation and concordance.

While reduction in surface area is clearly a good indicator of healing, it does not account for depth, which is another important dimension to consider. Chronic wounds heal from the base upwards as new collagen matrix is laid down in the wound bed as granulation tissue (Ovington and Schultz, 2004). Some wound edge contraction still occurs during this stage, but final wound closure does not take place until the wound is near to surface level (Dealey, 2012).

How should wounds be measured?

There are a number of methods for measuring wounds, ranging from simple linear measurements with a ruler to more sophisticated methods using computer software. Some will be expensive and more suitable for use in research studies, but this article will concentrate on those that are more likely to be available to the general healthcare practitioner in day-to-day practice.

1. Ruler

The simplest and quickest method is to use a disposable paper ruler (Figure 1) to measure the length and width of the wound (Goldman and Salcido, 2002). Multiplying these together will give an estimated surface area. Where

the measurements are taken from is important, however, and can significantly affect the surface area calculation. Options include longest length × greatest width, at any angle to each other OR longest length × greatest width, perpendicular to each other (i.e. at 90°). Whether the measurements are taken in head-to-toe orientation or at any angle will also influence the results (see Figures 2 and 3).

Multiplying these two measurements will calculate the surface area of either a square or rectangle, but as wounds are usually irregular in shape (see Figure 4 for an example, using a grid), this method will almost always overestimate the surface area (Langemo et al, 2008). Using a ruler, the longest length is 8.7 cm and the greatest width 4.5 cm. Multiplied together, these measurements give a surface area of 39.1 cm² for the wound in Figure 4. Counting the squares gives a surface area of 23 cm².

The most reliable ruler method and the one with the least overestimation involves taking the greatest length head-to-toe and greatest width perpendicular to length (Keast et al, 2004; Langemo et al, 2008). Wounds will change

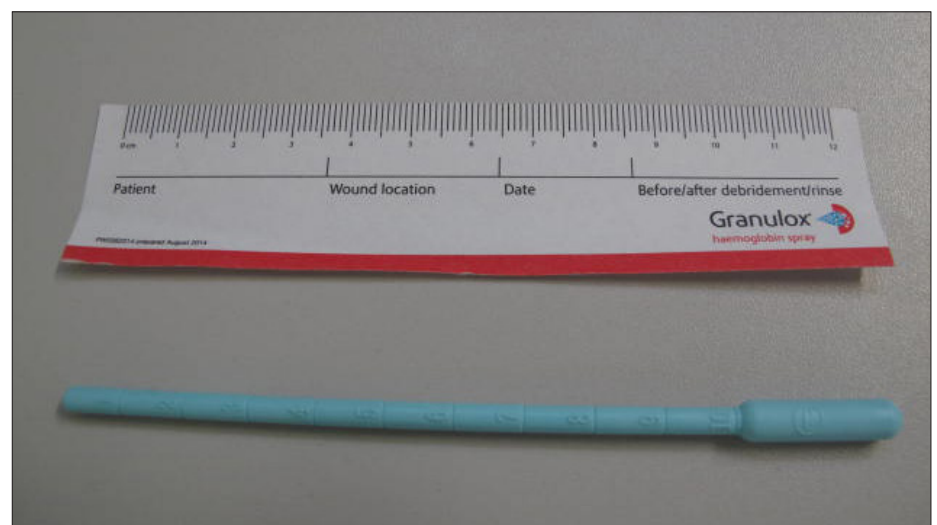


Figure 1. Ruler and probe. A disposable paper ruler is the simplest and quickest method of measuring wound length and width.

shape as they heal, and the head-to-toe orientation ensures the length and width points remain constant. Caution must be used when interpreting surface area from linear measurements.

2. Tracing

Tracing a wound is an easy and inexpensive method and has advantages over length \times width measurements. It gives more information about the shape of the wound, but still has limitations (Dealey, 2012). In this method, a clear film layer is applied over the wound and an acetate layer is applied on top. A fine-tipped permanent marker is used to draw around the wound outline (see Figure 5), and then the wound contact layer is disposed of in the clinical waste and the acetate sheet stored in the patient's record after being clearly dated and labelled. The direction of the head end must be labelled. More than one sheet can be used and overlapped for large wounds. Most acetate sheets will have a grid marked in 1 cm² squares. The number of squares within the outline of the wound is then counted to provide the overall surface area in cm².

There is subjectivity in deciding whether to include partial squares. Gethin and Cowan (2006) advocate including squares where at least 50% is inside the tracing of the wound. Defining the wound margins can also be difficult and subjective and they are not always clearly visible when performing the tracing. Gethin (2006) advises not leaning too heavily on the border while tracing as this can distort the shape.

It is possible to mark areas of devitalised tissue on the tracing and a reduction in the percentage of necrotic or sloughy tissue over time is an important indicator of wound progress.

With the rise in electronic patient records replacing paper-based records, the use of tracings appears to have declined, perhaps because they cannot easily be scanned into electronic records. Digital software is available that can provide detailed information on wound dimensions, e.g. Silhouette by Aranz Medical (Kieser and Hammond, 2011), however such software is expensive and not likely to be available in every-day practice. With the rise of digital technology, it is quite possible that more options will become available and affordable in the future.

3. Depth

It is important to establish the depth of a wound as part of the assessment process, and to determine whether there is any sinus or undermining present. The recommended method for measuring depth is to use a sterile cotton tip swab, gently insert it into the area of undermining, then grasping it at the wound edge measure against a ruler (Morgan, 2012). Plastic probes are also available that are pre-marked with cm markings (see Figure 1). The cavity should be gently explored to establish any areas of pocketing or undermining, and then the depth should be recorded at the deepest part of the wound. It is also good practice to record the amount of dressing required to fill the cavity (Dealey, 2012), as reduction in the volume of packing required will also indicate healing progress.

