Heads Up™ × mira

LIVE SESSION · WOMEN'S HEALTH

Beyond lab draws.

How real-time hormone monitoring is changing women's health outcomes.

FEATURING

Rose MacKenzie
Clinical Manager, Mira

HOST

Dave Korsunsky
Founder & CEO, Heads Up

WHEN

May 7, 2026 · 2 PM CST
90 minutes · Live + Q&A

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Today's *agenda.*

01	**Introductions** Your host, guest educator, panelists & moderators	INTRO
02	**About Heads Up** The clinical intelligence platform unifying your patient data	CONTEXT
03	**Feature presentation** Women's health deep-dive with Rose MacKenzie from Mira	EDUCATION
04	**Exclusive offer** Bring Mira into your practice	OFFER
05	**Live demo** Connecting Mira data with other women's health metrics on Heads Up	DEMO
06	**Q&A** Your questions, answered live	INTERACTIVE
07	**Next steps** Where to go from here	WRAP

Before we *begin.*

01 **Chat rules & etiquette**

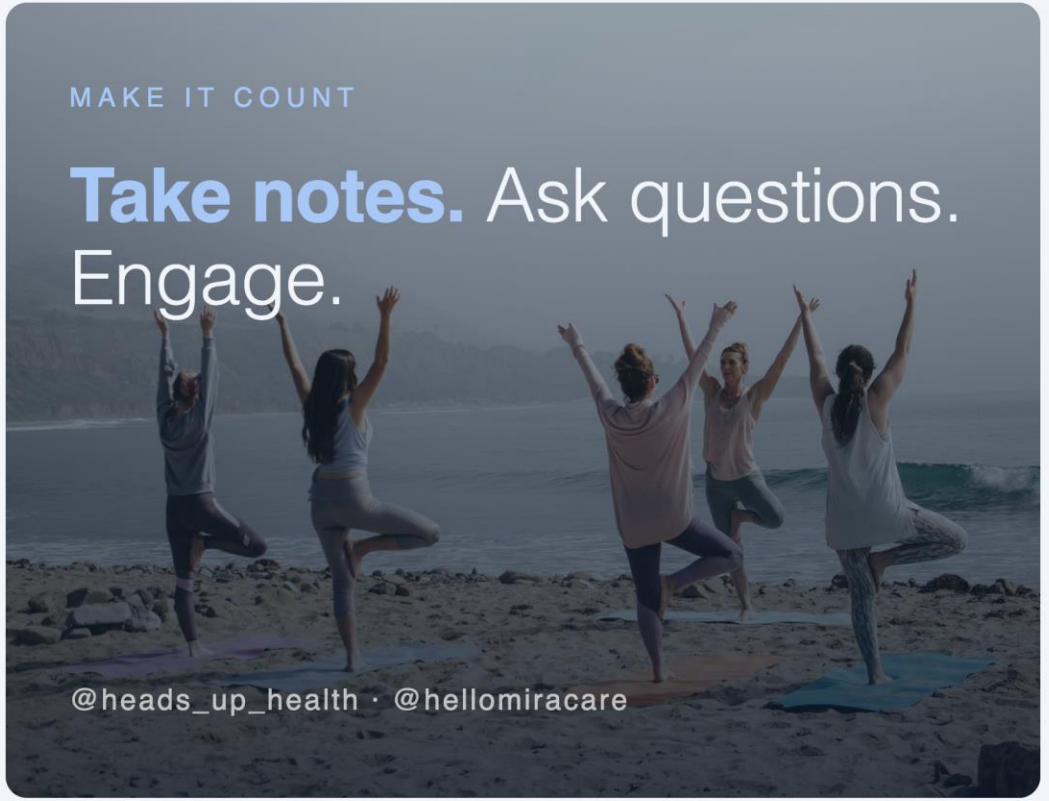
The golden rule applies. Be respectful and supportive of fellow attendees and presenters.

02 **React & engage**

Learn something new? Smash the heart or celebration emoji to let presenters know.

03 **Questions? Ask in the chat**

We'll address them during our Q&A segment near the end.



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Meet our *host.*

DAVE KORSUNSKY

Founder & CEO,

Heads Up™

Technology Leader · Speaker

Transforming fragmented health data into real-time clinical insights for practitioners worldwide. As founder of Heads Up, Dave has built a platform that unifies labs, wearables, and clinical data, equipping providers with tools to deliver personalized, data-driven care at scale.

FOUNDER | HEALTH-DATA PLATFORMS | CLINICAL AI

Heads Up™ × mira

Meet our *guest.*

ROSE MACKENZIE

Clinical Manager, mira

BSN, RN, CEN · Women's Health

Rose supports clinicians in integrating real-time hormone monitoring into practice. With nearly 10 years as a natural family planning instructor and a background spanning emergency medicine and restorative reproductive medicine, she helps providers translate hormone data into meaningful patient care.

CLINICAL EDUCATION

HORMONE MONITORING

FERTILITY AWARENESS

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Meet our *panelists.*

PANELIST · 01

Katrine Volynsky

Founder & CEO

CELLULAR REGENERATION

PANELIST · 02

Alex Smith

Product Manager

Heads Up™

Heads Up™ × mira

Meet our *moderators.*

MODERATOR · 01

Chuck Hazzard

VP of Wearables

Heads Up™

MODERATOR · 02

Maynon Ballow

Account Executive

Heads Up™

MODERATOR · 03

Eva Garro

Clinical Sales Associate

mira

About *Heads Up™.*

An AI-powered clinical intelligence platform that unifies fragmented patient data and continuously surfaces *meaningful, actionable insights.*

Heads Up connects labs, wearables, devices, EHRs and behaviors into one longitudinal picture, then puts AI to work on your actual patient data, not a generic knowledge base.

