



TREATMENT INNOVATIONS FOR SKIN OF COLOUR A GLOBAL REPORT

Wendy Lewis investigates best practices to safely treat darker skin types

OUR SKIN COLOUR IS DETERMINED BY A combination of anatomical and physiological phenomena that occur within the uppermost layers of the skin. Skin of colour individuals may be of diverse ethnic backgrounds hailing from any region around the world from North America to Asia Pacific, as well as people from these groups who have intermarried.

Four pigments contribute to skin colour: melanin, carotene, oxygenated haemoglobin, and reduced haemoglobin. Of these, the particle size, shape, and location of melanin contribute most significantly to overall colour; the more near the surface melanin is clustered, the darker skin will appear. Carotene gives the skin a yellow hue, while oxygenated and reduced haemoglobin are red

and purplish-blue, respectively. In addition to melanin, all light-absorbing molecules and particles in the skin, or chromophores, play a part in perceived skin colour¹.

The global 'skin-lightening' products market size is expected to reach USD 13.7 billion by 2025, according to Grand View Research, Inc. As expected, the Asia Pacific region is anticipated to witness the fastest growth as consumers link fair skin with beauty, which is also associated with career success and social status².

But topical agents are just the tip of a very big iceberg when it comes to tackling the challenges of skin of colour. Energy-based devices are continually evolving and improving to satisfy consumer and practitioner demands; however, patients with darker skin types are not always ideal candidates for these technological advancements. Today, patients may learn about

new technologies in the media or online forums and naturally assume they can have any of these treatments done safely. However, they may be disappointed when they learn about the potential side-effects for darker skin types.

Aesthetic practitioners need to guide this group of patients through the best options and determine which will be safe and effective for their skin type and tone. For skin of colour patients, specialised expertise in treating darker skin is vital to achieving successful outcomes.

Key considerations in skin of colour

Regarding the development of signs of ageing, darker skin type patients may age a decade or more slower than their fair-skinned counterparts. They may not develop fine lines and wrinkles, but they may experience volume loss in the midface or laxity of the lower face and submental region.

While fair skin type patients tend to develop lines, wrinkles and laxity over time, skin of colour patients may be more concerned about age-related pigmentary changes. Hyperpigmentation is a big issue as they get older, perhaps because the classic signs of skin ageing tend to appear later and are less noticeable. Hyperpigmentation caused by cumulative sun exposure may be particularly pronounced in darker skin types.

Patients with darker skin may think they are pigment-protected so they don't need to protect themselves from the daily assault from UV rays. This may present a challenge for practitioners to get them acclimated to using a broad spectrum SPF30 or higher year round and to follow safe sun habits, such as seeking shade during peak times and wearing protective clothing.

To further complicate matters, just by looking at a patient's face and neck, it may not always be possible to know what their true ethnic background may be. Practitioners may ask if either or both of their parents have dark skin for starters. According to New York City Dermatologist Andrew Alexis, MD, MPH, "To determine skin phototype (Fitzpatrick skin type), I will ask about the patient's response to sun in terms of their tendency towards burning or tanning. To assess their propensity for keloids or hypertrophic scars, I will inquire about any raised scars from piercings, skin injuries, previous surgeries, and examine them closely. To evaluate their tendency toward hyperpigmentation, I inquire about their history of developing dark spots following acne, insect bites, and minor skin injuries."

Energy-based device debate

It is commonly accepted that darker skin types need to be treated with extra special care. When applying any laser or light-based device to a skin of colour patient, experts

agree that pigmentation should always be top of mind.

"There are several key important distinctions to consider when treating skin of colour patients," says Charlotte, NC dermatologist Gilly Munavalli, MD, MHS, FACMS. "People of colour have different cosmetic needs than patients with lighter skin tones; thus, they require different treatments and protocols, and different modalities to treat the same skin conditions. For example, these patients are often seeking treatment for hyperpigmentation, including dark spots, melasma, and PIH. They tend to be less concerned with wrinkles, laxity, and overall skin quality."

He continues, "Despite the numerous advances in laser technology, side-effects on patients of skin of colour can be a challenge, especially for practitioners who have limited experience treating skin of colour. It is important to minimise inflammation and erythema, which can result in hyperpigmentation. Darker skin types can be more sensitive and reactive so a more conservative approach can help to avoid complications."

