Understanding the Different Ways Hormones Can Be Administered

> Hormones can be given in several different ways, and the method of delivery matters greatly. The route used affects how hormones are absorbed, how the body processes them, their safety profile, their effectiveness, and how closely they mimic natural human physiology.

The main methods of hormone administration include:

1. Oral (by mouth)
2. Topical (through the skin)
3. Injection
4. Pellets
5. Vaginal application
6. Sublingual (under the tongue)

Each method has advantages and disadvantages.

ORAL (BY MOUTH) HORMONES

Almost everything we swallow — other than normal dietary fats — is absorbed through the digestive system and passes through the liver before reaching the general bloodstream. This is called the **"first pass liver effect."**

The liver is one of the body's most important organs. It functions as the body's chemical factory and processing center. It produces vital proteins, enzymes, clotting factors, cholesterol carriers, hormones, and detoxification systems that are essential for life.

The liver responds to what it "sees." When hormones are taken orally, the liver is exposed to unusually high concentrations before the hormones reach the rest of the body. This can significantly alter liver function and change the production of many important proteins involved in blood clotting, inflammation, cholesterol metabolism, fluid balance, and blood pressure regulation.

Oral Estrogen

Oral estrogen has significant effects on the liver and is generally not considered safe.

As oral estrogen passes through the liver, it increases the production of clotting proteins. Over time, this may increase the risk of:

- Blood clots
- Stroke
- Pulmonary embolism
- Heart attack

Oral estrogen may also:

- Increase triglycerides
- Increase binding proteins (which can reduce free hormone availability)
- Increase risk of gallstones and gallbladder disease
- Contribute to fatty liver
- Alter normal liver metabolism
- Increase blood pressure

For these reasons, topical estradiol is generally considered safer and more physiologic than oral estrogen.

Oral Progesterone

Oral progesterone also undergoes major liver metabolism before reaching the bloodstream. Much of it is converted into intermediary metabolites rather than remaining as progesterone itself.

Some of these metabolites can cause many negative effects including:

- Sedation or drowsiness
- Brain fog
- Fatigue
- Mood changes
- Bloating and fluid retention

Blood levels with oral progesterone are often inconsistent and unpredictable. Although oral progesterone is convenient, it may not provide the same stable tissue exposure or physiologic effects as properly formulated topical progesterone.

An important example comes from fertility medicine. When women require progesterone support during pregnancy or fertility treatment, oral progesterone is not used because too much is converted by the liver before reaching the bloodstream. Instead, fertility specialists typically use injectable (preferred) or vaginal progesterone (less favored) when high and reliable blood levels are necessary.

Oral Testosterone

Oral testosterone undergoes substantial liver metabolism and may negatively affect liver function. Potential effects include:

- Elevation of liver enzymes
- Increased fat production in the liver
- Negative cholesterol changes
- Increased inflammation and oxidative stress
- Potential liver injury with long-term exposure

For these reasons, oral testosterone is avoided in modern hormone replacement therapy.

INJECTABLE HORMONES

Testosterone Injections

Injectable testosterone works extremely well for many men. In my experience, most men achieve significantly better symptom improvement and more reliable blood levels with injections compared to topical preparations. Testosterone injections can:

- Provide strong and reliable absorption
- Achieve the blood levels many men require
- Improve energy, strength, libido, mood, and body composition effectively

Weekly or twice-weekly injections are commonly used. Injectable testosterone can be used in women, although women can achieve appropriate physiologic levels with topical testosterone, as they require much less than men do.

Injectable Progesterone

Injectable progesterone is the most reliable method for achieving the very high progesterone levels required in fertility treatment. However:

- It can be painful
- It is more expensive
- It is less practical for long-term hormone replacement

For routine hormone replacement therapy, injectable progesterone is generally not practical.

Injectable Estradiol

Injectable estradiol may create hormone spikes and fluctuations rather than steady physiologic levels. It is also more cumbersome and expensive than topical therapy. For most women, topical estradiol provides steadier and more physiologic hormone delivery.