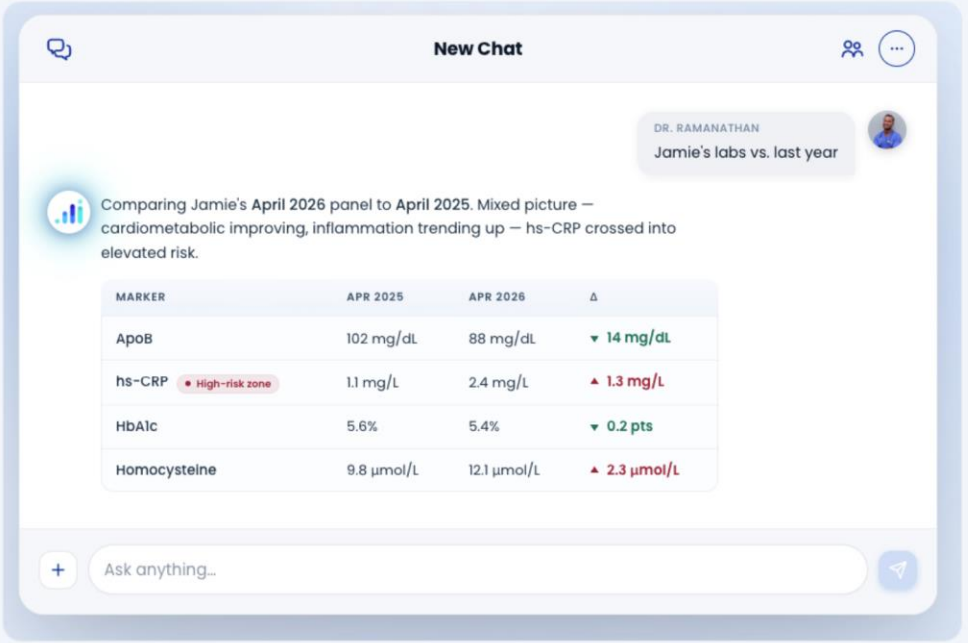
LONGITUDINAL DATA | CLINICAL AI CO-PILOT | PURPOSE-BUILT FOR MEDICINE

10+ YEARS

100+ CONNECTORS

100+ AI MODELS

HIPAA SOC 2 CERTIFIED



Quick *poll.*

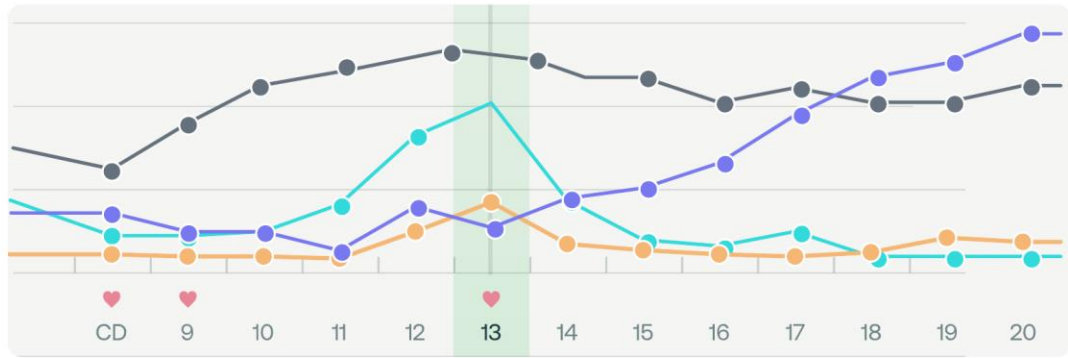
Which of the following best describes your current approach to *hormone evaluation in perimenopause?*


FEATURE PRESENTATION

Mira in Practice: Personalized Care Powered by Hormone Insights

mira | for Healthcare Professionals

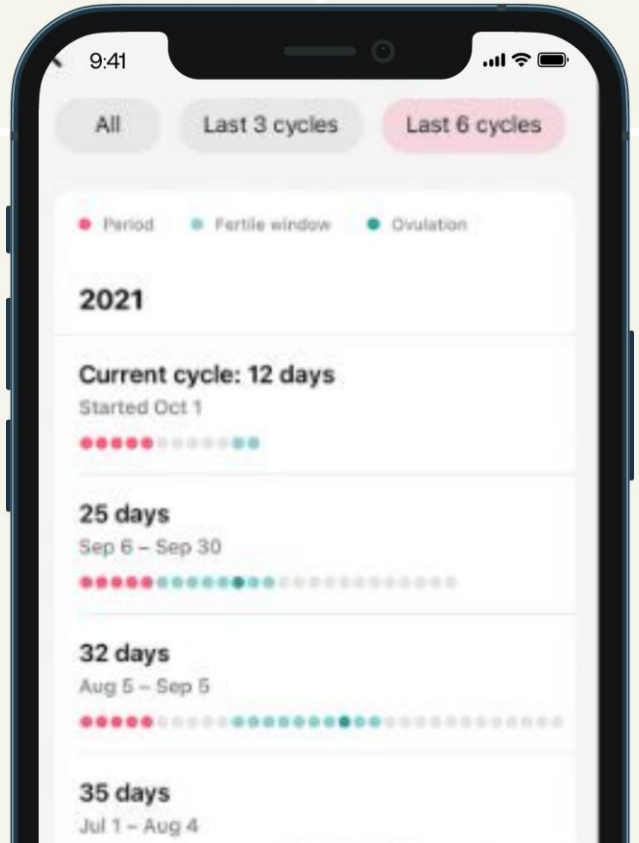
At-home hormone monitors shift the way providers care for female patients



Past: blood tests, calendar apps, mail in samples	Present: At-home hormone monitors
Snapshot in time	Ongoing real-time feedback
Generic calendar-based app with predictive features	AI-driven insights powered by date-specific machine learning analysis.
Indirect options (cervical mucus and temperature)	Direct measurements with urinary metabolites
Delayed results from mail in labs	Monitor responses to interventions and progress

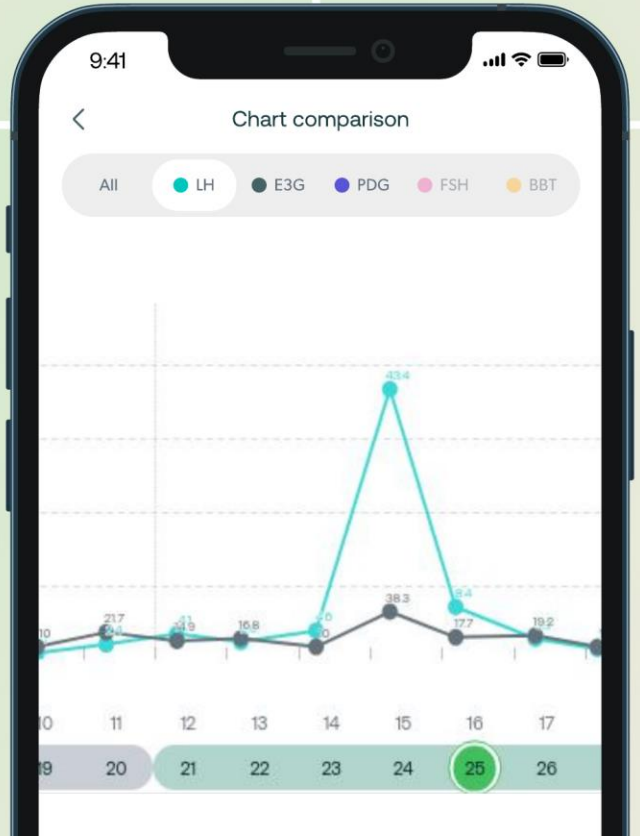
Hormone monitors help identify patients' underlying hormone dysfunction

App based tracking displays a "regular" cycle



But low E3G (urinary estradiol metabolite)

- Low E3G
- Lack of E3G changes leading to LH surge



Easy at-home hormone tracking with Mira

E3G Estrone-3-glucuronide
Main urinary metabolite of serum estradiol (E2)

LH Luteinizing hormone

PdG Pregnanediol glucuronide
Main urinary metabolite of serum progesterone

FSH Follicle-stimulating hormone

Step 1

User dips the wand into the first morning urine for 20 seconds.

Step 2

User inserts the wand into the Mira Hormone Monitor.

Step 3

The hormone results will automatically sync with the Mira App in 16-21 minutes.

