

Best Practice Statement

Addressing skin tone bias in wound care: assessing signs and symptoms in people with dark skin tones

2021



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BEST PRACTICE STATEMENT:
ADDRESSING SKIN TONE
BIAS IN WOUND CARE:
ASSESSING SIGNS AND
SYMPTOMS IN PEOPLE
WITH DARK SKIN TONES

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Foreword

Discrepancies in healthcare have long been an issue, with evidence-based best practice guidance needed to ensure that patients receive the best possible care. Disparities and biases due to ethnicity have been highlighted in particular. For example, Black women are four times more likely than white women to die in pregnancy or childbirth, with women from Asian ethnic backgrounds facing a two-fold risk (MBRRACE-UK, 2020).

The disproportionate effect of COVID-19 on ethnic minorities in some high-income countries such as the UK, in particular Black and South Asian communities, has thrown the effects of racism in healthcare into sharp relief (Razai et al, 2021). In the UK, people categorised as Black have had the highest COVID-19 diagnosis rates, with the lowest rates observed in white British people (Public Health England, 2020). Data up to May 2020 show 25% of patients requiring intensive care support were of Black or Asian background (Intensive Care National Audit and Research Centre, 2020).

It is evident that urgent action is needed to tackle systemic biases contributing to unequal outcomes across healthcare (Limb, 2021). In wound care, optimising treatment and outcomes for the individual patient depends on accurate assessment and diagnosis, for which knowledge of the signs and symptoms across skin tones is essential (Mukwende, 2020). There is generally a lack of evidence around skin tones in wound care, although it has been found that patients with dark skin tones are more likely to be diagnosed with higher-stage pressure ulcers (PUs) due to a lack of accurate assessment and early identification (Oozageer Gunowa et al, 2017).

White bias in education has been identified, with information and illustrative images overwhelmingly focused on white skin, and this has contributed to a lack of knowledge of assessment and diagnosis in dark skin tones (Mukwende, 2020; Oozageer Gunowa et al, 2020). Language and terminology such as a focus on ‘redness,’ which may differ in presentation depending on skin tone, has created a bias that mean individuals with dark skin tones may not receive accurate diagnosis and care.

A study on undergraduate nurse education at five higher education institutions in the UK confirmed that learning was predominately framed through a white lens, with white normativity being strongly reinforced through teaching and learning activities (Oozageer Gunowa et al, 2020). These findings highlighted that teaching skin tone diversity is needed to ensure meaningful teaching and learning experiences, and that educators have a duty of care to inform and highlight health inequities in nursing and ultimately to enhance equity in care.

This document aims to highlight this issue and provide clinicians with practical guidance to aid accurate assessment and diagnosis in all skin tones, optimising patient care and improving outcomes.

Luxmi Dhoonmoon and Jacqui Fletcher
(Expert Panel Co-chairs)

Glossary

- **Cellulitis** – an infection caused by bacteria getting into the deeper layers of the skin, usually indicated by a painful, swollen area of skin that may show changes in colour
- **Erythema** – a type of skin rash caused by injured or inflamed blood capillaries, often referred to as ‘redness’ although it may present differently in a range of skin tones
- **Eschar** – a type of dead tissue, often seen in PUs and may be black or brown in colour
- **Hemosiderin staining** – occurs when red blood cells break down and begin to leak iron, often appearing as darkened patches above the ankles
- **Ischaemia** – insufficient supply of blood to an organ or tissue, which can result in the insufficient supply of oxygen and nutrients, and result in damage to the tissue
- **Keloid scar** – an enlarged, raised scar that can be pink, red, skin-coloured or darker than the surrounding skin; they can develop after minor skin damage, and spread beyond the original area of skin damage
- **Lymphangitis** – inflammation of the lymphatic system caused by an infection
- **Maceration** – softening and breaking down of skin resulting from prolonged exposure to moisture
- **Necrosis** – dead skin or tissue
- **Periwound** – the area surrounding the wound
- **Sickle cell disease** – the name for a group of inherited health conditions that affect the red blood cells
- **Venous staining** – discoloration on the lower legs, caused by chronic venous disease (the abnormal function of veins)

Assessment and diagnosis

Effective wound treatment and preventative care depend on accurate and thorough assessment, leading to a diagnosis that triggers action and is tailored to the individual patient, their skin and their wound. Assessment should involve a thorough inspection of the skin, and this should include finding out about the patient's baseline skin tone. This is vital so that any changes to the patient's skin can be monitored and identified early. It is important to note that lack of early identification of skin changes can mean that important signs are missed, which can lead to skin and tissue breakdown and damage. Accurate assessment is key to ongoing care.

Skin inspection with an awareness of skin tone should be carried out as part of a full holistic assessment that includes the patient's skin, their overall health and medical history, and their wound, ensuring that care is tailored to the individual and their needs.

It is important to note that patients with all skin tones should receive an equitable level of assessment. Dark skin should not be seen as a 'challenge' in clinical practice, but assessing skin for colour so that early identification can be made of any changes or issues should be a routine part of care for every patient.

Colour bar tool

The Fitzpatrick classification is perhaps the most widely used method of skin phototyping, based on a person's self-reported tendency to sunburn and ability to tan (Gupta and Sharma, 2019). However, this classification tool has been found to be subjective and biased towards white skin, so may be of limited use in practice (Ho and Robinson, 2015).

The Munsell colour chart is widely used in a range of fields including archeology, soil analysis, art and food science. It is intended as an objective measure for skin tone, using a numerical system to describe and compare colours of many substances (McCreath et al, 2016); however, its wide use in categorising colour in agriculture and archaeology mean that it may not be suitable for use in patient care, as it has connotations of soil or 'dirt,' which are not appropriate to use when working with patients and considering of skin tone.