PELLETS

Pellets are small hormone implants inserted under the skin that slowly release hormones over several months. Pellets are most commonly used for testosterone and estradiol.

Potential Problems with Pellets

Once inserted:

- Levels cannot easily be adjusted
- Hormone release cannot be stopped quickly
- Effects may last for months

The release rate can vary depending on activity level, body composition, heat exposure, inflammation, and blood flow.

In women, testosterone levels from pellets are substantially higher than physiologic female levels. Chronically elevated testosterone may contribute to:

- Insulin resistance
- Unfavorable cholesterol changes
- Hypertension
- Metabolic syndrome
- Hair loss
- Acne
- Facial hair growth
- Voice deepening
- Clitoral enlargement

Progesterone is generally not included in pellets because progesterone does not release predictably from pellet formulations.

TOPICAL (THROUGH THE SKIN) HORMONES — PREFERRED METHOD

General Topical Application

With topical hormone therapy, hormones are absorbed through the skin directly into the bloodstream before the liver is exposed to high concentrations. This bypasses the “first pass liver effect” and allows hormones to enter the body in a way that is much closer to natural ovarian hormone release before menopause.

When properly formulated and correctly applied, topical hormones:

- Provide steady blood levels
- Allow a more physiologic hormone delivery
- Avoid liver stress
- Do not create metabolic abnormalities or byproducts

Certain areas of the skin absorb hormones better than others. Proper application technique is important and should be discussed with an experienced provider.

Topical Estradiol

Topical estradiol is the safest method of estrogen replacement for women. Creams and gels can often achieve blood levels that are closer to physiologic premenopausal levels.

Patches are typically lower-dose systems designed primarily to reduce hot flashes and night sweats. While patches can be very helpful for symptom relief, they may not always provide sufficient estrogen levels to help prevent some of the long-term degenerative effects associated with menopause.

Topical Progesterone

Topical progesterone has historically been controversial because many preparations do not absorb well through the skin.

However, with the correct formulation and proper application technique, progesterone can successfully enter the bloodstream and provide physiologic effects without first being extensively converted by the liver into other metabolites. This allows progesterone to function more naturally and predictably.

Topical Testosterone

Topical testosterone absorbs well in both men and women. However, it is often difficult to achieve the higher blood levels many men require using topical preparations alone. In my experience, most men obtain better results with injectable testosterone.

Women, on the other hand, can usually achieve appropriate physiologic testosterone levels quite successfully with topical therapy.

VAGINAL HORMONE APPLICATION

Vaginal Estrogen

Vaginal estrogen is primarily used for local vaginal symptoms such as dryness and irritation. Absorption into the bloodstream is limited, so blood estrogen levels remain low. Some women experience symptom improvement primarily from the moisturizing effect of the cream base itself rather than the effects of estrogen.

Vaginal estrogen may briefly help local symptoms, but it is not sufficient to restore physiologic systemic estrogen levels throughout the body.

Vaginal Progesterone

Vaginal progesterone was developed partly because oral progesterone has significant limitations. Although vaginal progesterone avoids first-pass liver metabolism, absorption is still limited and inconsistent. Many women also dislike leakage, vaginal irritation, and interference with intimacy.

SUBLINGUAL (UNDER THE TONGUE) HORMONES

Sublingual hormones are absorbed under the tongue, but some portion is still swallowed and exposed to the digestive tract and liver.

Sublingual progesterone exists but has limited popularity because it has a very bitter taste, it often requires sweeteners to tolerate, and some women develop oral irritation over time.

FINAL THOUGHTS

Hormones should be replaced in the safest, most effective, physiologic, and practical ways possible. In general, I prefer:

- Topical estradiol for women
- Topical progesterone for women
- Topical testosterone for women
- Injectable testosterone for men

This approach most closely mimics natural physiology while avoiding many of the unnecessary metabolic and liver-related effects associated with oral hormone therapy.

Have questions about hormone therapy?

Speak with Dr. Selma Rashid and our team about whether hormone replacement therapy is appropriate for you.

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