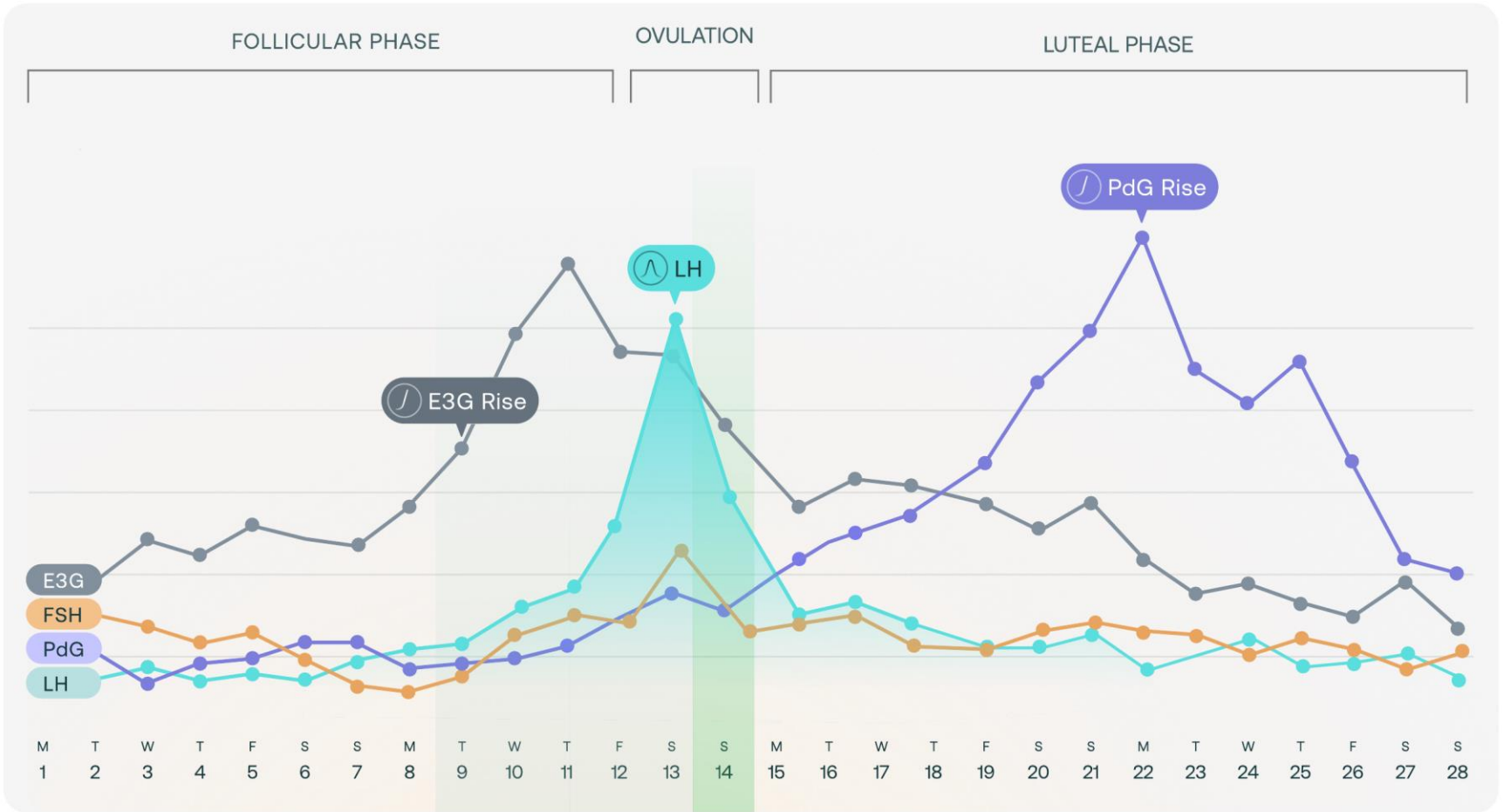
Mapping full hormone cycle with Mira

E3G Estrone-3-glucuronide
Main urinary metabolite of serum estradiol (E2)

LH Luteinizing hormone

PdG Pregnanediol glucuronide
Main urinary metabolite of serum progesterone

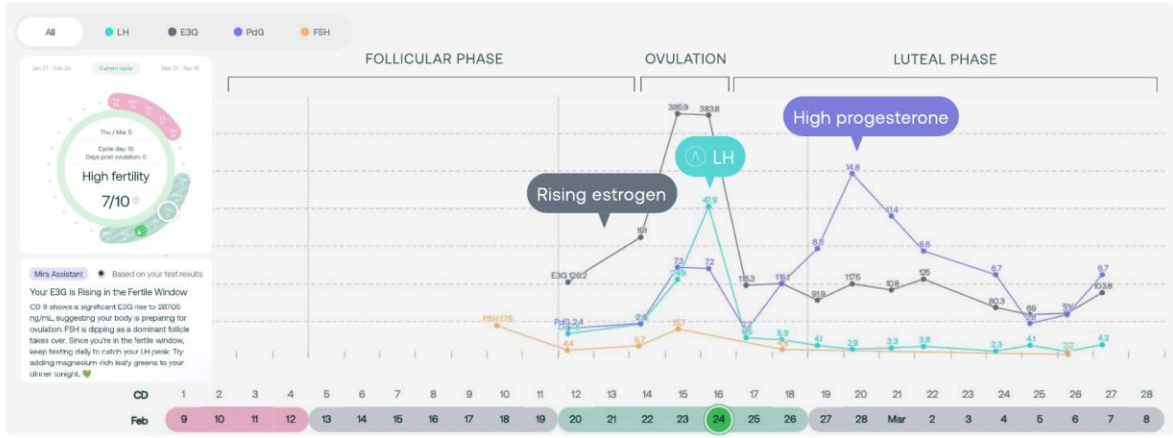
FSH Follicle-stimulating hormone

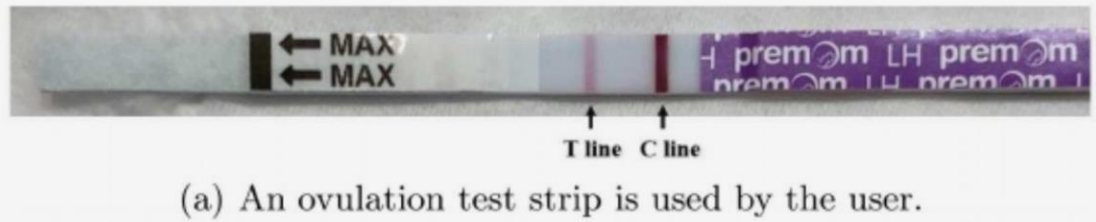


1. E3G rises, leading up to ovulation
2. LH and FSH surges, signaling the ovary to release the egg
3. Elevated PdG confirms ovulation occurred

From Binary Test Strips to Quantitative Hormone Data

Replace single-hormone yes/no results with continuous, multi-hormone measurements for deeper clinical insight





(a) An ovulation test strip is used by the user.

Wang L, He L, Li J, et al. T Line and C Line Detection and Ratio Reading of the Ovulation Test Strip Based on Deep Learning. Springer; 2021

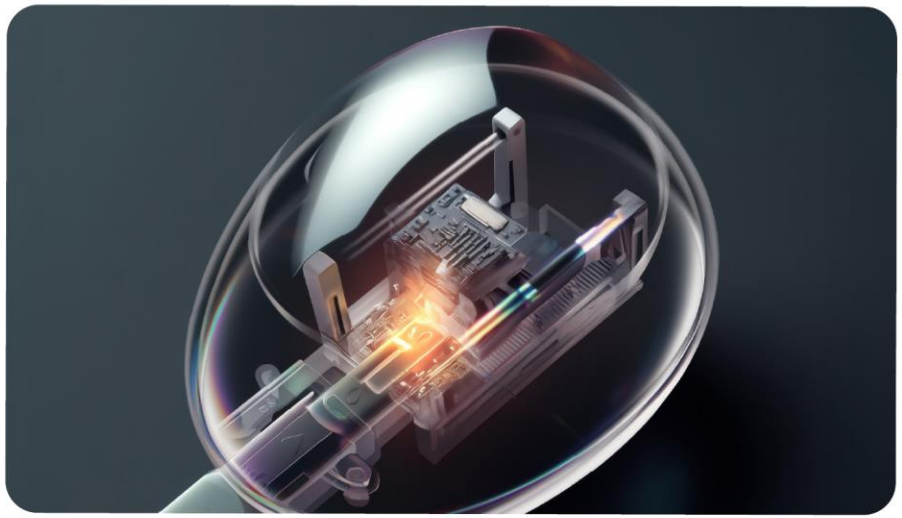
Mira Hormone Monitor

- Identifies the full fertile window through rising E3G (estrogen)
- Captures the LH surge to accurately detect ovulation timing
- Confirms ovulation with sustained PdG rise

Other at-home solutions

- Lateral flow (nano-gold)
- Uses a smartphone camera to “read” the results
- Binary; positive/negative results

Designed by scientists, backed by research

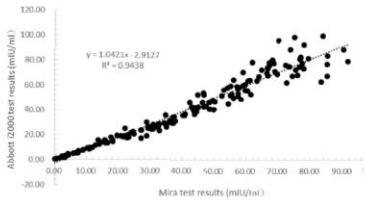


Mira Hormone Monitor

- Fluorescent lateral flow immunoassay technology
- Laboratory-graded technology
- Quantitative results

Other at-home solutions

- Nano-gold labeled lateral flow assay technology
- Uses a smartphone camera to “read” the results
- Qualitative or semi- quantitative results