The colour bar tool is a validated classification tool that shows a range of skin tones [Figure 1] so that the tone can be selected that most closely matches the patient's inside upper arm.

The colour bar tool has been found to be a simple and economical way of assessing skin tone and can be used across care settings, including in patients who may have

Assessment should include awareness of skin tone in order to monitor any changes to the patient's skin.

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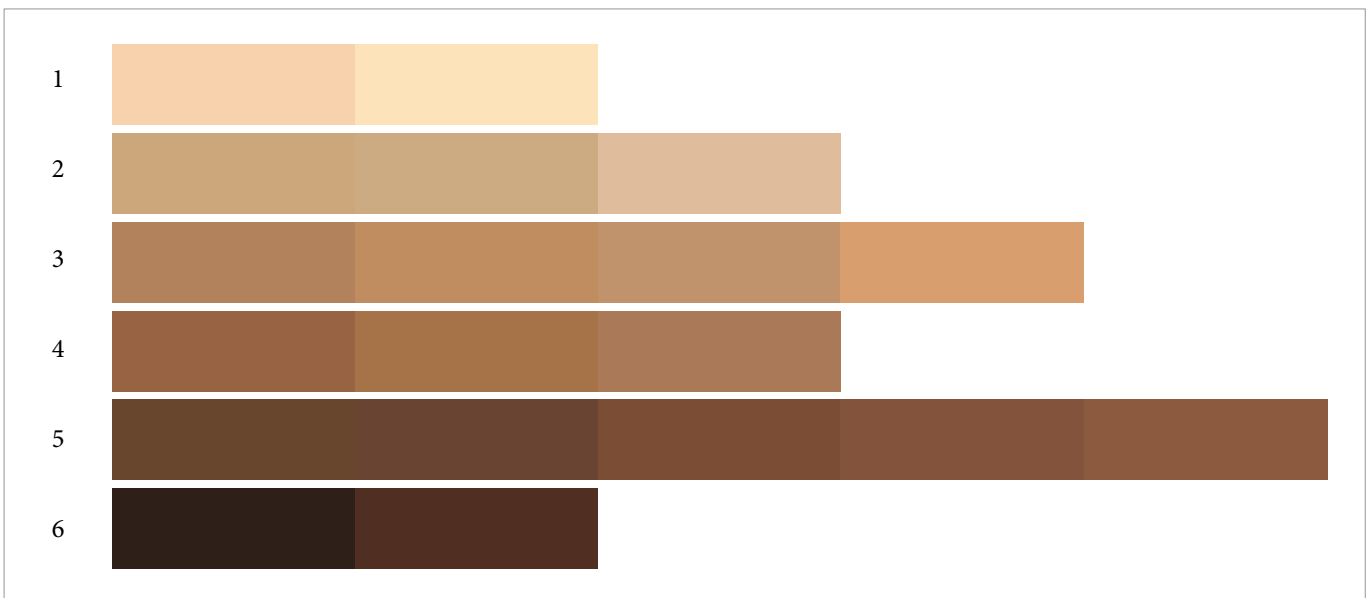


Figure 1. Colour bar tool (Ho and Robinson, 2015)

Overview of skin tone (Robinson and Ho, 2015; Gupta and Sharma, 2019)

Skin tone is the result of melanin, a brown pigment. The purpose of melanin is to protect the skin by absorbing harmful ultraviolet (UV) radiation from the sun. As the skin encounters UV rays, cells called melanocytes produce additional melanin. There is no difference in the number of melanocytes between skin types. The palest and the darkest person will, on average, have the same number of these cells in their skin. However, the production and concentration of melanin in the epidermis (top layer of skin) is greater in dark skin.

Skin tone can be constitutive or facultative. Constitutive skin tone refers to the genetically determined levels, types, and distribution of epidermal melanin, which is not influenced by intrinsic or extrinsic factors. Facultative skin tone refers to an increased epidermal melanin content as a result of intrinsic factors (e.g. hormones) or extrinsic factors (e.g. environmental factors such as sunlight). This means that skin colour can be changeable across all skin tones.

The colour bar tool should be used to record baseline skin tone for monitoring purposes.

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limited literacy (Ho and Robinson, 2015). The tool encompasses more gradients than binary 'light' and 'dark' generalisations so is more useful for use in practice.

The colour bar tool has been used to screen for individuals at risk of skin cancer and to identify those needing sun protection, and it may also be a useful tool in wound care assessment. It has been found that using the colour bar chart is more effective than asking the patient to select what may be a subjective term to describe their own skin tone. Particularly in cultures where there is a light skin bias, or colourism is an issue, this may affect how patients view and describe their own skin tone (Everett et al, 2012). It is also important to note that skin tone may differ across different areas of the body.

The importance of touch

It is important that touch is used in skin assessment and that factors beyond the appearance/baseline tone of the skin are considered, in order to gain a more accurate overall picture of the patient's skin and its condition. For example, in cellulitis, the affected skin feels different from the surrounding skin, with tightness apparent to the touch.

Using the senses as part of assessment is a key element that may have been affected by restrictions around COVID-19

(e.g. less contact with patients, virtual consultations, and clinicians wearing personal protective equipment), and it is important to highlight the importance of the senses, and particularly touch. Full use of the senses increases diagnostic value for all patients, but may be particularly important for patients with dark skin as there is less of a visual evidence base for assessment and diagnosis.

Communication at assessment stage

It is important to listen to the patient's perspective and their views and feelings on their own wound and their overall skin condition. For example, asking the patient direct questions such as 'are any parts of your skin sore?' or 'have you noticed any changes to your skin?' can help to obtain information that might otherwise have been missed.