If there is tracking or undermining present, then the direction and depth must be recorded. The accepted way of describing direction is to use the clock face and assume 12 o'clock is at the patient's head end to describe the direction of the sinus, e.g. 2 cm at 4 o'clock; if it is an area of undermining then this can be described as a range, e.g. 2 cm between 4 and 6

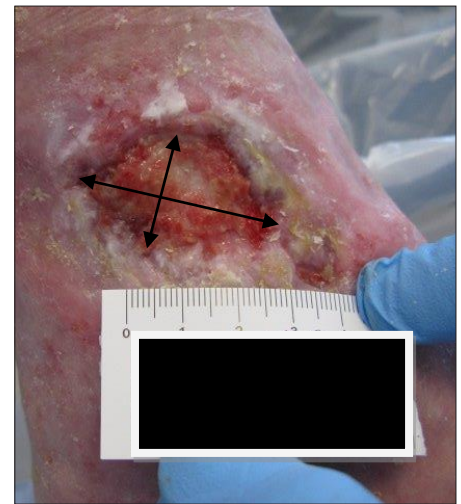


Figure 2. Longest length \times greatest width perpendicular to length, regardless of orientation.

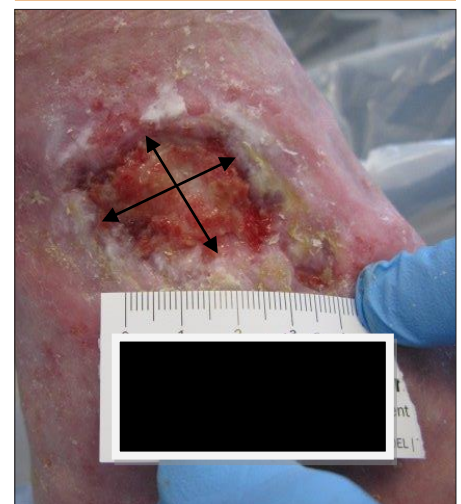


Figure 3. Longest length \times greatest width perpendicular to length, using head to toe orientation. Note the difference between Figures 2 and 3.

o'clock (Morgan, 2012). It is also important to note which position the patient is lying in and to ensure the same position is adopted at each reassessment.

If the wound bed is covered with necrotic or sloughy tissue, the depth will not be visible until the wound has been debrided (Dowsett, 2009).

Reassessment

How often wounds should be remeasured will depend on local guidelines. Dealey (2012) notes that acute wounds progress more

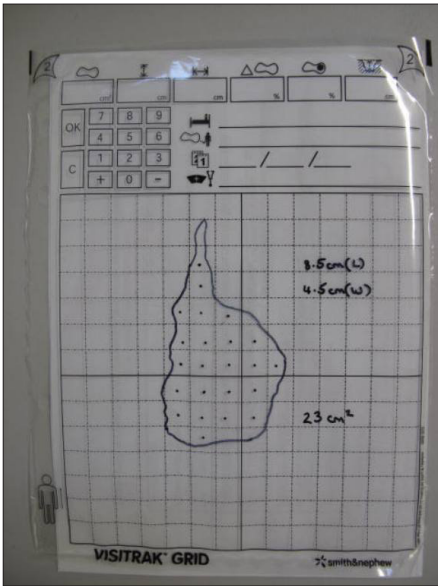


Figure 4. Counting squares on a grid tracing.



Figure 5. Tracing a wound.

quickly and, therefore, will need re-measuring at every dressing change, while there is little benefit in measuring chronic wounds more frequently than every 2–4 weeks. Indeed, too frequent re-measurement may make evaluation of progress difficult (Keast et al, 2004). Local guidelines should also be followed.

4. Photography

Photography is becoming increasingly popular as a method of recording wound assessment and monitoring progress. The

advantages of a photograph are that it can provide greater information about the wound, such as tissue type and condition of the surrounding skin. The value of a photograph for monitoring progress is dependent on certain conditions being fulfilled to ensure consistency (Sperring and Baker, 2014). Photographs must always have a ruler in them to provide an objective view of size and should ideally be taken at the same distance from the wound each time, with the patient in the same position. Photography is a useful method of recording wound assessment, but should not be used in isolation (Brown, 2006). Measurements are still required otherwise the photograph becomes meaningless.

Conclusion

In conclusion, measuring wounds is an essential part of assessment and provides important information about the progress of the wound over time and the prediction of time to healing. There are various methods available to measure wounds, and although there are limitations with all options, these can be reduced by adopting the same method at each reassessment, with the patient in the same position. All measurements, tracings and photographs must be documented and stored securely in the patient's care records and be accessible to all healthcare practitioners providing wound care to the patient. **WE**

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Box 2: Tips for measuring wounds.

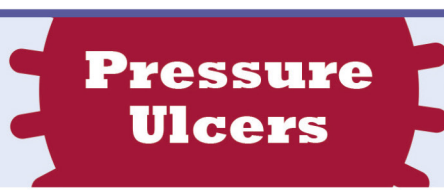
- ▶ Ensure the patient is in the same position each time
- ▶ Use the same method for each re-measurement; methods are not interchangeable
- ▶ Include a ruler in any photograph to give perspective and try to ensure the same distance on each subsequent photograph
- ▶ Measure separately any areas of devitalised tissue, bone, tendon, etc, within the wound bed; these can be marked on a tracing.

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NHS Safety Thermometer National Data Report 2014-15



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