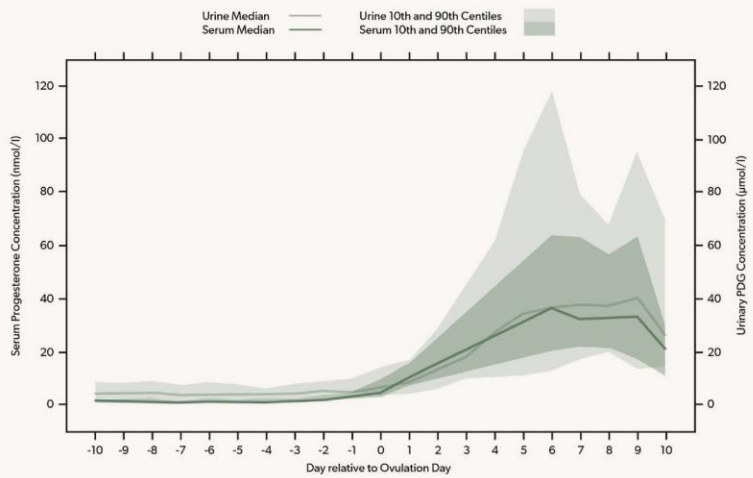
Bouchard, T., Yong, P., & Doyle-Baker, P. (2023). Establishing a Gold Standard for Quantitative Menstrual Cycle Monitoring. Medicina, 59(9), 1513. https://doi.org/10.3390/medicina59091513

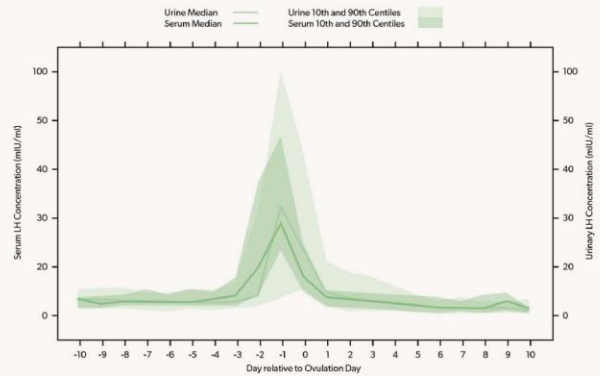
Comparison of Day-Specific Serum LH, Estradiol, and Progesterone with MiraTM Monitor Urinary LH, Estrone-3-glucuronide, and Pregnanediol-3-glucuronide Levels in Ovulatory Cycles by Stephen J. Usala, David D. Vineyard, Maria Kastis, A. Alexandre Trindade and Harvinder Singh Gill.

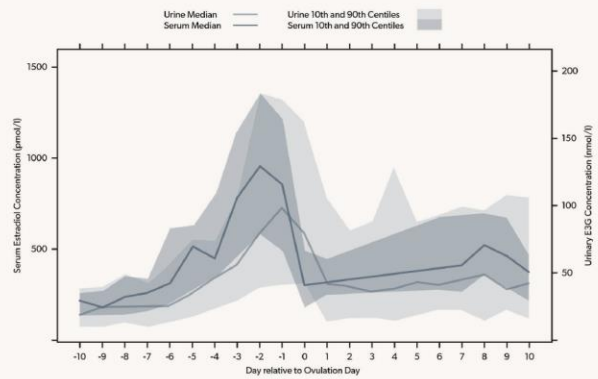
Validation

Comparison of urinary and serum reproductive hormones referenced to true ovulation (n=40)

Urinary and serum reproductive hormones showed excellent agreement and may be used interchangeably. The beginning of the surge in serum and urinary LH was an excellent predictor of ovulation. The rise in progesterone and P3G above baseline was a consistent marker of luteinisation confirming ovulation. Both LH and progesterone surges delivered clear, sharp signals in all volunteers, allowing reliable detection and confirmation of ovulation.







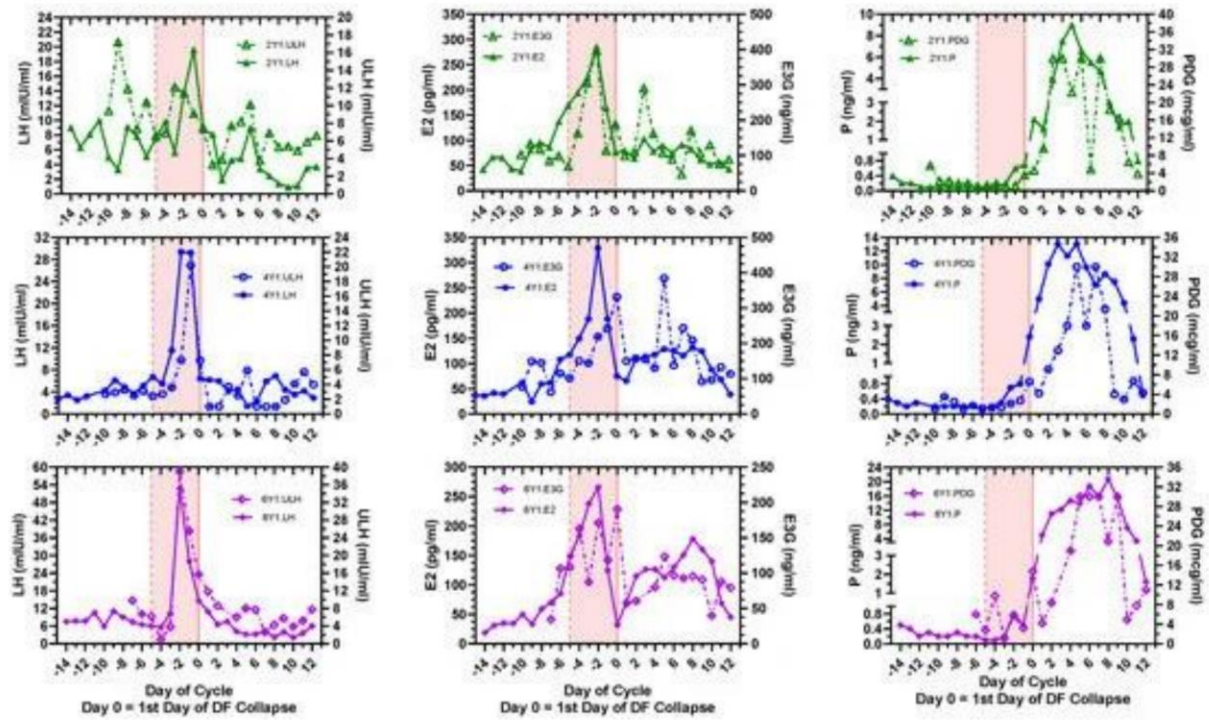
Roos J, Johnson S, Weddell S, Godehardt E, Schiffner J, Freundl G, et al. Monitoring the menstrual cycle: Comparison of urinary and serum reproductive hormones referenced to true ovulation. Eur J Contracept Reprod Health Care. 2015;20(6):438-50. Epub 2015/05/29. doi: 10.3109/13625187.2015.1048331. PubMed PMID: 26018113.

Comparison of Day-Specific Serum LH, Estradiol, and Progesterone with Mira Monitor Urinary LH, Estrone-3-glucuronide, and Pregnanediol-3-glucuronide Levels in Ovulatory Cycles

Conclusions:

The Area Under the Curve algorithm with (E2, P) or (E3G, PDG), showed that both serum and Mira hormone measurements could pinpoint the 24 h interval of ovulation and transition to the luteal phase.

The AUC (E3G, PDG) algorithm should be applicable to existing urinary hormone monitors. Serum E2 and P have promise as improved biomarkers for timing the major events during the menstrual cycle.



Comparison of Day-Specific Serum LH, Estradiol, and Progesterone with MiraTM Monitor Urinary LH, Estrone-3-glucuronide, and Pregnanediol-3-glucuronide Levels in Ovulatory Cycles by Stephen J. Usala, David D. Vineyard, Maria Kastis, A. Alexandre Trindade and Harvinder Singh Gill.

