

A close-up, profile view of three women of different ethnicities (Caucasian, African American, and Caucasian) looking towards the right. The image is the background for the magazine cover.

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Hormonally Induced Skin Conditions

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They are the chemical messengers that control nearly every aspect of the human body. Without hormones, growth and development, metabolism, reproduction, mood control, digestion and other necessary functions would not be possible. Small changes in hormones can cause big changes within the body and the skin. Hormonally induced skin conditions, like acne and melasma can be frustrating, as fluctuations in hormones are unpredictable and often not easily detected, even with medical testing. Knowing the pivotal times in life when hormonal fluctuations are most likely to occur and becoming familiar with the skin conditions influenced by hormonal changes are crucial to successfully controlling hormonally induced skin concerns.

Pivotal Life Changes Equal Hormonal Disruption

Puberty marks the halt of adolescence and the beginning of adulthood. For girls, puberty begins between the ages of 9 to 14, lasting, on average, for four years. Boys typically hit puberty between the ages of 10 to 17 and experience changes for up to seven years. This extremely important hormone influx involves estrogen, progesterone and androgen hormones, such as testosterone. Girls produce primarily estrogen while boys produce more testosterone. Dominant androgen hormones can be responsible for an increase in sebum production in both sexes, making acne a common concern for teenagers.

More than just a necessity to reproduction, a woman's menstrual cycle brings about a host of hormonal shifts. During the first seven days of menstruation, estrogen levels peak and the skin is typically clear of acne breakouts. However, as estrogen levels begin to fall, testosterone levels are more prominent and oil production increases, playing a significant role in acne formation later in the month. During days 15 to 28, estrogen decreases and progesterone levels increase, allowing for fertilization to occur. This fluctuation causes tissues to swell, which constricts pores, trapping the increased oil within the follicle. This combination creates the perfect condition for acne breakouts.

While acne is common in younger patients, hormone-induced pigment challenges become more prevalent during

pregnancy. The exact reason as to why pregnancy affects the pigment-producing process is unknown. Patients and clinicians alike can all agree that melasma is one of the most frustrating skin conditions to treat and can leave the affected patient feeling self-conscious of their appearance. With few treatment options available, melasma tends to persist throughout the pregnancy and during lactation.

Perimenopause marks the start of infertility in women and can begin as early as the age of 35. During this time, hormonal changes often affect the rise and fall of estrogen and progesterone. This constant fluctuation creates a myriad of unwanted changes – menstrual periods become irregular, melasma can return and acne breakouts increase. Perimenopausal skin is difficult to treat because of the day to day hormonal shifts. It can be even more unpredictable than during pregnancy because there is not a definitive end date. Each woman will start and stop perimenopause and go onto menopause based on genetics, lifestyle, diet and general health. The increased breakouts many women experience are due to the low levels of estrogen and progesterone, allowing androgen hormones to become more prominent. The drop in estrogen leads to surface dryness, trapping sebum beneath the skin, causing an increase in acne breakouts. This erratic shift in hormones can also bring about pigment changes, such as melasma.

Removing the Mask

Hormonal fluctuations cause two major skin concerns: Melasma and acne. Melasma is commonly referred to as the "mask of pregnancy," but in reality, any hormonal fluctuation, aside from puberty and menstruation, can bring about the onset of melasma. Melasma can be triggered by starting or stopping contraceptive use, lactation, hormone replacement therapy, perimenopause, as well as thyroid and hormone disruptions. It is estimated that five to six million American women suffer from melasma annually. Although we know what brings about the onset of melasma, the exact cause has yet to be identified, but science suggests a few possibilities.

Studies have shown that pigment-producing melanocytes in melasma patients have more dendrites, and produce and distribute more melanosomes to the keratinocytes. Other potential causes are larger, darkly pigmented melanocytes, an increased number of estrogen receptors within the melanocytes and a possible vascular component has been identified in melasma. The frustrations felt among clinicians and their patients are evident, especially when there is not one definitive cause for the pigmentation. There are, however, steps to proper treatment. The most important factor when treating melasma is to be consistent without being overly aggressive.

Since hormones are often unpredictable, controlling the acne that they can bring about is also unpredictable.

