

Medical Reference: Dark Spots (Hyperpigmentation)

1. Condition Overview

Name: Dark Spots (Hyperpigmentation) **Definition:** Hyperpigmentation is a common skin condition characterized by patches of skin that become darker than the surrounding areas. This darkening occurs when an excess of melanin—the brown pigment that produces normal skin color—forms deposits in the skin. The most common forms include Post-Inflammatory Hyperpigmentation (PIH), Melasma, and Solar Lentigines (sun spots).

Who is commonly affected: Dark spots can affect people of all skin types, but they are often more pronounced or persistent in individuals with deeper skin tones (Fitzpatrick scales IV–VI). It affects individuals exposed to significant UV radiation, those with hormonal fluctuations (e.g., pregnancy or birth control), and those recovering from inflammatory skin conditions like acne or eczema.

2. Visual Severity Mapping

The following numerical scores categorize the depth, density, and persistence of the pigmentation:

- **Mild (0–30):** Faint, superficial spots that are light brown or tan. Usually localized to a small area (e.g., a few post-acne marks). Spots are not confluent (do not join together) and are easily covered by light makeup.
- **Moderate (31–60):** Clearly visible dark brown or grayish-brown patches. Multiple clusters of spots or larger "mask-like" areas (common in Melasma). Pigment may appear deeper in the dermis and is harder to conceal.
- **Severe (61–100):** Deep, dense, and widespread pigmentation. Patches are dark, persistent, and may cover significant portions of the face or body. Significant contrast between affected and unaffected skin. Often resistant to standard over-the-counter treatments.

3. Common Triggers

- **UV Exposure:** Sun radiation is the primary trigger that stimulates melanocytes to produce melanin.
- **Inflammation:** Skin trauma, acne, or rashes trigger Post-Inflammatory Hyperpigmentation (PIH).
- **Hormonal Changes:** Estrogen and progesterone can trigger Melasma (the "mask of pregnancy").
- **Blue Light:** High-energy visible (HEV) light from screens can exacerbate pigment in darker skin tones.
- **Medications:** Certain antibiotics, NSAIDs, and chemotherapy drugs can increase skin sensitivity to pigment.
- **Aging:** Cumulative sun damage over decades leads to solar lentigines (age spots).

4. Evidence-Based Care Guidelines

Mild Care (Score: 0–30)

- **Vitamin C (L-Ascorbic Acid):** Apply a serum in the morning to neutralize free radicals and inhibit melanin production.
- **Niacinamide (Vitamin B3):** Use 5% concentrations to block the transfer of pigment to skin cells.
- **Daily SPF 30+:** Non-negotiable. Use a broad-spectrum sunscreen even on cloudy days to prevent spots from darkening.
- **Mild Alpha Hydroxy Acids (AHAs):** Use low-strength Lactic or Glycolic acid to increase cell turnover and shed pigmented surface cells.

Moderate Care (Score: 31–60)

- **Tyrosinase Inhibitors:** Use Alpha Arbutin, Kojic Acid, or Azelaic Acid to target the enzymes responsible for melanin production.
- **Tranexamic Acid:** Incorporate serums containing 2–3% Tranexamic acid to target vascular-linked pigmentation like Melasma.
- **Chemical Peels:** Monthly superficial peels (Glycolic or Mandelic acid) to accelerate the removal of deeper pigment.
- **Tinted Sunscreen:** Use sunscreens containing Iron Oxides, which provide essential protection against blue light.

Severe Care (Score: 61–100)

- **Prescription Interventions:** Consultation for "Kligman's Formula" or high-strength Hydroquinone (used under strict doctor supervision).
- **Cysteamine Cream:** An alternative for stubborn pigment that does not respond to traditional brighteners.
- **Laser/IPL Therapy:** Professional treatments such as Q-switched or Picosecond lasers to break up deep dermal pigment.
- **Oral Medications:** A dermatologist may prescribe oral Tranexamic acid for systemic management of severe Melasma.

5. Do's and Don'ts

Do

- **Wear Sunscreen Indoors:** UV rays (UVA) can penetrate window glass and darken existing spots.
- **Reapply SPF:** Every 2 hours when outdoors to maintain the protective barrier.
- **Be Consistent:** Pigmentation takes 2–4 months of daily treatment to show visible fading.
- **Moisturize:** A healthy skin barrier is essential for the skin to heal from inflammatory trauma.

Don't

- **Pick Scabs or Pimples:** Physical trauma is the fastest way to create deep, long-lasting dark spots.
- **Use High-Strength Hydroquinone Long-term:** Using it for more than 3–6 months without a break can lead to permanent blue-black darkening (Ochronosis).
- **Skip SPF While Using Acids:** Chemical exfoliants make your skin more sensitive to the sun; skipping SPF will result in more pigment, not less.
- **Expect Instant Results:** Pigment resides in different layers of the skin and requires time to cycle out.