Establishing a Gold Standard for Quantitative Menstrual Cycle Monitoring

Prospective diagnostic accuracy study: 52 women | 121 ovulatory cycles | 890 ultrasounds | 18 months

Study Results (in publication):

- Ovulation prediction: Urinary LH peak vs. ultrasound R^2=0.96, ICC=0.971 (95% CI 0.943–0.984), 96% of cycles within ±1 day. PDG confirmed ovulation R^2=0.87. All p<0.0001.
- Urine–serum correlation (AM sample, within 90 min of draw): LH R^2=0.92 | PdG R^2=0.75 | $E_1$3G R^2=0.73 | FSH R^2=0.61
- $E_1$3G mirrors follicle growth, potentially replacing tracking ultrasounds or serum estradiol draws
- The only self-contained quantitative system — no smartphone camera required to read results

medicina MDPI

Protocol

Establishing a Gold Standard for Quantitative Menstrual Cycle Monitoring

Thomas Bouchard [1,2,*], Paul Yong [1] and Patricia Doyle-Baker [3]

[1] Department of Obstetrics & Gynecology, University of British Columbia, Vancouver, BC V6Z 2K8, Canada; pyong@cw.bc.ca
[2] Department of Family Medicine, University of Calgary, Calgary, AB T3H 0N9, Canada
[3] Faculty of Kinesiology, University of Calgary, Calgary, AB T2N 1N4, Canada; pdoyleba@ucalgary.ca
* Correspondence: tbouchar@student.ubc.ca or tbouchar@ucalgary.ca

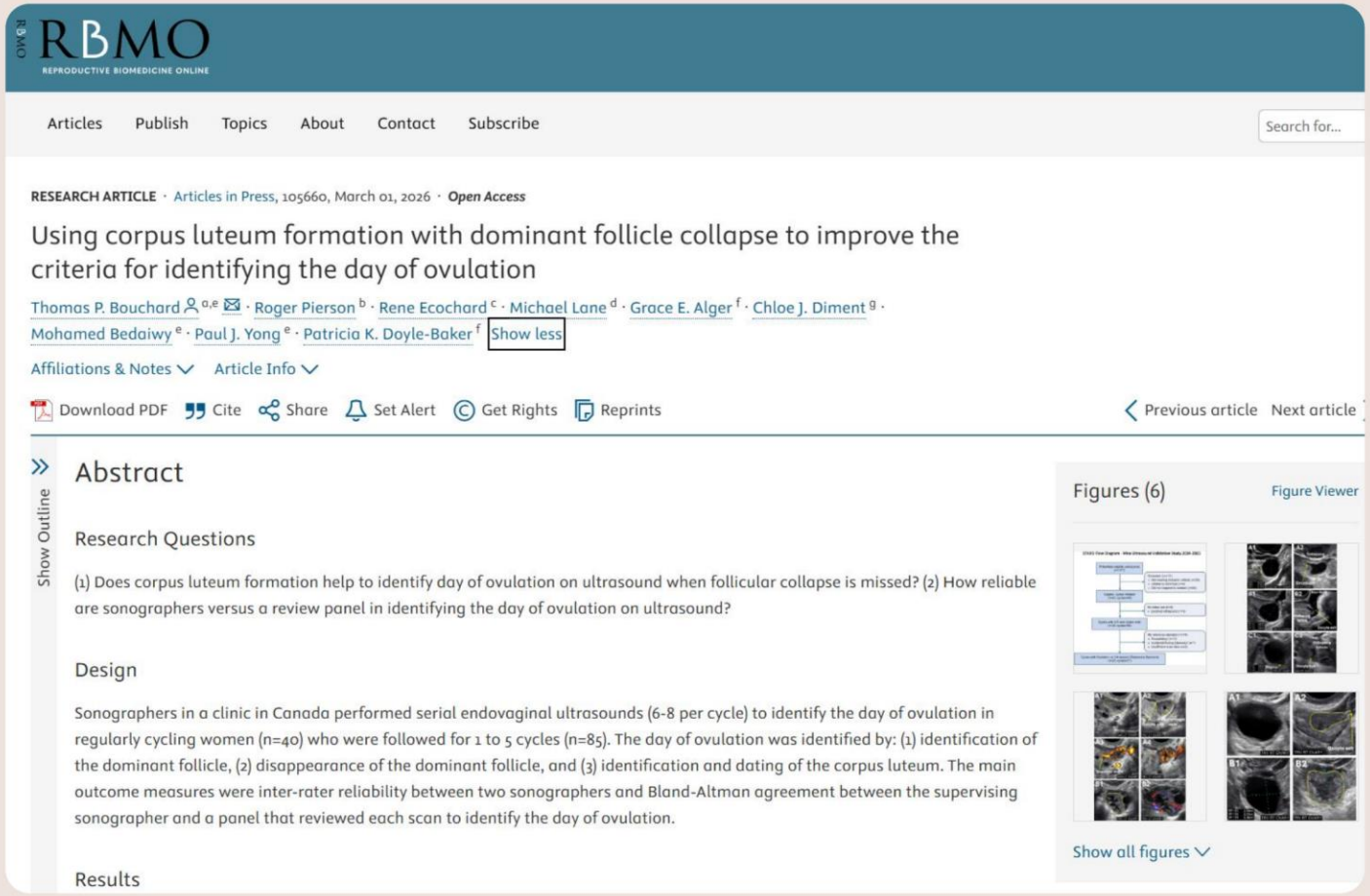
Abstract: *Background and Objectives*: The Quantum Menstrual Health Monitoring Study will measure four key reproductive hormones in the urine (follicle-stimulating hormone, FSH; estrone-3-glucuronide, $E_1$3G; luteinizing hormone, LH; and pregnanediol glucuronide, PDG) to characterize patterns that predict and confirm ovulation, referenced to serum hormones and the gold standard of the ultrasound day of ovulation in participants with regular cycles. These normal cycles will provide a reference for comparison to irregular cycles in subjects with polycystic ovarian syndrome (PCOS) and athletes. *Materials and Methods*: Participants will track their menstrual cycles for 3 months and be provided with an at-home urine hormone monitor (Mira monitor) to predict ovulation. The day of ovulation will be confirmed with serial ultrasounds completed in a community clinic. Urine results will be compared to serum hormone values. Other markers of menstrual health, such as bleeding patterns and temperature changes, will be determined using a customized app. Three groups will be recruited. Group 1 will include those with consistent regular cycle lengths (between 24–38 days), and will be compared to two groups with irregular cycle lengths (with increased cycle length variability and longer cycles). Group 2 will include those with polycystic ovarian syndrome (PCOS) with irregular cycles and Group 3 will include individuals participating in high levels of exercise with irregular cycles. *Hypothesis*: The Mira monitor quantitative urine hormone pattern will accurately correlate with serum hormonal levels and will predict (with LH) and confirm (with PDG) the ultrasound day of ovulation in those with regular cycles as well as those with irregular

Thomas P Bouchard, Mohamed Bedaiwy, Aline Talhouk, Gary Nakhuda, Paul J Yong, Patricia K Doyle-Baker, Establishing a Gold Standard for Quantitative Menstrual Cycle Monitoring. Medicina, 59(9), 1513. https://doi.org/10.3390/medicina59091513

Establishing a Gold Standard for Quantitative Menstrual Cycle Monitoring

Conclusion:

We demonstrated that identifying ovulation on ultrasound was feasible with approximately 6 scans per cycle resulting in a more precise outcome with the use of additional corpus luteum criteria. Future studies should consider replicating these criteria to further delineate the process for identifying the day of ovulation with follicular development and collapse as well as the development of the corpus luteum. The application of a precise US-based definition of ovulation will be very important in validation studies of tools that seek to define the fertile window (Branch et al., 1982; Collins, 1982; Wilcox et al., 2000) by predicting and confirming ovulation in serum or urine (Behre et al., 2000; Bouchard et al., 2023).



