

# Hormone Imbalances (Irregular cycle/PCOS) Protocol

Tracking and monitoring hormones with Mira allows both the patient and provider to gain a clearer understanding of hormonal changes, identify any abnormalities, and effectively time treatments. It helps visualize positive progress, which encourages engagement and adherence, and supports personalized treatment plans. Additionally, it enables the assessment of responses to interventions and progress towards achieving regular cycles.

## Using Mira for hormone monitoring assists with:

### Identify:

1. Accurately tracking and documenting essential elements of the menstrual cycle:
  - a. Period dates
  - b. LH surge and suspected day of ovulation
  - c. Luteal phase length
  - d. Cycle length
2. Identifying ovulatory vs. anovulatory cycles

### Assess and Monitor:

1. Assessing the underlying hormone pattern for abnormalities
2. Monitoring and trending FSH levels to assess ovarian function
3. Symptom monitoring and correlation with hormones

### Adjust and Intervene:

1. Scheduling lab tests at specific points in the menstrual cycle, such as on cycle day 3 or 7 days post-ovulation
2. Timing interventions, imaging or strategies.
3. Monitoring response to interventions.

#### 4. Assessing progress toward goal of regular cycles.



Mira data is most useful for identifying overall patterns and trends rather than focusing on individual data points, as hormone levels can fluctuate frequently.

## Limitations:

1. Hormones measured in serum cannot be directly compared to urine metabolites, as they are assessed in different units and show correlation rather than direct equivalence. While these metabolites often fluctuate, a study has found that they generally correlate well with the overall serum hormone pattern. Urine metabolites measured with Mira cannot be used to determine serum levels.
2. Types of hormone supplementation that raise serum hormone levels will raise urine metabolites and therefore, will affect Mira data.
  - a. Oral progesterone tends to raise serum progesterone levels more than topical progesterone due to differences in absorption, metabolism, and distribution. Oral bio-identical progesterone supplementation may cause Mira PdG to reach the max threshold of 30.
  - b. A study has demonstrated that topical progesterone leads to slight increases in both serum progesterone levels and PdG excretion.
    - i. Although supplementing progesterone does not directly reduce estrogen levels, it can indirectly affect estrogen by stabilizing its effects within the body. In hormone therapy, supplementing progesterone is utilized to balance estrogen's impact and maintain hormonal equilibrium. To manage estrogen dominance, optimizing progesterone levels may be helpful. Mira results indicate help monitor these indirect effects on estrogen levels.
3. At this time Mira cannot be used to assess whether a specific dose of hormone such as progesterone is achieving the desired serum levels or to evaluate the absorption rate but providers have found Mira helpful to monitor response to HRT and indirect effects such as lowering estrogen levels.



Disclaimer: The information provided is based on the experiences and feedback of providers using Mira with their patients, rather than results from scientific research or studies. It serves as a guideline and should not be considered scientific proof.

## Testing Instructions:

### 1. Sample Collection:

- Use first morning urine for best results.
- Wait at least 4 hours between voids. For later testing, hold urine for 4 hours and limit oral intake for 2 hours before testing.
- Test at the same time each morning. **Limit fluid intake to less than 100 ml before bedtime and during the night.**

### 2. Dipping Method:

- Dip the wand up to the "max" line for exactly 20 seconds.

### 3. Analyzing Process:

- Apply and secure the cap.
- Insert the capped wand into the analyzer.
- Place the analyzer on a flat surface and do not move it. Analysis takes 16-21 minutes.

### 4. Urine Sample Storage:

- Test your urine sample immediately and keep it until a successful result is obtained.

### 5. Equipment Storage:

- Store the analyzer and wands in a cool, dry place. Avoid moisture, heat, or freezing.

## Testing Pattern:



*Regardless of the category encourage patients to begin testing immediately. It is not necessary to wait for the start of a new menstrual cycle.*

*Testing can be started on any day of the cycle except during the period.*

## **Regular/Ovulatory Cycles**

Test OVUM (FSH) daily or cycle day 3-6, as well during fertile window

**Option 1** Daily Testing: MAX (E3G, LH, PdG) wands daily starting on cycle day 6 until next menses.

**Option 2** Reduced Testing: MAX ( E3G, LH, PdG) wands daily during the fertile window and every other day during early follicular and luteal phase.

## **Irregular or long cycles**

Test OVUM (FSH) daily or cycle day 3-6 as well, as during the fertile window.