As well as aiding with accurate assessment, patient advocacy is an important element of care. This means understanding and considering the patient's choices, needs and preferences, and helping to advocate for these in practice and within the health care team (WUWHS, 2020). Patients have the right to be involved and informed about their own care – it is important for them to be aware they have the right to ask questions and make comments. The clinician should help to encourage an environment where the patient feels safe and supported, and able to speak up (WUWHS, 2020). The National

The senses – especially touch – should be considered as part of skin inspection and assessment.

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Questions to consider as part of skin assessment

- What is the wound/periwound skin like in comparison to the surrounding skin?
- Are there any differences in colour?
- Does the skin feel warm/cool? Are there any changes in temperature?
- Does the skin feel spongy or firm to the touch?
- Does the skin look or feel shiny or tight?
- Is there any swelling or inflammation?
- Are there any changes in the texture of the skin and underlying tissue?
- How is the overall condition/integrity of the skin?
- Is there any pain, itchiness or change in sensation?

Listen to the patient's perspective, both to aid accurate assessment and to understand their choices, needs and preferences.

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Patient Safety Strategy (NHS, 2021) focuses on reducing inequalities by promoting patient involvement and participation.

Facilitating shared or supported care in suitable patients is now an important consideration in practice, seeking to empower patients as part of a wider, structured support system (WUWHS, 2020).

Language and terminology

Some clinicians can find skin tone a 'difficult' or 'awkward' topic to talk about with patients, or may be worried about causing offence. This is unprofessional and dangerous as it can mean that important factors are not discussed, putting the patient at risk of harm.

A study using the game 'Guess Who?' – where the goal is to guess who appears on the opponent's card by asking about various appearance-related characteristics, making acknowledgement of skin tone not only appropriate but advantageous – found that white people tended to avoid mentioning skin tone when playing with a Black partner (Apfelbaum et al, 2008). This avoidance, in fact, prompted a perception of them as more biased rather than less. In another study, simply instructing non-Black interviewers to not think about race caused more social distance between them and a Black interviewee (Madera and Hebl, 2013).

In wound care, it is important to remember that skin tone is separate from race – e.g. not all people classified as Black have dark skin tones. Language used in the medical context

simply needs to be accurate, rather than carrying any political or social connotations.

Skin tone and ethnicity are not correlated, so language used should be neutral and professional, focusing on skin tone rather than race. Ethnic background is important, but in this case it is not the focus.

Clinicians should feel confident to talk about what they can physically see in front of them. This should give the patient confidence that their clinician is looking at them individually, and that any diagnosis will fit them as an individual, rather than being 'labelled'.

It is preferable to use terms that do not centre light skin tones or use light skin as the 'norm' or baseline – for example, this would mean saying 'dark skin tones' rather than 'darker' (which raises the question 'darker than what?') or 'non-white'.

Assessing different anatomical locations

Depending on where the wound is located, there may be specific challenges associated with assessment. As skin tone may vary across different anatomical locations on the body, it is important to inspect a similar area of skin for comparison – for example, if you are examining the heel for a potential PU, make sure to look at the other heel as well (in patients where this is possible), noting that in patients with dark skin the soles of the feet are generally much lighter.

Clinicians should be aware that skin tone is separate to ethnicity and have the confidence to talk about this in a professional way, treating the patient as an individual.

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When assessing the skin, compare similar anatomical locations (e.g. the heels).

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It should be noted that, once the skin is breached, skin tone no longer affects assessment of the wound tissues, but assessment of the surrounding skin remains important.

Photographing wounds

Photographing wounds can be useful for recording and monitoring purposes; however, photographs should not be used as a diagnostic tool. Colours can be inaccurate in photographs (e.g. changing tones, appearing 'washed out'), especially if taken with a mobile phone. It is useful to remember that, historically, photography was not designed to accurately capture dark skin; this bias remains, with silicon pixels in digital photography still not optimised to register dark skin well (Ramirez, 2020). This means that photographing wounds in dark skin is not likely to be accurate.

If photographing a wound, it is recommended that a calibrated colour

General tips for skin assessment

- Good lighting is needed to assess a patient's skin properly and to ensure that nothing is missed – ideally skin assessment should be carried out in bright daylight; if this is not possible, a torch or pen light can be used when necessary
- The senses should be used when assessing the skin, especially touch
- It is vital to listen to the patient's perspective, and to understand their choices, needs and preferences relating to their care
- Ask about any history of skin changes and how they presented
- Awareness of skin tone should be incorporated into existing assessment frameworks and pathways.

chart should be used to ensure that the colours captured are true (Institute of Medical Illustrators, 2019).

If you are photographing a wound, a calibrated colour indicator should be used. Note that photographs should be used for recording and monitoring, rather than diagnostic purposes.

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Tips for patients photographing their own wounds (adapted from Lindsay Leg Club, 2021)

- Most mobile phones and tablets should be capable of taking a good photograph and photos of a wound may help your clinician
- It may help to get someone else to take the photograph, particularly if you can't see your wound clearly
- It may be easier to use a mirror if you have difficulty with focusing on the wound site. If you take the photo of the wound through the mirror, then the flash should be turned off or it will be too bright and obstruct the image
- Do not get the device too close: most cameras and phones can only focus to about half a metre. If you go closer, it may be blurred. Your clinician can always zoom in on particular areas of the photograph, if required
- When it comes to capturing visual images, light becomes important. Use a bright area or make sure you put the lights on, and the light falls on the wound
- Ask your clinician to provide you with a paper ruler or use a tape measure placed close to the edges of your wound, as it often helps your clinician to assess the size of your wound
- Try to take the picture from the same angle each time you take a photo.

Common wound types and issues to consider

In all wound types and skin conditions, it is important to be aware of how signs and symptoms may present in a range of skin tones.