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RESEARCH ARTICLE · Articles in Press, 105660, March 01, 2026 · *Open Access*

Using corpus luteum formation with dominant follicle collapse to improve the criteria for identifying the day of ovulation

Thomas P. Bouchard [a,e] · Roger Pierson [b] · Rene Ecochard [c] · Michael Lane [d] · Grace E. Alger [f] · Chloe J. Diment [g] · Mohamed Bedaiwy [e] · Paul J. Yong [e] · Patricia K. Doyle-Baker [f] Show less

Affiliations & Notes Article Info

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Show Outline

Abstract

Research Questions

(1) Does corpus luteum formation help to identify day of ovulation on ultrasound when follicular collapse is missed? (2) How reliable are sonographers versus a review panel in identifying the day of ovulation on ultrasound?

Design

Sonographers in a clinic in Canada performed serial endovaginal ultrasounds (6-8 per cycle) to identify the day of ovulation in regularly cycling women (n=40) who were followed for 1 to 5 cycles (n=85). The day of ovulation was identified by: (1) identification of the dominant follicle, (2) disappearance of the dominant follicle, and (3) identification and dating of the corpus luteum. The main outcome measures were inter-rater reliability between two sonographers and Bland-Altman agreement between the supervising sonographer and a panel that reviewed each scan to identify the day of ovulation.

Results

Figures (6) Figure Viewer

Show all figures

Bouchard, T. P., Pierson, R., Ecochard, R., Lane, M., Alger, G. E., Diment, C. J., Bedaiwy, M., Yong, P. J., & Doyle-Baker, P. K. (2026). Using corpus luteum formation with dominant follicle collapse to improve the criteria for identifying the day of ovulation. Reproductive BioMedicine Online. Advance online publication. https://doi.org/10.1016/j.rbmo.2026.105660

Bench study and research binder

Updates:

- Benchmark study completed, planned to be published in 2-3 months
  - Mira superior to Oova, Proov, and Inito except in one area PdG

- Research binder: Review here

Serum and Urinary Hormones Correlate—But Are Not Equivalent

serum → metabolism → urine

Serum → precise, time-specific decisions

Single moment in time

Urinary metabolites with Mira→ longitudinal pattern tracking

Average over several hours (metabolism + excretion)

Correlated Patterns, Distinct Reference Ranges

Serum hormones and urinary metabolites track together, but are not directly equivalent—each must be interpreted within its own validated reference range.

Estradiol (serum)

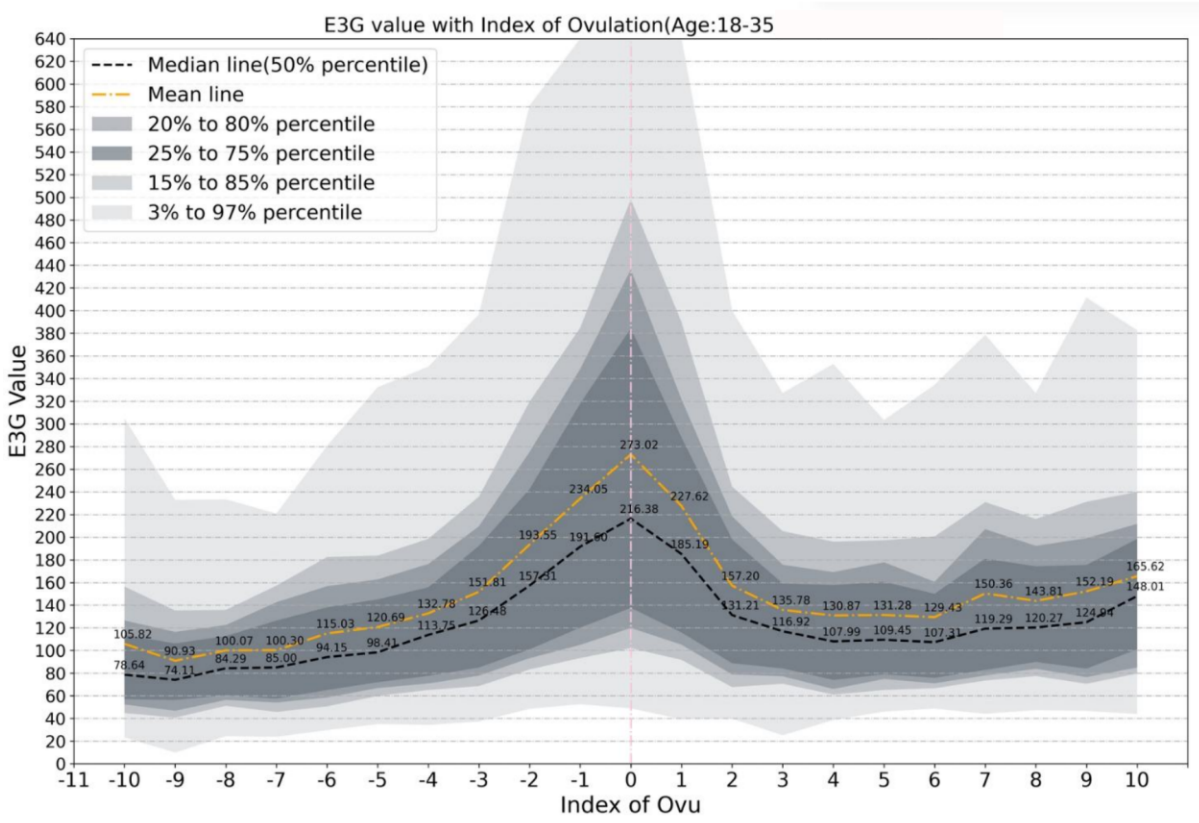
Estradiol (E2) varies by sex, menstrual cycle phase, pregnancy, and assay method. The ranges shown include two published pregnancy reference sets used in clinical laboratories.

Category	Value 1	Value 2	Value 3
Prepubertal children	< 10 pg/mL		
Male	< 60 pg/mL		
Females ovulating — phase	**Early follicular**	**Late follicular**	**Luteal**
pg/mL	30 – 100	100 – 400	60 – 150
Pregnant (Set 1) Abbassi-Ghanavati et al.	**1st Trimester** 188 – 2,497 pg/mL	**2nd Trimester** 1,278 – 7,192 pg/mL	**3rd Trimester** 6,137 – 3,460 pg/mL*
Pregnant (Set 2) Roche Diagnostics E2 III	154 – 3,243 pg/mL	1,561 – 21,280 pg/mL	8,525 – >30,000 pg/mL
Postmenopausal	< 18 pg/mL		

* Published as given in original table; third-trimester ranges vary by assay and laboratory.

