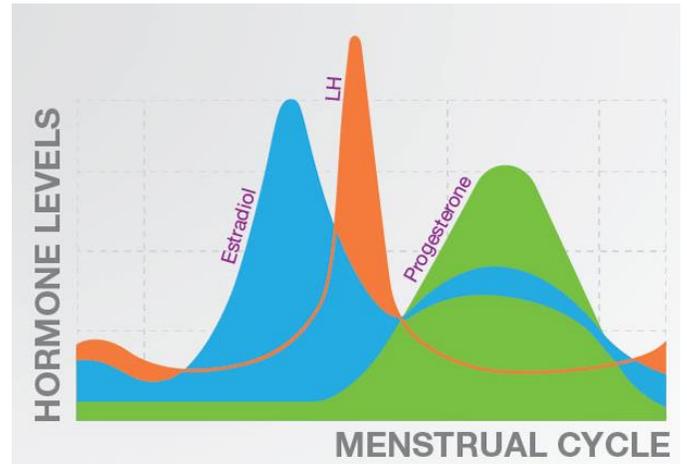


# DUTCH CYCLE MAPPING

## THE ULTIMATE TEST FOR PREMENOPAUSAL WOMEN

For some women, testing reproductive hormones (progesterone, estrogen, etc.) on a single day is sufficient. In other scenarios, the clinical picture cannot be properly captured without “mapping” out the hormonal pattern throughout their menstrual cycle. The expected pattern of hormones shows relatively low estrogen levels early in the cycle, a surge around ovulation and modest levels in the latter third of the cycle (the luteal phase). Progesterone levels, on the other hand, stay relatively low until after ovulation. After ovulation levels ideally increase (>10-fold) and then drop back down at the end of the cycle. A disruption in this cycle can lead to infertility or hormonal imbalance.



### When is Cycle Mapping not needed? (testing once is sufficient)

- Postmenopausal women
- Women on birth control
- Women with cycles that follow the expected pattern

### When is Cycle Mapping recommended?

- Women struggling with infertility
- Women with cycling hormones but no menstrual bleeding
  - Partial hysterectomy (ovaries intact, but no uterus)
  - Ablations
  - Mirena IUD (no actual menstrual bleeding due to IUD but still has hormonal symptoms)
- Women with irregular cycles
  - PCOS
  - If the luteal phase shifts from month-to-month
  - Not sure when to test due to longer or shorter than average cycles
  - Peri-menopause
- Women whose hormonal symptoms tend to fluctuate throughout the cycle
  - PMS, mid-cycle spotting, migraines, etc.

### Why is DUTCH Cycle Mapping preferred over similar salivary testing models?

There is much more hormone (~1000x) in urine than in saliva. This allows for the use of more accurate methodologies (GC-MS/MS instead of immunoassays). A recent internal study showed the agreement between urine and serum to be much improved over commercially available saliva testing. This was true of progesterone, but even more so for estradiol. The salivary correlation was very poor for some saliva methods and more reasonable for others (more sensitive methods) but was best with dutch testing.

## Easy Sample Collections Make for Better Testing

Salivary mapping of hormones limits the number of collections, which may result in missing progesterone and especially estrogen peaks if not timed correctly. For women with irregular cycles, this is particularly problematic. Dutch Cycle Mapping uses more sample collections (convenient, first-morning urine collections) and performs testing on targeted samples based on the actual length of the cycle. This allows for better characterization of both the ovulatory and luteal peaks.

## Better Testing Makes for Better Treatment

Treating women appropriately and effectively with irregular cycles, fertility problems, or who have had an ablation can be challenging to practitioners because it is difficult to fully ascertain what their hormones are doing and when. By collecting the dutch cycle mapping test, a complete picture of the patient's cycle in a graph format will allow for a more accurate and comprehensive treatment program specific to the patient's situation. Understand if your patient is ovulating and when, determine why they are having mid-cycle spotting or hormonal migraines, get a clearer understanding of how their ovaries are functioning if they do not bleed (ie. Ablation), or look further into fertility issues. These answers will help with clinician's goal of individualized medicine.

## How well do estrogen and progesterone values correlate with serum measurements?

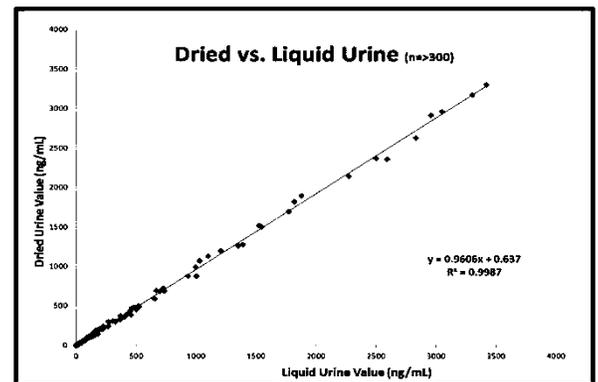
Hormone patterns throughout the menstrual cycle parallel simultaneously collected serum samples very well. When compared to salivary measurements, dutch measurements showed improved correlation to serum for both progesterone and especially for estradiol. Dutch Cycle Mapping results correlate strongly enough to serum results that urine results are given along with serum-equivalent results for easy interpretation.

## Do dried samples compromise the analysis?

Dried samples are accurate for hormone testing, and values correlate to liquid samples (see graph, right). Samples are more stable once they are dried and also much easier to store and ship than liquid samples.

## Methods Used for Testing

Estrogen and progesterone metabolites for this profile are all tested (9x) by GC-MS/MS. This is the most accurate method for testing urinary reproductive hormones and their metabolites. Other options include immunoassays, LC-MS/MS or GC-MS.



***Precision Analytical is a CLIA-certified laboratory (also licensed in FL, CA)***

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