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There are particular wound types where white skin bias in education has resulted in confusion around diagnosis in patients with dark skin tones. Most of the literature focuses on PUs, but evidence-based guidance in this area has still been found to be lacking (Oozageer Gunowa et al, 2017) and, in other wound types, there is generally even less information and guidance available. See Table 1 (page 12) for more information on different wound types, how they may present in practice, and a range of signs and symptoms that encompass all skin tones.

Pressure ulcers

While there is more evidence around PUs in dark skin than in other wound types, people with dark skin tones are more likely to develop higher-stage PUs. This may be due to current skin assessment protocols being less effective for people who have dark skin tones, resulting in early damage arising from pressure not being recognised

(Oozageer Gunowa et al, 2017). There is still a gap in knowledge and education, meaning that people with dark skin tones are at increased risk of harm.

It has been acknowledged that skin tone variance may affect presentation of early-stage PUs (National Pressure Ulcer Advisory Panel, 2008). Many of the signs and symptoms that clinicians have been educated to look for may present differently depending on the patient's skin tone. For example, it has been found that dark skin rarely shows the blanching response that clinicians are trained to look out for, and erythema may also be hard to detect (Grimes, 2009). It is also important to remember that skin irritation in patients with dark skin tones may cause hyperpigmentation (increased pigmentation) or hypopigmentation (reduced pigmentation), with no redness visible (Nijhawan and Alexis, 2011). By the time textural changes to the skin have been

Erythema and 'redness' (adapted from BAD, 2021)

Erythema (from the Greek erythros, meaning red) is a change in colour of an area of skin, caused by increased blood flow. It is a symptom common to many diseases, particularly inflammatory skin diseases.

While redness can be an obvious symptom in people with less deeply pigmented skin, where it contrasts clearly against light skin tones, this is not necessarily the case in people with dark skin tones; for example, black, brown and olive skin tones. An example of this is sunburn: it is a common misconception that people with dark skin tones do not burn in the sun. It can happen but may not be easily visible. If it does occur, it may not appear as 'redness' that people generally associate with sunburn.

The term redness itself can be misleading, as the colour change can run the spectrum of pink, red, and purple – in some cases it may be limited to a subtle darkening of the existing skin tone.

While the signs of erythema in dark skin can be easy to miss, there are ways of spotting it. Changes in skin colouration are often the main sign – this can be easier to spot when affected areas are compared with unaffected skin.

There is no straightforward way to predict exactly what colour erythema will look like in an individual's skin. It is dictated by a person's skin tone, of which there are many more variations than most people realise, and the nature of the disease in question.

In addition to this, if you suspect that inflammation is not easy to spot on your patient's skin, then it is sensible to take into consideration other potential symptoms of their condition.



Figure 2. Category 1 PU in dark skin: the erythema is clear on the lighter sole of the foot but harder to detect on the dark skin at the side of the heel (photograph courtesy of Jacqui Fletcher)



Figure 3. Category 1 PU in light skin: the erythema is clearly demarcated across the whole wound (photograph courtesy of Jacqui Fletcher)



Figure 4. Unstageable PU, Category 4 when debrided (photograph courtesy of Sarah Pankhurst)

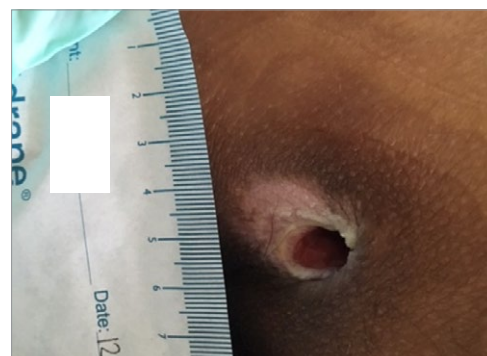


Figure 5. Tracking ulcer under the dark area around the wound (photograph courtesy of Sarah Pankhurst)

Clinicians must be aware of all signs and symptoms of pressure ulcer development and how these may present across skin tones.

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detected, the damage may be more severe. Categorisation of PUs can be a major challenge in clinical practice regardless of skin tone. However, it is a vital part of care, and effective and inclusive skin assessment is vital. It is necessary for clinicians to be aware of all possible signs and symptoms of PU development, and how these may present across skin tones (see Figures 2–5 for examples).

Leg ulcers

Leg ulcers are a significant issue in health care. A large-scale study based on patient records (Guest et al, 2020) found that, in total, there were 1 million ulcers of the lower limb, which equates to 2.0% of the adult population having a lower limb ulcer in the

study year. However, many of these ulcers were recorded as ‘unspecified’, without appropriate diagnosis of the patient’s underlying issues. This can result in non-healing and a vicious cycle of recurrence.

Legs ulcers are a wound type where skin colour changes are often used as part of clinical assessment to identify and diagnose issues such as infection and underlying pathophysiology. Terms such as hemosiderin staining, erythema and ‘red legs’ are commonly used descriptors. A common complication of lower limb ulceration is cellulitis, which frequently requires the patient to be prescribed antibiotics. The accurate diagnosis of cellulitis in all patients can be challenging



Figure 6 and 7. Venous staining in the lower leg can be more difficult to identify in dark skin tones but, as shown in these images, can be also clearly visible (photograph courtesy of Mid Yorkshire NHS Trust)

In assessing the legs for ulceration, all changes in the skin (including colour and texture) should be thoroughly assessed.

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but becomes even more challenging in patients with dark skin tones, as the main diagnostic influence in cellulitis is spreading erythema, which is more difficult to see in dark skin tones. The use of other diagnostic methods is important, such as touch, comparing the temperature of the affected leg to the other leg, observing for localised oedema and ascertaining if there is any evidence of change in the normal appearance of the surrounding skin (e.g. elimination of fine wrinkles).