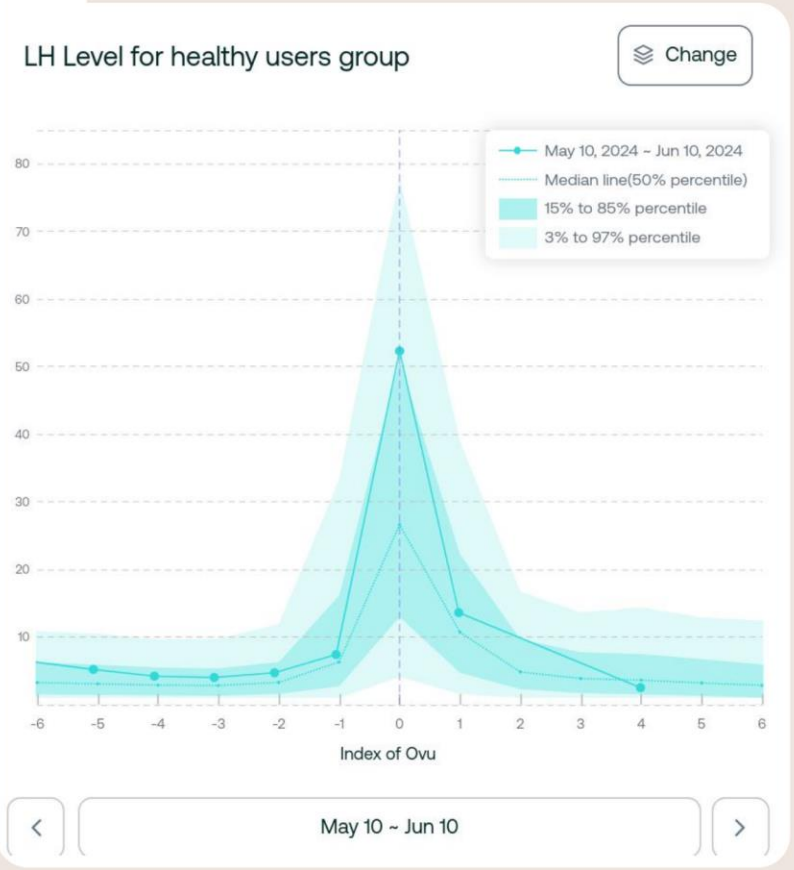
References

1. Abbassi-Ghanavati M, Greer LG, Cunningham FG. Pregnancy and laboratory studies: a reference table for clinicians. *Obstet Gynecol.* 2009;114:1326–31. PMID: 19935037.
2. Roche Diagnostics Estradiol III assay. University of Iowa Diagnostic Laboratories. Test Handbook. Accessed 11/26/2025.



Interpreting Mira hormone patterns

Normal



Abnormal

Are the hormones inside the reference ranges for a majority of the data points?

For optimal hormone levels and patterns a majority of the data points should be within the reference range.

Yes - Normal

The majority of the data points are within range.

No - Abnormal

The majority of the data are not within the reference range.

Screening: Identifying low progesterone

Mira data discovers

Low progesterone in ovulatory cycle

Suboptimal ovulation

Screening: Abnormally high E3G in the luteal phase

Mira data discovers

Abnormally high E3G in the luteal phase

Hormone imbalance in ovulatory cycle

Low hormone levels in “regular” 32 day cycle

Despite a regular 32-day cycle with ovulation around CD 18, hormone trends suggest suboptimal ovulation. E3G remains low with no significant pre-ovulatory rise, and PdG levels after ovulation are insufficient.

This pattern indicates poor follicular development and a weak luteal phase, potentially impacting implantation and conception. Without hormone tracking, these issues would likely go undetected.

Patient Details

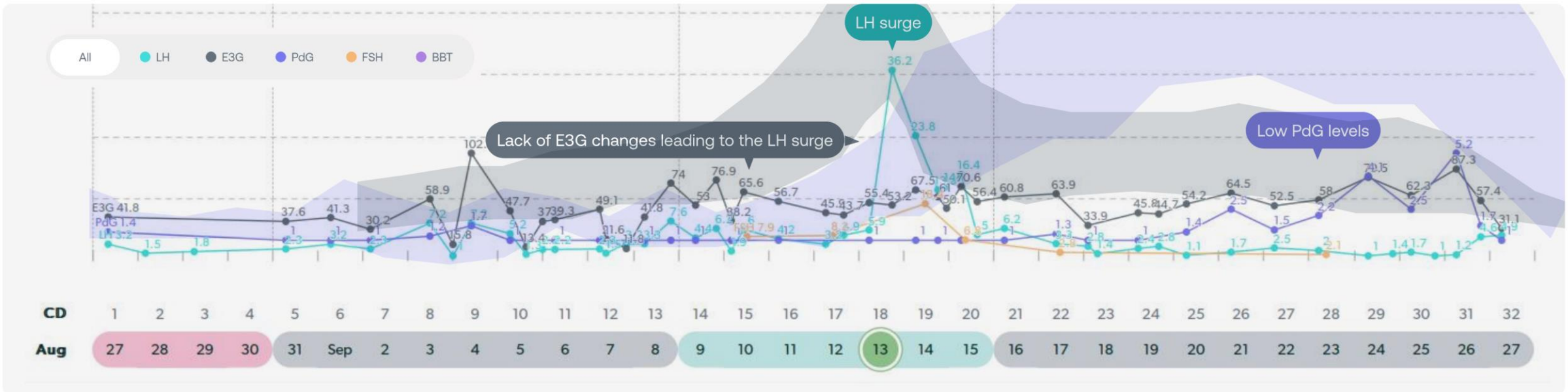
40 year old trying to conceive for 1 year

Mira data discovered

Low estrogen levels

Low progesterone levels

Lack of effective rise of estrogen before ovulation



Accessible Hormone Monitoring for Patients and Providers

Accessible for Patients	Designed for Healthcare Professionals
Direct-to-consumer, no prescription necessary	Partnerships available for all types of healthcare professionals
Available internationally	Provider Resources: Clinical education hub, FAQs, roundtable discussions with hormone experts and 1:1 clinical support
VIP customer support	Real-time remote monitoring

Certified Quality

- ISO 13485 certified
- MDSAP compliant
- FDA registered
- HIPAA-compliant

Proven Science

- Backed by 50+ leading universities and fertility clinics
- Recognized with 30+ industry awards

Johns Hopkins University · University of Toronto · Duquesne University · University of British Columbia

Trusted Globally

- Used by 150,000+ women
- Recommended by 4,000+ clinicians
- Covered by leading fertility benefits

CARROT · MAVEN · Win.

Longitudinal Hormone Tracking: The Missing Piece in Women's Health

- Supports early identification and screening of hormonal abnormalities
- Provides context for single-point lab testing (serum, saliva, dried urine)
- Improves diagnostic timing (e.g., mid-luteal testing 7 days post-ovulation vs. generic CD21)
- Monitors response to interventions with before-and-after data
- Correlates symptoms with real-time hormone patterns

Mira

The Foundational Tool for Longitudinal Hormone Assessment Enabling precise, real-time clinical decision-making

- Integrates hormone data with physiologic and biometric markers (sleep, HRV, exercise, recovery, metabolic markers)
- Enables phase-specific treatment interventions
- Monitors and optimizes response to HRT
- Applicable for patients without menstrual bleeding (hysterectomy, uterine ablation, IUDs)
- Validates patient experience and promotes engagement

01

Patient validation and empowerment

Bridging the Gap: Patient Stats

71% women say that Mira helped them connect daily hormone fluctuations with symptom flare-ups.

77.6% of PCOS users identified ovulation with Mira while other methods failed

95% of PCOS users found Mira helpful for managing PCOS

6 in 10 perimenopause women say that Mira helped them discover a hormone imbalance they weren't aware of.

82% perimenopause women say that Mira increased their confidence in making decisions about their health.

84% Of TTC users got pregnant during their first 3 cycles of using Mira

Bridging the Gap: Patient Testimonials

I love being able to see my hormones instead of being told everything is “normal”.

This data helped me connect how I feel with what’s actually happening in my body.

This has completely changed how I understand my cycle and symptoms.

For the first time, I can understand what my hormones are doing instead of guessing.

What a relief to have confirmation of what I’ve been feeling all along.

I’m not crazy—my symptoms actually make sense now.

Having this information gave me confidence to advocate for myself.

Seeing my hormone patterns was incredibly validating.

Bridging the Gap: Provider Testimonials

The best tool I've used in 35 years of women's health.

—Dr. Maggi Beeson, ND

Supports tailored, timely treatments with real-time hormone data.

—Kindreth Hamilton, DACM, L.Ac

Helps me adjust treatments and optimize patient outcomes.

—Stephanie Harrod, DPT

It removed the guesswork from a complex biological transition.

—Stephanie Coffey, MS, CNS, LDN

Tracks patient progress throughout the month—not just a moment in time.

—Grace Chang, ND, LAc, IFMCP

Provides the data needed for truly individualized care.

—Dr. Bianca Chiara, MD, IFMCP

Adds objective data to an otherwise subjective experience.

—Christina Saldanha, PA-C, MSCP

A game changer for practitioners.