Trending FSH levels from cycle day 3-6 overtime can provide insight into reproductive health. When FSH and LH surge together it is more likely to be ovulatory.

**Option 1** Daily Testing: MAX (E3G, LH, PdG) wands daily starting on cycle day 6 until next menses.

**Option 2** Reduced Testing: MAX (E3G, LH, PdG) wands daily during fertile window and every other day during early follicular and luteal phase (for example. "gray zones" on Mira chart).

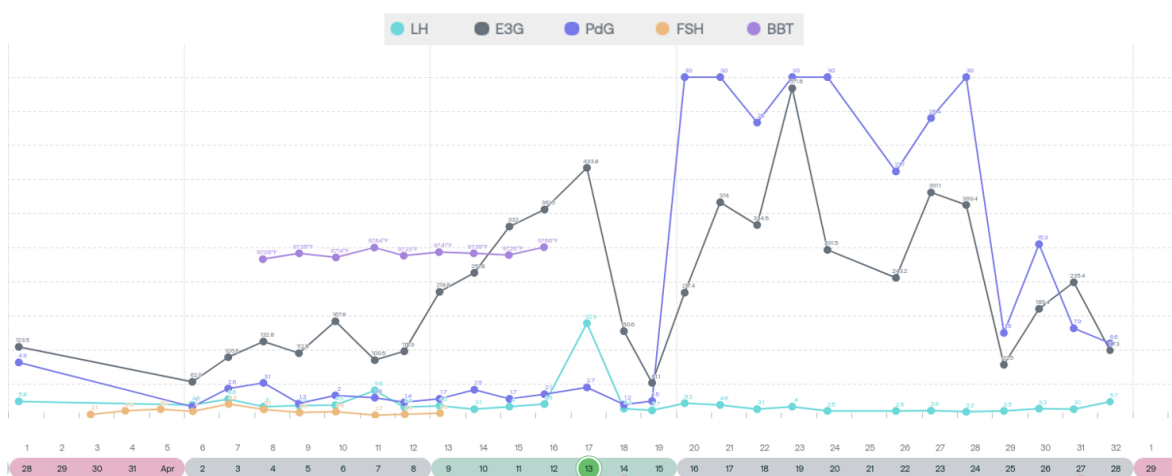
**Option 3** Cost Saving: PLUS (E3G, LH) wands daily or every other day starting on cycle day 6 until LH surge is identified. After the LH surge is identified switch to testing with MAX (E3G, LH, PdG) wands daily or every other day.



**Option 3 (cost saving) example:** PLUS (E3G and LH) wands until LH surge, MAX (E3G, LH, and PdG) after LH surge



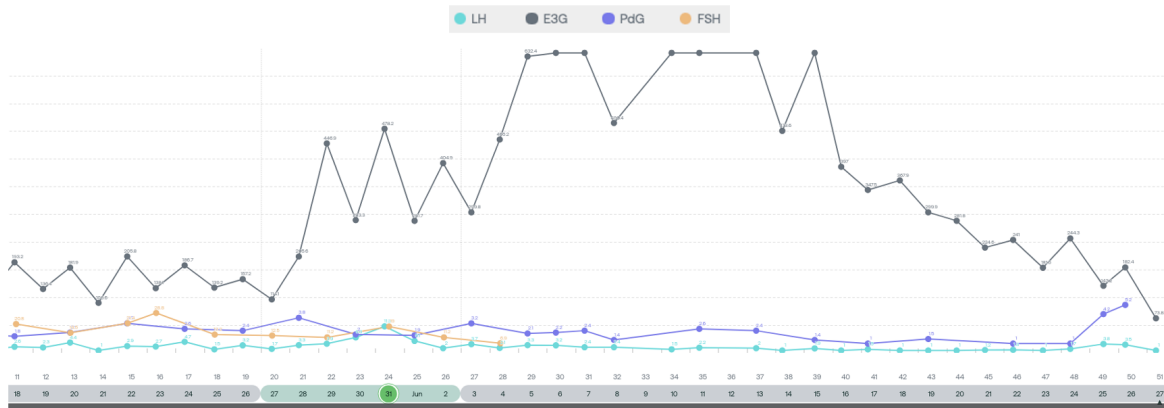
Ongoing testing during the luteal phase helps confirm ovulation through rising and sustained PdG levels and allows for monitoring E3G and PdG patterns.