"Most lasers are able to safely treat skin of colour when used correctly. The key is to adjust the density and fluence, so they are appropriate for the skin type you are treating. My preference for skin laxity, neck lines, and to define the jawline in darker skin types is RF Microneedling. I use Profound (Candela) and Genius™ Intelligent RF Delivery (Lutronic). To improve skin texture and even out skin tone for patchy hyperpigmentation, I perform a technique known as laser toning using either a picosecond laser, Picoway (Candela) and/or the Spectra (Lutronic) 1064nm Q-Switched Laser," said Dr. Munavalli.

For treating lines and wrinkles, there is a new kid on the block that is considered safe for all skin types. "The new Sofwave Ultrasound Beam technology (Sofwave Medical) is a good choice for mild to moderate rhytids and perioral lines in all skin types. This ultrasonic system is combined with a cooling system that generates High-Intensity Non-Focused Ultrasonic Pulses (HIUS), causing controlled thermal damage by elevating the temperature to 60-70°C in the dermis layer while sparing the epidermal layer using surface cooling," said Dr. Munavalli.

Choosing the right technology for the right patient

While it is true that today many aesthetic clinics will invest in an array of lasers, only some of them are commonly used on patients with darker skin types. >



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DEFINING SKIN OF COLOUR³

1 The term skin of colour identifies individuals of particular racial and ethnic groups who share similar cutaneous characteristics and disorders, as well as reaction patterns to those disorders

2 The term skin of colour identifies individuals of racial groups with skin darker than Caucasians, including Asians, Africans, Native Americans, and Pacific Islanders

3 Patients with skin of colour often have distinctive cutaneous and hair characteristics, disorders, and reaction patterns, as well as diverse cultural practices affecting skin care

4 There is a diversity of skin hues, cutaneous diseases, and responses to cutaneous stimuli within each racial or ethnic group



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▷ More often, just a few lasers or light-based systems may be used to safely treat a particular condition in skin of colour. Select lasers may be used on all skin types for hair removal, skin tightening, body contouring, textural improvements as well as pigmented lesions from acne, scars or melasma. For example, radiofrequency is considered to be colourblind and the heat it produces does not get absorbed by pigment. Ultrasound has been demonstrated to be safe for tightening skin of any colour. Infrared lasers that are absorbed by pigment have been shown to be effective for acne, acne scars, wrinkles, and rosacea.

Laser devices

Whenever a laser is used on skin of colour patients, minimising inflammation and erythema are top of mind. Any incidence of irritation can transform into hyperpigmentation as skin of colour is more sensitive and reactive towards irritation. There is also a greater risk of irritation, inflammation and redness that may lead to discolouration, whereas in fair skin types, these common side effects usually resolve. As a result, it is advised to be more conservative and adopt common-sense parameters to stay safe.

According to dermatologist Penelope Tympanides who practices in Athens and London, 'Lower fluences are recommended for higher SPT to minimise excessive thermal injury to the epidermis, which can be associated with disfiguring pigmentary alterations (hyper or hypopigmentation). Long pulses allow the skin to have piecemeal time to properly cool from the treatment heat, preventing inflammation and thus pro-inflammatory hyperpigmentation. Patient selection, as well as realistic expectations, are critical. When I deal with dark skin types, I treat in a very conservative way. I always offer patients a "trial" treatment in a small area at a week to 10 days prior to starting the actual treatment. Darker skin patients are warned about the probability of hyperpigmentation, or other complexion issues that may arise with treatment, as well as potential scarring.'

She continues, 'When selecting the right wavelength, consider chromophore (especially risk of absorption by epidermal melanin). Longer wavelengths are associated with less epidermal absorption and therefore offer greater safety in patients with a higher SPT. Conservative treatment parameters may consist of settings that minimise the extent of epidermal and dermal injury, which often requires a greater number of sessions, for example, lower fluences and longer pulse durations for laser hair removal. I use rigorous epidermal cooling, including choosing slower treatment speeds when using lasers with contact cooling, pausing between passes to reduce bulk heating, and applying ice packs post-procedure. I will consider using topical steroids post-treatment to reduce inflammation, especially when



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significant erythema or oedema is noted. This may also prevent the likelihood of post-inflammatory hyperpigmentation to some extent.'