Lower leg issues may also present as venous staining, which may be difficult to identify in patients with dark skin tones, particularly in patients who are likely to have vulnerable or dry skin on their lower legs (Legs Matter, 2020b). However, venous staining can still be observed in patients with dark skin tones [Figures 6 and 7].

Sickle cell disease (SCD), an inherited disorder of the red blood cells, can affect people of any ethnicity, although it has been found to be more common in people of African-Caribbean heritage (CDC, 2020). Ulceration may be an issue in patients who have already been diagnosed with SCD; these ulcers can be very painful and add to quality of life issues associated with SCD (Legs Matter, 2020a). Sickle cell ulcers often deteriorate during a sickle crisis due to the



Figure 8. This heel blister could be mistaken for necrosis due to the darkness of the skin (photograph courtesy of Jacqui Fletcher)

general reduction in oxygen to the skin. Sickle cell ulcers usually present around and behind the malleolus, although they can also present around the base of the toes in more extreme cases; they can be single, multiple or bilateral. Tolerance of treatment may be difficult, especially use of compression therapy; neuropathic pain and hypersensitivity around the ulcer may also be extreme (Legs Matter, 2020a).

Diabetic foot ulcers

In diabetic foot ulcers (DFUs), changes in colour may also be difficult to spot, and 'redness' is often used as a descriptor, so any changes in colour should be assessed and monitored. Diagnosing infection or

In patients with dark skin tones, extra care should be taken to ensure that eschar or necrosis are not incorrectly diagnosed.

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ischaemia in people with a DFU and dark skin tones can be challenging due to the lack of colour change and an inability to assess for lymphangitis.

Additionally, severe DFUs may present with black or brown eschar overlying the ulcer; in patients with dark skin tones, it is vital to assess the skin thoroughly to ensure that eschar or necrosis is not diagnosed incorrectly [Figure 8].

In people with a DFU, neuropathy may be an issue, which means the patient may not be able to use pain as a sign, making thorough assessment using touch even more important. DFUs are at high risk of infection, so any changes should be closely monitored. Extra care should be taken in patients with dark skin tones to ensure that no changes to the foot are missed.

Where possible, the affected foot should be compared to the other foot to compare skin tones, but this may not always be possible in people with diabetes who have had a previous amputation.

Moisture-associated skin damage

Moisture-associated skin damage (MASD) is an umbrella term for irritant-contact dermatitis that encompasses incontinence-associated dermatitis (IAD), peristomal dermatitis, intertriginous dermatitis (intertrigo), and periwound maceration.

MASD represents another area of skin damage where identifying 'redness' is often referred to, and consideration needs to be made of how this may present in a range of skin tones. Classification of IAD – for example, the Ghent Global IAD Categorisation Tool (GLOBIAD) – relies on 'redness' as a key indication of damage, while noting that, in patients with dark skin tones, this may present as paler or darker or more purple than red (Beeckman et al, 2018).

Maceration is a key symptom that may be easier to spot in dark skin tones; however, maceration indicates a more severe stage of damage.

Risk assessment and prevention strategies are of key importance in MASD (Fletcher et al, 2020). It is important that patients at risk are identified early, so that interventions can be taken to protect the skin and prevent MASD, including the use of skin protection products, such as barrier creams, liquid polymers, and cyanoacrylates to create a protective layer on the skin surface that simultaneously maintains hydration levels while blocking external moisture and irritants (Gray et al, 2011; McNichol et al, 2018).

Evidence now highlights the links between MASD and other skin conditions such as cutaneous infection and PUs (Beeckman et al, 2014; Beeckman et al, 2020). Adopting a holistic, integrated approach, focused on prevention strategies and the importance of skin integrity, can have overall beneficial results and help to break down barriers to effective care in practice (Beeckman et al, 2020).

Clinicians must be vigilant, both in maintaining optimal skin conditions and in diagnosing and treating early stages of MASD to prevent progression and skin breakdown (Beeckman et al, 2020).

Skin tears

Skin tears occur across varied patient groups; patients with aged and fragile skin are at increased risk of skin tears, and the ageing of the worldwide population means that incidence is increasing (LeBlanc et al, 2018). Early recognition of people who are at risk of developing skin tears is an essential part of prevention, and identifying those patients at risk of skin tear development is vital to minimising incidence of avoidable skin tears (LeBlanc et al, 2018).

Preventative strategies for skin tears should focus on skin integrity, which in turn hinges on assessment, early intervention and implementation of a skin care regimen that incorporates appropriate moisturising products (Beeckman et al, 2020). While all patients may benefit from a moisturising regimen to manage the risk

Care for patients at risk of moisture-associated skin damage should focus on prevention and early intervention to prevent progression and skin breakdown.

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Patients at risk of skin tears should have a preventative regimen in place to preserve skin integrity.

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of skin damage, it has been found that the physiological properties of skin differ depending on skin tone and dry skin can be more problematic for those with dark skin tones (Wan et al, 2014). While more evidence is needed, quantifiable parameters have been developed showing differences in trans-epidermal water loss, water content, ceramide levels, and skin reactivity between patients with different skin tones (Wan et al, 2014). Therefore, it is important that suitable moisturising products are used that are tailored to the individual, ensuring that the risk of skin damage is minimised.

The use of suitable products should be incorporated into a standard approach to skin care to aid with moisture management, such as using a moisturising liquid body wash instead of soap (Wounds UK, 2018). A full skincare plan is recommended for all patients with at-risk skin, which includes the use of a combination of soap-free wash products, as well as 'leave-on' creams and ointments (Beeckman et al, 2020).

