

MONITORING (B)HRT WITH LAB TESTING

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Oral Progesterone	Patch, Pellet, Injection	Transdermal Estrogen	Transdermal Testosterone	Transdermal Progesterone	Vaginal or Anal Mucosa	Oral Estrogen	Sublingual
✓ DUTCH	✓ DUTCH	✓ DUTCH	✓ DUTCH	✗ DUTCH	✓ DUTCH	✗ DUTCH	✗ DUTCH
The DUTCH test provides useful feedback when using oral progesterone to aid sleep disturbance related to menopause. 5a (more active) and 5b (less active) metabolites are measured to individualize doses of oral progesterone.	Values increase intuitively with dosing. For estrogen patches, see Transdermal Estrogen comments. Pellets and injections also increase levels intuitively, but the increase may exceed what is seen in serum testing. DUTCH allows for monitoring both the proper dosing of hormones as well as metabolic patterns.	Target values between the top of the postmenopausal range and the lower third of the premenopausal range correlate with patient clinical improvement (bone density, hot flash relief, etc.). Doses that push levels to the middle of the premenopausal range and beyond may be excessive. DUTCH is preferred over serum due to the inclusion of metabolites.	Levels generally parallel measurable clinical outcomes (increased lean body mass, decreased LH values in men). Epi-testosterone values can also be used to assess gonadal suppression due to TRT (levels decrease as TRT increases and are <10 ng/mg with complete suppression).	Creams and gels cannot be effectively monitored with any lab testing. Values increase only slightly with dosing. Because of the uncertainty of tissue levels, take caution to use concurrently with estrogen therapy without endometrium surveillance (ultrasound or biopsy).	Special method removes potential contamination and monitoring is helpful with most hormones.	Cannot be used to effectively monitor dosing due to 1st-pass metabolism. Most of the hormone in urine has not been in circulation as "free" hormone.	Lab testing is not effective. DUTCH is confounded by the hormone that is swallowed.
✗ DUTCH	✗ DUTCH	✗ DUTCH	✗ DUTCH	✗ DUTCH	✗ DUTCH	✗ DUTCH	✗ DUTCH
✗ SERUM	✓ SERUM	✓ SERUM	✓ SERUM	✗ SERUM	✓ SERUM	✓ SERUM	✗ SERUM
Results go up-and-down quickly. If taken at bedtime, levels return to baseline within a few hours. Results can also be inaccurate due to progesterone metabolites cross-reacting with immunoassay tests.	Serum testing is well suited for use with these types of therapies.	Effective for monitoring estrogen creams and gels similarly to patches. Levels may have an up-and-down pattern throughout the day, unlike when using patches.	Results correlate to clinical symptoms. In men, lean body mass increases only when serum (and likely urine) results increase.	Values do not increase significantly with dosing.	While serum levels likely represent systemic uptake of hormone, interpret with care as you may not know if your value represents a peak or a trough.	Serum testing offers the best feedback on monitoring the actual dose of oral estradiol.	Serum testing is not effective. Results rise and fall too rapidly for useful testing. In many cases, results are back to baseline within a few hours.
✗ SALIVA	✓ SALIVA	✗ SALIVA	✗ SALIVA	✗ SALIVA	✗ SALIVA	✓ SALIVA	✗ SALIVA
Ineffective for monitoring oral progesterone for the same reason as serum above.	Testing can conceptually be used, but available testing is less accurate than serum.	Results are exaggerated, do not correlate to clinical symptoms and are highly variable.	Results are exaggerated, do not correlate to clinical symptoms and are highly variable.	Values are exaggerated and highly variable. Levels may remain elevated for months after cessation of therapy.	Testing has not been shown to be effective for monitoring vaginal/anal hormones.	Testing can conceptually be used, but available testing is less accurate than serum.	Saliva is contaminated directly, and testing is not meaningful.
<i>*Clinical effects are primarily from metabolites (α-pregnanolone). Levels of actual progesterone do not reach luteal levels.</i>	<i>*Testing is best done midway between doses or just before a dose depending on provider preference.</i>	<i>*Common doses are 0.25 - 1.0 mg.</i>		<i>*Transdermal progesterone can be used with patients not on estrogen therapy, but lab results do not help with dosing.</i>	<i>*Labs showing systemic hormone exposure do not reflect the higher levels in localized tissue (vaginal, uterus).</i>		