Dr. Riekie Smit, from Pretoria, South Africa manages numerous skin types from the fairest blonde hair, blue-eyed patients to the darkest skin tones. 'We have a very sunny climate and love the outdoors, so pigmentation is a major problem in our country among all skin types. In fairer skin types (Fitzpatrick I to III) I see an abundance of photoaging, solar keratosis, and skin cancers. In skin types III and upwards, the biggest skin concerns are pigmentary changes, especially PIH and melasma. In patients with darker skin types, the biggest mistake a physician can make is to cause inflammation with a procedure. Inflammation is the trigger for the pigmentation, so treatments should be focused on reducing inflammation. My preference in Fitzpatrick skin types III and upwards are superficial peels, non-ablative low inflammatory lasers, LED light therapy and skin revitalization. Superficial peels and not anything deeper than epidermal are important to help exfoliate the keratinocytes filled with melanin deposits. This should be combined with appropriate skin care to reduce excess melanogenesis.'

She adds, 'Before picosecond lasers, my preference was q-switched or nanosecond 1064nm. But lasers have really advanced to make it easier to treat skin of colour. I really love the results that I obtain from the Enlighten® system (Cutera) utilising 1064nm in picosecond pulsing. The difference is that it does not cause inflammation and just like we want to break up the tattoo ink into smaller particles, I use this to break up dermal pigmentation which is trapped as melanophages. Dermal pigmentation has always been a difficult condition to treat and is very common in darker skin tones. The secret lies in treating the patient with continued feedback of the pain level. So, I do not think we should numb the skin of patients with a high risk for pigmentation. When a treatment is too painful, then it will cause inflammation and inflammation leads to pigmentation. I see so many patients with post-inflammatory hyperpigmentation after treatments were done incorrectly for their skin type. In darker skin tones, stronger and deeper is not better! Photobiomodulation or low-level laser therapy (LLLT) is an anti-inflammatory treatment that speeds up healing; therefore, I will always include this for all treatments for patients with a risk for pigmenting.'

According to dermatologist and laser surgeon Maritza Perez, MD in New Canaan, Connecticut, 'For my skin of colour patients, I am using technology that carries the ▷



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DEVICES FOR TREATMENT SKIN OF COLOUR

DR. PENELOPE TYMPANIDES

Hair Removal Lasers

The most popular systems include:

- Alexandrite – Short pulse of 755 nm, very efficient in skin types I-IV, as it targets melanin both in the hair follicle and the epidermis, thus, it is not safe for darker skin types
- Diode – Longer wavelength of 800-810 nm, safer than alexandrite but I would not apply this to a skin type IV-V for hair removal
- Nd:YAG – The lowest incidence of adverse events associated with laser hair removal in darker skin types has been shown with the long-pulsed 1064 nm. In my opinion, it is the most appropriate for darker skin types

Ablative Lasers

- Fractional CO₂
- Erbium YAG

I never use these lasers in high SPT (skin prick test) patients, as it can be a disaster.

I never treat hyperpigmentation with light-based devices in these patients as it can make the hyperpigmentation worse. In some cases, fractional CO₂ may potentially cause keloids. If the treatment goes smoothly, the benefits for acne scars, for example, will not be as evident as in a lighter skin type like Type III.

Skin Tightening

- Radiofrequency (RF)
- High-Intensity Focused Ultrasound (HIFU)

These devices, when applied for skin tightening, are safer on darker skin types, as they are not light-based and bypass the epidermis. Pigmentary considerations are not as important of a consideration in energy-based modalities that treat layers beneath the skin – layers that do not involve the melanocyte layer, which is essentially the dermal-epidermal junction. They are effective only when applied properly. This requires causing only minimal trauma in the deep dermis, which appears as inflammation and erythema. Inflammation may cause post-inflammatory hyperpigmentation; therefore, I will treat lightly explaining to the patient that this may imply lower effectiveness that may necessitate more sessions to achieve the desired result.

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▷ least potential for complications such as hyperpigmentation and erythema. My preference in devices for skin of colour are the infrared lasers as Q-switch Nd:YAG (in the nanosecond pulse duration) and pico (in the pico wavelength 10-12). These lasers are very effective in performing non-ablative facial and body rejuvenation without downtime, pain or complications. I have stopped using diodes (860nm wavelength) in skin of colour because of potential complications.’

The challenges of rosacea

According to the American Academy of Dermatology (AAD), studies show that when people of colour develop rosacea, the early signs, such as flushing, can be missed or mistaken for another condition⁴.