Other factors should also be considered when caring for at-risk skin, such as reducing sun exposure, minimising frequency of bathing, taking care that water temperature is not too hot, and patting the skin dry with a soft towel rather than rubbing (LeBlanc et al, 2018; Wounds UK, 2018).

There is emerging evidence that a skincare regimen to reduce incidence of skin tears also reduces the risk of PUs and MASD, and that this standardised regimen can also be used to manage end-of-life skin changes (Beeckman et al, 2018).

Medical adhesive-related skin injury

Medical adhesive-related skin injury (MARS) is prevalent, under-recognised and preventable, and can occur in any patient group or setting (Ousey and Wasek, 2016). While MARS is under-recognised across all patient groups, definitions of MARS focus on erythema so this may be a particular issue in patients with dark skin tones: MARS has been defined as 'an occurrence in which erythema and/or other manifestation of cutaneous abnormality (including, but not limited to, vesicle, bulla, erosion, or tear) persists 30 minutes or more after removal of the adhesive' (McNichol et al, 2013). This means that extra care may be needed, both to avoid MARS, and to identify it when it occurs, in patients with dark skin tones.

It is important to note that, although injuries caused by medical adhesives may look minor, they may affect skin integrity, cause pain, increase risk of infection, potentially increase wound size and delay healing, all of which reduce patient quality of life unnecessarily (Ousey and Wasek, 2016).

Extra care should be taken to avoid medical adhesive-related skin injury, and to identify it when it occurs, in patients with dark skin tones.

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Figure 9. Skin tone can change significantly where there is scar: this newly epithelialised wound is very pale but with a darker edge and periwound area compared to the surrounding skin (photograph courtesy of Jacqui Fletcher)



Figure 10. Change in skin tone can be seen in this slightly more mature scar to the top left of this wound (photograph courtesy of Jacqui Fletcher)

Extra care should be taken to prevent scarring in patients with dark skin tones, as dark skin tone constitutes a risk factor for keloid scarring.

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Infection must be identified early by investigating signs and symptoms that do not rely on 'redness'.

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Care should also be taken when using adhesive products in patients where dry or fragile skin is an issue.

Scarring

Scarring is the end result of the wound healing process, but patients affected by major scars often suffer from long-term functional and psychological problems (Marshall et al, 2018). As patients with dark skin tones are at risk of a lack of early intervention and diagnosis, they may be at increased risk of more severe scarring. For example, if a PU is diagnosed at a later stage, there will be increased depth of damage, which will cause scarring. See Figures 9 and 10 for examples.

Scars can cause a significant amount of suffering, and cause quality of life issues and a sense of 'loss' for the patient. While there are treatments and products available that may help to minimise existing scarring, the most effective means of minimising scarring is limiting skin damage through early and effective intervention, and avoiding wound infection or breakdown (Marshall et al, 2018).

A keloid scar is a type of raised scar that extends beyond the borders of the original wound. Some of the symptoms of keloid

scarring include pruritus, tenderness, and pain; plus, these scars can often be difficult to treat and prevent from recurrence (Viera et al, 2012). Having dark skin tone constitutes a risk factor for keloid scarring, so extra care should be taken to prevent scarring from occurring in patients with dark skin tones (Nasr-Allah et al, 2012).

It is a myth that keloid scarring only affects dark skin; however, keloid scarring is more prevalent in patients with dark skin tones (Nasr-Allah et al, 2012). The causes of this are still unclear and research is ongoing, with the aim of improved prevention and treatment (AAD, 2021).

Identifying infection

Early identification is vital in wounds that are infected or at high risk of infection. Therefore, an over-reliance on 'redness' as a key symptom of infection must be avoided. Other signs and symptoms of infection may include (IWII, 2016):

- Local warmth
- Swelling
- Purulent discharge
- Delayed wound healing beyond expectations
- New or increasing pain
- Increasing malodour.

Table 1. Common wound types and their possible presentations across skin tones

Wound type	Possible presentations	Tips for practice
Pressure ulcer	<ul style="list-style-type: none"> • Change in skin colour: this may present as redness, darkening, lightening or grey/blue/purple tones • The skin may feel tight, spongy or appear shiny • Change in temperature – check if the skin feels cold or hot • Pain or numbness over the affected area 	<ul style="list-style-type: none"> • Ensure that the skin is inspected thoroughly with an awareness of skin tone variance: late identification of pressure damage due to skin tone constitutes an omission in care that has led to patient harm
Leg ulcer	<ul style="list-style-type: none"> • Change in skin colour: redness or appearance of bruise-like purple or blue tones • The skin may feel hot or appear swollen • The skin may feel tight or appear shiny • Skin may be itchy related to varicose eczema • In venous disease, lipodermatosclerosis and haemosiderin staining are easier to see in pale skin – feel for the hardening in the skin 	<ul style="list-style-type: none"> • Compare the affected leg to the other leg for comparison of colour and swelling • Be aware of the risk of ulceration in patients who have been diagnosed with sickle cell disease
Diabetic foot ulcer	<ul style="list-style-type: none"> • Change in skin colour: redness or appearance of bruise-like purple or blue tones • Check for swelling or pain in the foot (note that pain may be absent if the patient has significant neuropathy and typical signs of infection including heat may be diminished) • Check for change in skin temperature, comparing one foot to another where possible, and assessing for infection or ischaemia • Take care to ensure that darker skin is not incorrectly diagnosed as eschar or necrosis 	<ul style="list-style-type: none"> • Take particular care to watch out for potential infection – compare to the other foot for comparison (in patients where this is possible), and use touch to check for warmth and texture
Skin tear	<ul style="list-style-type: none"> • Skin tears should be easy to diagnose in all skin tones, but prevention is key – check for skin fragility or changes to the skin before a skin tear occurs wherever possible • Patients with dark skin tones may be more likely to have issues with dry skin or irritation that need to be addressed early to make sure that damage does not occur 	<ul style="list-style-type: none"> • Make sure the patient is given an appropriate moisturising regimen to prevent damage and recurrence
Moisture-associated skin damage (MASD)	<ul style="list-style-type: none"> • Change in skin colour: this may present as redness, darkening, lightening or blue/purple tones • The skin should be checked for changes so that diagnosis can be made before maceration occurs if possible 	<ul style="list-style-type: none"> • Inspect the skin thoroughly and regularly, and make sure that protective measures such as barrier products are used in at-risk patients before damage occurs
Medical adhesive-related skin injury (MARS)	<ul style="list-style-type: none"> • Damage may be difficult to spot if clinicians are looking for ‘redness’ – extra care should be taken to avoid MARS, and to identify it when it occurs, in patients with dark skin 	<ul style="list-style-type: none"> • Skin integrity and issues such as dryness should be considered when using adhesive products