Melasma is one of the hardest skin conditions to treat because it can be quite reactive. One moment you and your patient may be seeing dramatic results, then the next treatment could push the patient's skin over the edge and suddenly the melasma has worsened. This is an all too common occurrence among those who suffer from hormonally induced hyperpigmentation. The trick to successful treatment is using the right combination of ingredients at home and during in-office procedures.

A low percentage of hydroquinone (two percent) is one of the most favored ingredients when treating melasma. However, if the patient is pregnant or lactating, always check with their OB/GYN before administering treatment of hydroquinone. Once approved by the physician or after pregnancy and lactation is complete, incorporate the following into a comprehensive daily care routine:

- An alpha hydroxy acid-based cleanser.
- Melanogenesis inhibiting corrective products and spot treatments containing hydroquinone; kojic, lactic or azelaic acids; mulberry or licorice extracts; arbutin; phenylethyl resorcinol or undecylenoyl phenylalanine.
- Stable L-ascorbic acid (15 – 20 percent) products.
- Stable retinoid products.
- Daily broad-spectrum sun and antioxidant protection.

Melasma patients should always be treated progressively in-office. Again, check with the patient's OB/GYN before administering treatment if they are pregnant or lactating. Modified and enhanced Jessner's solutions blended with hydroquinone and kojic acid, and trichloroacetic acid (TCA) formulas blended with lactic, kojic and azelaic acids are especially helpful. Treatment should be administered every three weeks to ensure proper cellular turnover, which will lift the pigment out of the skin at an accelerated rate, while avoiding unnecessary inflammation.

Breaking the Breakout Routine

Acne involves four main causes: Increased keratinization within the follicle, increased sebum production, proliferation of *Propionibacterium acnes* (*P. acnes*) bacteria, and inflammation. Hormones play a significant role in acne as well.

Hormonal acne is typically triggered by a chain reaction starting with 5-alpha reductase. This enzyme converts testosterone into dihydrotestosterone (DHT). The androgen receptors at the base of the follicle are stimulated by DHT, leading to an enlargement of the sebaceous gland and increased sebum production. The stress hormone cortisol can also increase acne breakouts. Cortisol levels are often higher in acne patients. In addition, stress causes the release of neurotransmitters that increase sebum production and inflammation, causing breakouts to occur more frequently.

Consistency is vital when treating hormonal acne. The more controlled the acne breakouts are, the less likely future breakouts will develop. Encourage acne patients to use the following for daily acne control:

- An antibacterial cleanser containing: Liquid benzoyl peroxide, gluconolactone, salicylic acid, sulfur or alpha hydroxy acids.
- An alpha hydroxy acid toner with anti-inflammatory agents and antioxidants.
- Corrective products containing salicylic, azelaic, kojic and lactic acids; licorice extract or retinoids.
- An antibacterial and anti-inflammatory moisturizer.
- Daily use of a lightweight antioxidant and broad-spectrum UV protecting product.

Although daily care products are crucial when treating acne, corrective treatments can encourage fast results. In-office treatments designed to increase cell turnover and decrease bacteria and oil production include modified and enhanced Jessner's formulas, salicylic acid treatments blended with anti-

inflammatory ingredients, deep pore cleansing treatments and treatments designed to enhance circulation. Puberty-induced acne patients should be treated every two weeks since this particular condition tends to be sluggish and in need of regular exfoliation. Menstrual-induced acne can be treated every four weeks depending upon the patient's cycle.

Conclusion

Hormonally induced skin conditions, such as melasma and acne, often cause frustration for the clinician and the affected patient. As the clinician, it is important to know which hormonal change the patient may be experiencing to develop the best treatment plan for their skin. With most hormonal skin conditions, it is best to treat slowly, rather than being overly aggressive. Low percentage hydroquinone, gluconolactone and botanical corrective ingredients typically work best in daily care products. In-office treatments increase success rates as long as the correct chemical peel solutions are administered. Although it can be difficult to stop hormonal fluctuations from occurring, we can apply preventative and corrective measures to reduce the skin conditions they often bring.



Jennifer Wild, DO, currently serves as a national educator for PCA SKIN and regularly speaks for the International Association for Physicians in Aesthetic Medicine. An osteopathic physician and surgeon, Dr. Wild is also board-certified in family practice and has served as medical director for successful medical spas throughout Arizona. Since 2004, she has pursued an active interest in aesthetics, including dermal injections, laser, and professional skin care treatments and her expertise in biology and medicine have allowed her to excel within the industry.