‘Rosacea in patients with skin of colour is both very complex and quite interesting,’ says Dallas, TX dermatologist Seemal R. Desai, MD. ‘Many patients who I subsequently diagnose with rosacea do not even know they have it. I get a lot of reactions from patients who felt that their skin was slightly red or had a brownish texture. Some may not think they have classic acne, but always had a few pimple-like bumps that show up. It’s only when we delve into their history and look further that we find that many have extreme skin sensitivity linked to diet or certain foods and chemicals, and in some cases, sun sensitivity.

‘We need to closely examine the signs of erythema because they may not be as visible in darker skin type patients. The treatment approach I advocate for rosacea in these patients should be the same as in patients with lighter skin tones. We should offer the same type of medications and treatments with some exceptions. For example, in the case of laser therapy, which I often use for the aesthetic improvement of blood vessels and redness in lighter skin tones, I would use more cautiously in skin of colour patients. However, topical agents such as those containing ivermectin topical brimonidine, topical oxymetazoline and others in addition to stressing the importance of skin care and photoprotection remains at the centre of the therapeutic ladder for these patients. I also do not hesitate to use low-dose oral doxycycline as an anti-inflammatory for these patients if clinically indicated,’ he adds.

Pigmented lesions

In treating skin of colour, experts advise using lasers that bypass the pigment in the skin’s outer layer. Water is mostly in the dermis and the water absorbs the light, turns it into heat and heats up the dermis breaking up pigment and reducing dark spots. Using higher fluencies and energies may be considered safe in some cases.

For melasma, energy-based devices are sometimes considered the treatment of last resort. Melasma is difficult to treat in all patients and patients with skin of colour are even more challenging. This condition often treated very gently using very low fluences to avoid causing hypopigmentation.

When treating skin of colour, laser specialists stress the importance of selecting the right device or laser, the ▷

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5 COMMON SKIN OF COLOUR CHALLENGES

DR. ANDREW ALEXIS

- 1 Scarring Alopecia, especially Central Centrifugal Cicatricial Alopecia (CCCA) and Frontal Fibrosing Alopecia (FFA)
- 2 Post-inflammatory Hyperpigmentation (PIH)
- 3 Melasma
- 4 Keloid scarring
- 5 Seborrhic dermatoses

TREATMENT TRENDS FOR SKIN OF COLOUR⁵

DR. ANDREW ALEXIS

- Non-hydroquinone topical with efficacy vs. placebo cream in two published studies combined with light (UV and visible) protection and procedures (peels, non-ablative fractional laser) shows favorable results for melasma and facial hyperpigmentation
- Adding visible light protection in the management of melasma with iron oxide containing sunscreens (tinted) and oral polypodium leucotomus.

▷ appropriate wavelength, safe parameters and aggressive skin cooling and to treat conservatively to avoid side-effects. Managing patient expectations is also an important factor.

Although skin conditions can occur in patients of every skin tone, certain conditions can affect skin of colour patients more frequently and more severely. Among the most common problems with skin of colour are hypopigmentation and hyperpigmentation. These conditions are more visible in patients with darker skin tones and they can be the cause of great distress and low self-esteem.

As darker skin patients age, they may experience benign facial pigmentation and skin growths including seborrhic keratoses, skin tags, solar lentigines, moles, freckles and dermatosis papulosa nigra. Picosecond devices have been demonstrated to be effective for removing some of these lesions with fewer treatments. I have found that using the 532nm in the ExcelV[®] system (Cutera) for dermatosis papulosa nigra in African American patients works well,' says Dr. Munavalli.

Facial plastic surgeon Dr. Nabil Fakh-Gomez who practices in two sunny places, Beirut and Madrid, sees many patients for pigmentation concerns. 'Hyperpigmentation and melasma are chronic concerns that affect all countries on the Mediterranean Sea. Melasma has increased in the last few years with the rise of tanning and sun exposure. We offer ZO Skin Health treatment solutions to reduce and eliminate hyperpigmentation and control melasma. Their Pigment Control Program has demonstrated a great impact on my cases by helping many patients with darker skin types. In addition to applying topical agents for treating and stabilising these conditions, we also stabilise our cases with lasers, such as the Neo[®] system (Aerolase), an innovative 650 microsecond pulsed 1064nm laser technology with no downtime to help control and treat melasma. Today I recommend the current gold standard method, which is a multimodal approach for treating hyperpigmentation and melasma to achieve the best results safely,' he explains.