Product selection

Selecting treatments and products that are tailored to the individual, their wound and their lifestyle is vital. Wherever possible, shared decision-making should take place between the clinician and the patient, involving and engaging the patient so that they feel empowered and confident in the care they are receiving (Moore et al, 2015).

An awareness of skin tones when helping to select the most appropriate treatment or product for the patient may be useful. It is important to explain the rationale of product selection to the patient where needed, as understanding the reasoning for product selection can help the patient feel confident and engaged in the treatment that they are receiving (WUWHS, 2020).

For many patients, living with a wound may make them feel self-conscious, so discretion is a key factor in product selection (WUWHS, 2020).

Moisturising and skin protection

Limited research suggests that the hydrophilic/lipophilic balance of the skin differs across skin tones, which may affect how the skin holds moisture (Fotoh et al, 2008; Wan et al, 2014). More research is needed in this area, but anecdotal evidence also suggests that darker skin tones may have increased need for moisturising treatments.

As previously discussed, skin integrity and prevention of damage and complications are key. If, after thorough and holistic assessment, a patient's skin is deemed to be fragile or at-risk, they should be prescribed a regular moisturising regimen and if necessary a barrier product to help to preserve their skin integrity and minimise the risk of skin damage.

Regular moisturising should be viewed as a vital part of skincare in individuals with frail skin, in order to promote general skin health and reduce the risk of skin damage (Wounds UK, 2015; Beeckman et al, 2020). This can help to restore the barrier function of the skin, reduce itching, and increase the level of hydration. The

benefits of moisturising to treat specific skin conditions are well recognised, but in patients at risk of skin breakdown, this should also be used as part of a full everyday skin care routine (Wounds UK, 2018). The use of moisturisers has been found to aid prevention of forms of skin damage including skin tears and superficial pressure ulcers (Carville et al, 2014; Beeckman et al, 2020). Many moisturising products are available and these should be selected according to the patient's skin, preferences and lifestyle.

With a focus on prevention, those at risk of MASD should also receive a moisturising regimen. It is recognised that excessive moisture is damaging; however, replenishing natural moisture is important and can be accomplished through applying moisturisers, making sure that these are used appropriately and do not risk additional maceration (Beeckman et al, 2020). Excessive moisture should not be seen as an implementation barrier to using moisturising products as these serve to protect the skin and improve its overall integrity (Woo et al, 2017). In some cases, it may be beneficial to use products containing amino acids, ceramides and essential fatty acids (Woo et al, 2017). A protective barrier (e.g. spray/cream) is recommended to help prevent skin from further breakdown (Benbow, 2012), alongside appropriate products to aid incontinence management (Wounds UK, 2018). For patients with IAD, it is recommended to use a skin protectant that can alleviate pain or improve comfort; for patients at risk of IAD, a skin protectant to repel moisture and irritants should be used (Fletcher et al, 2020).

Prevention of PUs should include use of appropriate support surfaces, frequent repositioning, nutrition, moisture management and prophylactic use of dressings where appropriate (Mervis and Phillips, 2019).

Dressing selection

In a survey on dressing qualities, the issue of dressings being 'bulky' or 'conspicuous'

The patient should be involved and engaged with shared decision-making wherever possible.

Best Practice Statement

All patients with fragile or at-risk skin should receive an appropriate moisturising regimen to preserve skin integrity and minimise the risk of skin damage.

Best Practice Statement

All dressings and treatments should be tailored to the individual, their wound, their skin and any lifestyle or other personal factors, with an awareness of skin tone.

Best Practice Statement

was highlighted as a key factor that patients find difficult (WUWHS, 2020). While shops now stock basic plasters in a range of skin tones, wound dressings tend to be available only in very pale colours such as white or pink. For many patients of all skin tones, this may not be an issue. However, if the patient is self-conscious about their wound, they may be worried that the dressing will appear more conspicuous if they have dark skin.

It can be helpful to explain the clinical rationale for this – e.g. that dressings tend to be in pale colours so that it is easier to see any bleeding or exudate. The dressing is not intended to match anybody’s skin tone, but to provide the most effective treatment, which can include visual cues for the patient and clinician to indicate when dressing change is needed or if there is a change in the wound. Transparent dressings may be useful where visibility is required and the patient would prefer the dressing not to contrast with their skin tone.

For some patient groups, visibility of the dressing is a clinical issue as well as a psychological one. For example, a patient with mental health issues or dementia

may have more issues with picking at or disturbing a dressing if it is more visible against their skin.

The patient’s skin hydration levels (see page 10–11) may also influence dressing selection. If the patient’s skin does not hold moisture well, then adhesive dressings may not work well for them, and an alternative may be needed (e.g. plastic-based adhesive dressings may not work and fabric-based dressings may be a better alternative). Different types of skin can have varying moisture levels and this can affect healing, so this should be considered at assessment stage and when selecting all products for the patient.