**Example:** Testing during the luteal phase allowed the provider to identify abnormally high E3G in the luteal phase

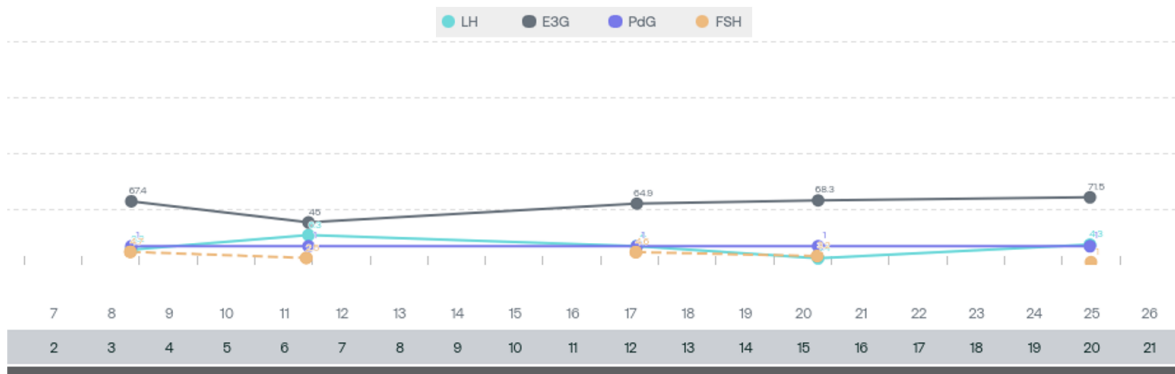
## Amenorrhea/Non-cycling

## Option 1 Daily Testing: MAX wands daily



**Example:** Daily testing with MAX wands

## Option 2 Reduced Testing: MAX wands every other day or every third day



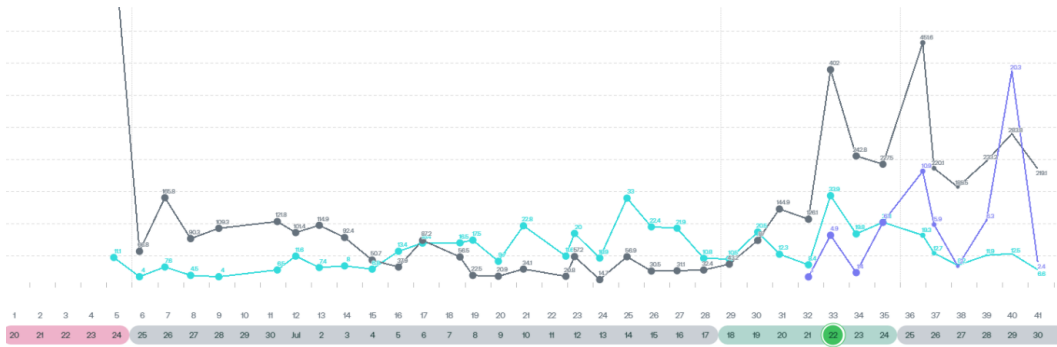
**Reduced Testing example:** Testing done at intervals using MAX wands

## Interpretation

[Click here](#) to download the interpretation guide.

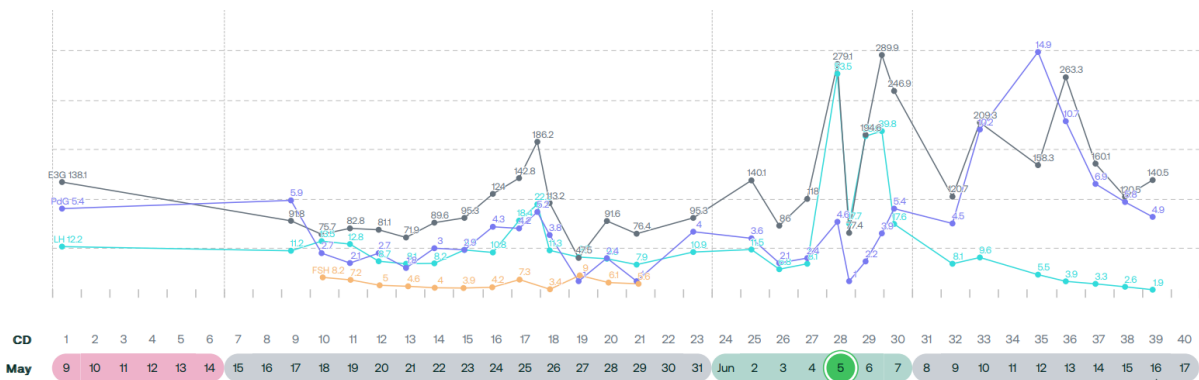
## Chart Examples:

1. 39 Female: Diagnosed with insulin resistance PCOS



Mira Data Discovered:  
 Extended follicular phase with persistently elevated LH levels  
 Rising E2G levels coordinated with an LH surge  
 Abnormally long LH surge from CD 33-37  
 Rising PdG confirms ovulation

## 2. 26 Female PCOS: Non-ovulatory LH surge



Mira Data Discovered:  
 LH surge on Cd 17 and CD 18.  
 Suspicion for unsuccessful attempt due to lack of FSH and LH coordination. Determined to be non-ovulatory due to a lack of PdG change.  
 Second LH surge on CD 28-30 determined to be ovulatory due to PdG changes following the LH surge.

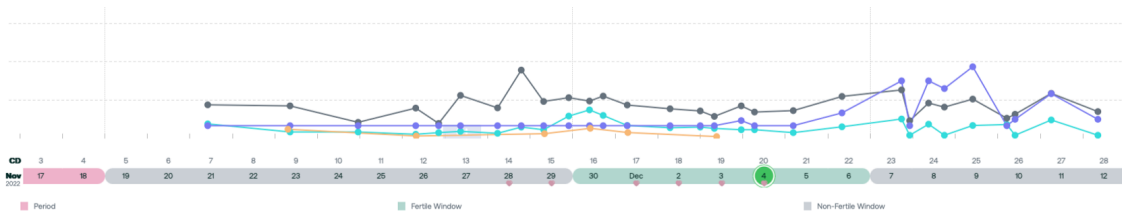


A lack of PdG rise after an LH surge likely represents an anovulatory cycle or sub-optimal ovulation

## 3. 32 Female with history of irregular cycles and inability to conceive for 6 cycles, complicated by ileostomy due to severe Crohn's.