The skincare factor

Skincare trends have witnessed an uptick in specialised topical agents designed to be safe for darker skin types, with their special needs in mind offering more safe and effective options in clinical skin care dispensed in aesthetic practices in many markets around the world, with some exceptions due to local regulations.

Pre and post topical treatments with laser and light-based devices have long been considered a critical success factor to prepare the skin properly and achieve the desired results. I always have my patients using a

skincare regimen prior to any laser treatment so that they can go back to the same regimen after the treatment. The regimen always includes a mild cleanser, barrier repair moisturiser, a moisturiser with niacinamide, hyaluronic acid, topical vitamin C as an antioxidant, inorganic elegant sunblock, plus a retinoid of some form for night applications. Because I am not using lasers that can induce pigmentary complications, I am not recommending bleaching creams unless the patient has melasma or pre-existing post-inflammatory hyperpigmentation,' says Dr. Perez.

'Skin revitalisation with vitamins and hyaluronic acid done in a soft and non-traumatic manner is very good for darker skin types to improve the skin barrier, nourish the skin and improve skin quality. I like to perform the treatment with the Nanosoft[™] device by Fillmed as it ensures non-painful perfect intradermal injections. Of



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course, all treatments should come with a strict lecture to patients about incorporating daily high-quality SPF usage. Many patients still believe that because their skin is darker, they do not need an SPF because they never burn in the sun, not realizing that a high SPF will prevent uneven skin tone, and reduce PIH and melasma significantly,' adds Dr. Smit.

Patients may also experience a variety of other common skin conditions that require treatment. For example, hypopigmentation, acne, rosacea and eczema may persist from early ages to later in life and can potentially lead to hyperpigmentation and scarring. Dermatologist Dhaval Bhanusali, MD whose practice is located at Hudson Yards in New York City, sees a diverse range of patients from millennials to mature patients across all skin tones. "We are seeing a lot of hair loss, breakouts, and subsequent pigmentation from the breakouts. In our practice, we use the lightening compounded product from Skin Medicinals® at varying strengths. I sometimes like to combine that with supplements like Heliocare® as well as diligent sunscreen use."

Many skincare brands have jumped on the opportunity to offer more inclusive lines to support diverse skin tones. Most recently there has been a cosmetics industry-wide campaign to be more sensitive to skin of colour customers and tone down their imagery and branding. A new wave of criticism over skin 'lightening' products has even led some of the major cosmetics giants to reassess creams, cleansers and masks that promote 'whiter' skin, though they are unlikely to abandon this multi-billion dollar market*. On June 19, 2020, Johnson & Johnson announced that it would stop selling 'dark-spot reducers' in the Neutrogena Fine Fairness and Clear Fairness by Clean & Clear lines sold in Asia and the Middle East. Unilever stated that it would rename its Fair & Lovely line marketed in India and would also remove the words 'fair,' 'fairness,' 'white,' 'whitening,' 'light' and 'lightening' from all of its brands and products. L'Oréal followed suit for its products, notably the Garnier line internationally⁷.

As this important category continues to expand globally, it is essential to get up to speed on the technology, injectables, and topical agents that are safe and effective to meet the diverse needs of this growing community of patients seeking aesthetic treatments.

► **To stay up to date on issues of skin of colour, join the Skin of Color Society:** skinfofcolorssociety.org/membership-2/membership-application/Skin

- **Resources:** Aerolase – aerolase.com
 Candela – candela.com
 Cutera – cutera.com
 Fillmed Laboratoires – fillmed.com
 Heliocare – heliocare.com
 Lutronic – lutronic.com
 Skin Medicinals – skinmedicinals.com
 Sofwave – sofwave.com
 ZO Skin Health – zoskinhealth.com



Figure 1 (A) Before and (B) after two treatments with the Enlighten® PICO Genesis™ FX (Cutera). Photos courtesy of S. Mohan, M.D and S. Karim, M.D



Figure 2 (A) Diagnosis: Melasma. (B) Treatment: ZO® Skin Health Retinol Skin Brightener 1% and Wrinkle + Texture Repair for 6 months combined with the ZO Step Peel® (3 peels). ©Zein Obagi, MD

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