Hosiery

Choice of hosiery products should focus on the patient’s individual needs and preferences. ‘Colour’ is generally less of a consideration in hosiery selection than it is in dressings, as hosiery now tend to be available in a range of different colours and styles. If patients have a preference, it may be for more modern-looking garments (e.g. black instead of beige).

Education and the future

It is clear that systemic change is needed to eradicate health inequities due to skin tone across care settings (Oozageer Gunowa et al, 2017; Mukwende, 2020). In wound care, a lack of education around skin tone awareness may mean that clinicians are not trained to spot signs and symptoms in all skin tones, and may miss these even when the skin is inspected, leading to late identification and diagnosis of skin damage, and potentially patient harm (Oozageer Gunowa et al, 2017).

Many clinicians and educators (and the wider population) consider themselves to be ‘colour blind’, or ‘not to see race’ (Oozageer Gunowa et al, 2020). This is an outdated ideology that can have harmful consequences: colour blindness allows members of groups who are not directly affected by racism to believe that racism ‘does not exist’ and that they are automatically non-prejudiced, and can also subconsciously endorse and perpetuate current inequality by refusing to acknowledge its existence (Plaut et al, 2018). A study found that those who considered themselves to be ‘colour blind’ lacked sensitivity to observing inequalities and microaggressions and were less attuned to the unique realities experienced by those of different races (Offermann et al, 2014). It is important to acknowledge difference, and that different patient groups may have different needs, sometimes due to their skin tone.

In terms of education, a study of teachers demonstrated that those with a ‘colour blind’ approach were less willing to adapt their teaching to the needs of ethnic minority students (Hachfeld et al, 2015). Other research has found a connection between colour blind racial attitudes and lower adoption of inclusive teaching practices by educators (Aragón et al, 2017), greater apathy to racism (Tynes and Markoe, 2010), and less willingness to support diversity efforts such as affirmative action to reduce discrimination (Awad et al, 2006).

In wound care education, a study examining diversity in undergraduate education through the lens of pressure ulceration

found that there was no discursive language or awareness of colour or colour blindness (Oozageer Gunowa et al, 2020). Documentary analysis confirmed five higher education institutions ‘overwhelmingly directed teaching and learning activities about PUs towards people with white skin tones’, and that observation of teaching indicated all teaching sessions only contained ‘brief, separate and superficial information’ on people with PUs and dark skin tones.

Nursing knowledge directly impacts on the incidence of PUs (El Enein and Zaghoul, 2011) and is a key factor in reducing patient harm caused by PU development (Greenwood and McGinnis, 2016). Therefore, it was concluded that ‘radical critique of all teaching and learning activities needs to occur, to help explore, improve and meaningfully and authentically include diversity and inclusivity in nurse education, and in particular, how people across the skin tone spectrum are included and represented in teaching and learning activities’ (Oozageer Gunowa et al, 2020).

There is a need for education that does not centre white skin and for educational materials to show a range of skin tones (Mukwende, 2020; Oozageer Gunowa et al, 2020). Educational materials must show the presentations of common wound types and skin conditions in a range of skin tones, so that students feel confident learning to assess and make accurate diagnoses in all patients.

All those providing education need to use self-reflection skills to review and reflect in an honest and unbiased way, ensuring that their teaching reflects different skin tones as part of the training provided, in an integrated rather than a tokenistic way. Education on skin tones needs to be delivered in a way that does not present dark skin tones as ‘different’, ‘other’, or a ‘challenge’ in practice to be overcome. Educators also need to create an environment in which students feel confident speaking up and discussing the

Any tissue viability or wound care-related training must include pictures of different skin tones. This needs to be incorporated into all education – not just a specific section about skin tones.

Best Practice Statement

Every educator should reflect on the inclusivity of their teaching and their own unconscious bias.

Best Practice Statement

Regardless of patient demographics, clinicians must have the knowledge and awareness to provide optimal care for all.

Best Practice Statement

differing needs of patients based on their skin tone.

In the literature, guidance on skin tone variance remains a gap and there is a lack of formal evidence. As research and evidence has always focused on white skin, there are unanswered questions. More research and evidence is needed to address the inequities that exist across health care and to build on evidence-based best practice.

As well as educating new healthcare practitioners (HCPs) in wound care, all HCPs delivering care to patients (including nursing and medical staff at all levels, and carer or care home staff) need to educate themselves and make active steps to make their practice inclusive and informed of skin tone variance. We are all responsible for fostering a culture that eradicates health inequities.

The need for increased awareness applies to all HCPs, including those working in areas that do not have a diverse patient population. Patient demographics may vary and awareness may be greater in some areas than others; however, it is vital to have the knowledge and awareness to be able to provide optimal care for all. We all have a responsibility to increase knowledge and prevent health inequality. Skin assessment in general can be poor, with an over-reliance on visual signs, so this should be seen as an opportunity to improve care for all patients.

In communities where health inequities and misdiagnosis have had an impact, some people may be mistrustful of HCPs or reluctant to seek help (Mukwende, 2020). This may have an adverse effect on individuals' physical and mental health. It is the responsibility of all HCPs to foster an environment in which all patients can feel confident in the care they receive.

Further and general reading

- *MIND THE GAP*: Malone Mukwende (www.blackandbrownskin.co.uk/mindthegap)
- *BEING WHITE IN THE HELPING PROFESSIONS: DEVELOPING EFFECTIVE INTERCULTURAL AWARENESS*: Judy Ryde
- *WHY I'M NO LONGER TALKING TO WHITE PEOPLE ABOUT RACE*: Reni Eddo-Lodge
- *THE GOOD ALLY*: Nova Reid

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