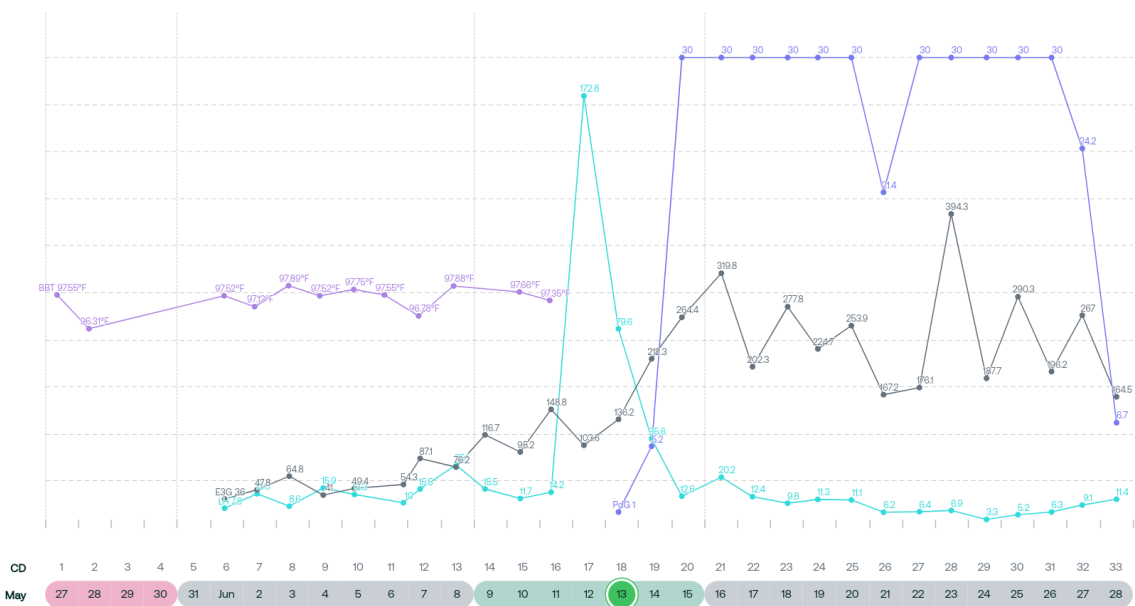






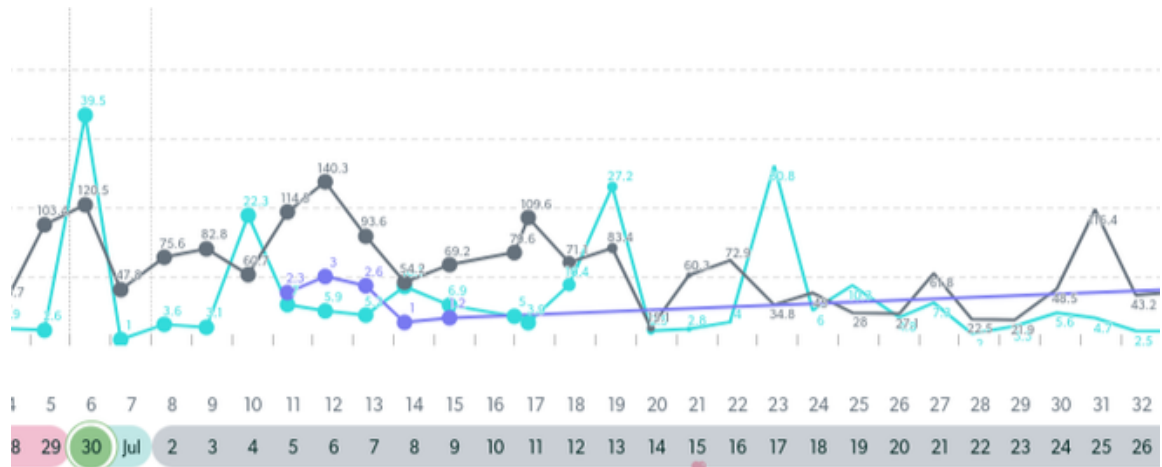
Mira Data Discovered:  
 Low and minimal E3G changes  
 No LH surge found  
 No ovulation discovered

### 6. 28 Female: Irregular cycles with menorrhagia and elevated prolactin



Mira Data Discovered:  
 Abnormal E3G pattern: Minimal E3G changes in the follicular phase and higher E3G levels in the luteal phase than follicular phase  
 LH surge on CD 17-19  
 Progesterone supplementation after LH surge

### 7. 39 Female: Identified abnormal hormone patterns after birth during postpartum amenorrhea, leading to PCOS diagnosis



Mira Data Discovered:  
 Frequent abnormal non-ovulatory LH surge  
 Lack of coordinated hormones

## Hormone Imbalance Case Reports

- Managing PCOS and PMDD with Mira - [View here](#)
- Postpartum PCOS: Identifying Hormone Imbalance while Postpartum with a Fertility Awareness Method - [View here](#)
- Three case reports with a Functional Medicine Approach: PCOS, Secondary Infertility, Abnormal LH and low progesterone - [View here](#)

## Provider Testimonials

"I am excited about giving my patients access to daily, sophisticated and (importantly) EASY at-home hormone testing. Think PCOS, fertility, PMS, etc. With Mira, we may be witnessing the next disruptive player in the Functional Medicine ecosystem."

Dr. Kara Fitzgerald, LLC | Functional MedicineLongevity, Epigenetics

"Mira has revolutionized my practice by providing real-time insights into my patients' daily hormone levels, allowing for precise monitoring of their menstrual cycles. This technology

enables me to educate patients on the specifics of their cycle, particularly highlighting the role of progesterone as a key indicator of ovulation. With Mira, we can demonstrate how ovulation can vary from month to month, empowering patients with knowledge and enhancing their reproductive health management."

Dr. Tara Harding (Brandner), DNP, FNP-C, Founder of "Simply You"

"I find Mira a highly valuable tool to offer clinicians real time, reliable results demonstrating the hormonal status for our patients - whether this is for PCOS, endometriosis or the perimenopause. Additionally our patients are finding the real time feedback invaluable in helping them to understand the shifts that they are subject to and how this affects them symptomatically."

Dr. Liz Leek, BiOrigin

"Given the relative ease of testing hormones throughout the cycle with Mira, compared to serum hormone testing every other day in a lab, the patient was able to see evidence of improvement with treatment. Seeing improvement in cycle hormones motivates the patient to continue with treatment plan and encourages compliance."

Naprotechnology Physician