—Michelle Oravitz, AP, L.Ac, FABORM

02

Screening: Identifying hormone imbalances

- Ovulatory vs. anovulatory
- Hormone deficiency and/or hormone excess
- Low progesterone
- LOOP cycles
- Lengthening follicular phase and shorten luteal phase
- Early ovulation
- Shortening cycles
- Elevated FSH

Identify and Act on “Low-Hanging Fruit” with Real-Time Hormone Data

Quickly determine when to intervene vs pursue additional diagnostics

Ovulatory Cycle – 50 Year Old Female

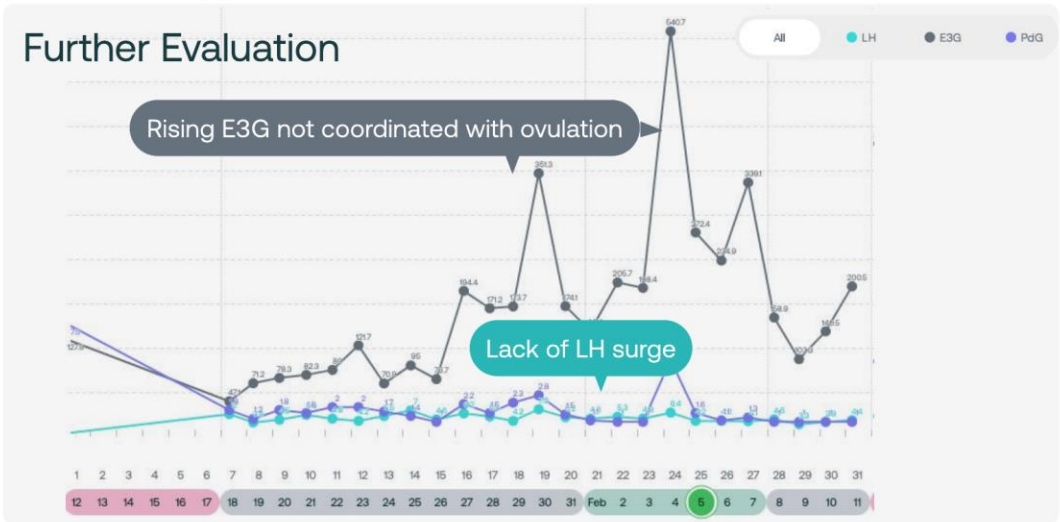
Coordinated E3G → LH surge → ovulation confirmed

PdG rise confirms luteal phase

Suboptimal PdG suggests luteal insufficiency

Clear, actionable hormone imbalance identified (low progesterone)

Pattern supports confident determination of next steps without additional testing



Anovulatory Cycle – 50 Year Old Female

Rising E3G without coordinated LH

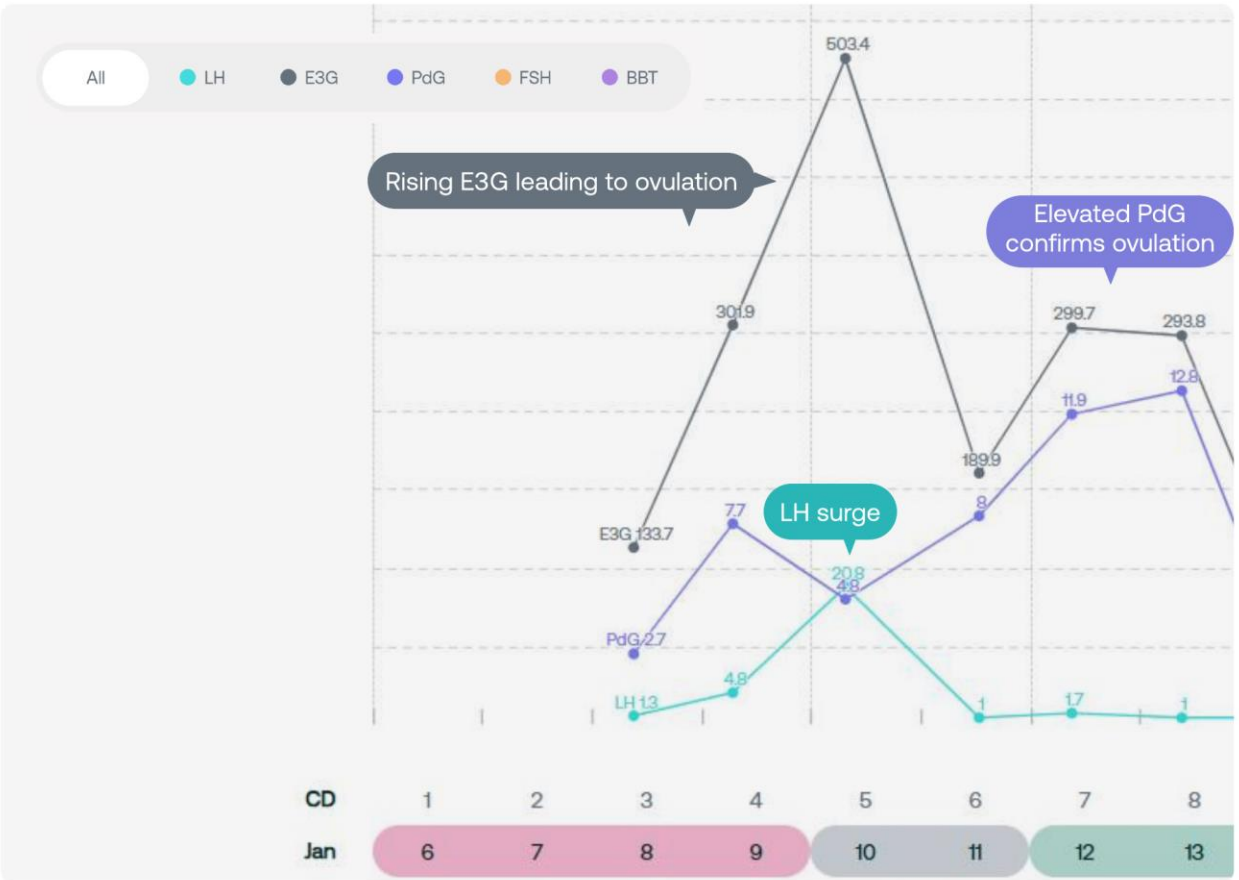
No LH surge

No PdG rise → anovulatory cycle

Uncoordinated pattern—additional evaluation may be needed to confidently determine next steps

Screening: Identifying early ovulations in short ovulatory cycles

Confirmed early ovulation within a shortened ovulatory cycle



Patient Details

19-day ovulatory cycle

Mira data discovered

Coordinated E3G leading to LH surge

LH surge on CD 5

Rising PdG confirming ovulation

03

Accurately timing and interpreting other diagnostics

Accurately Timing Mid-Luteal Diagnostics

Serum progesterone and estradiol

Dried urine

Saliva

Inaccurate:
Generic cycle day 19–21

Accurate mid-luteal:
Personalized 5-7 days after ovulation

Example of inaccurate assumptions based on CD 19- 21 testing

Generic cycle day 19–21
Serum conclusions:
low estrogen and low progesterone= no ovulating
More accurate she hasn't ovulated yet

Accurate mid-luteal:
Personalized 5-7 days after ovulation
Serum results would truly be assessing mid-luteal progesterone and estrogen production

Example of inaccurate assumptions based on CD 19- 21 testing

Mira data discovered

Coordinated E3G elevation with an LH surge on CD 17 and CD 18. Suspicion for unsuccessful attempt due to a lack of FSH and LH coordination. Determined to be non-ovulatory due to a lack of PdG changes.

Second LH surge on CD 28–30 determined to be ovulatory due to PdG changes following the LH surge.

Accurate mid-luteal:
Personalized 5-7 days after ovulation
Serum results would truly be assessing mid-luteal progesterone and estrogen production

Generic cycle day 19–21
End of cycle not mid-luteal

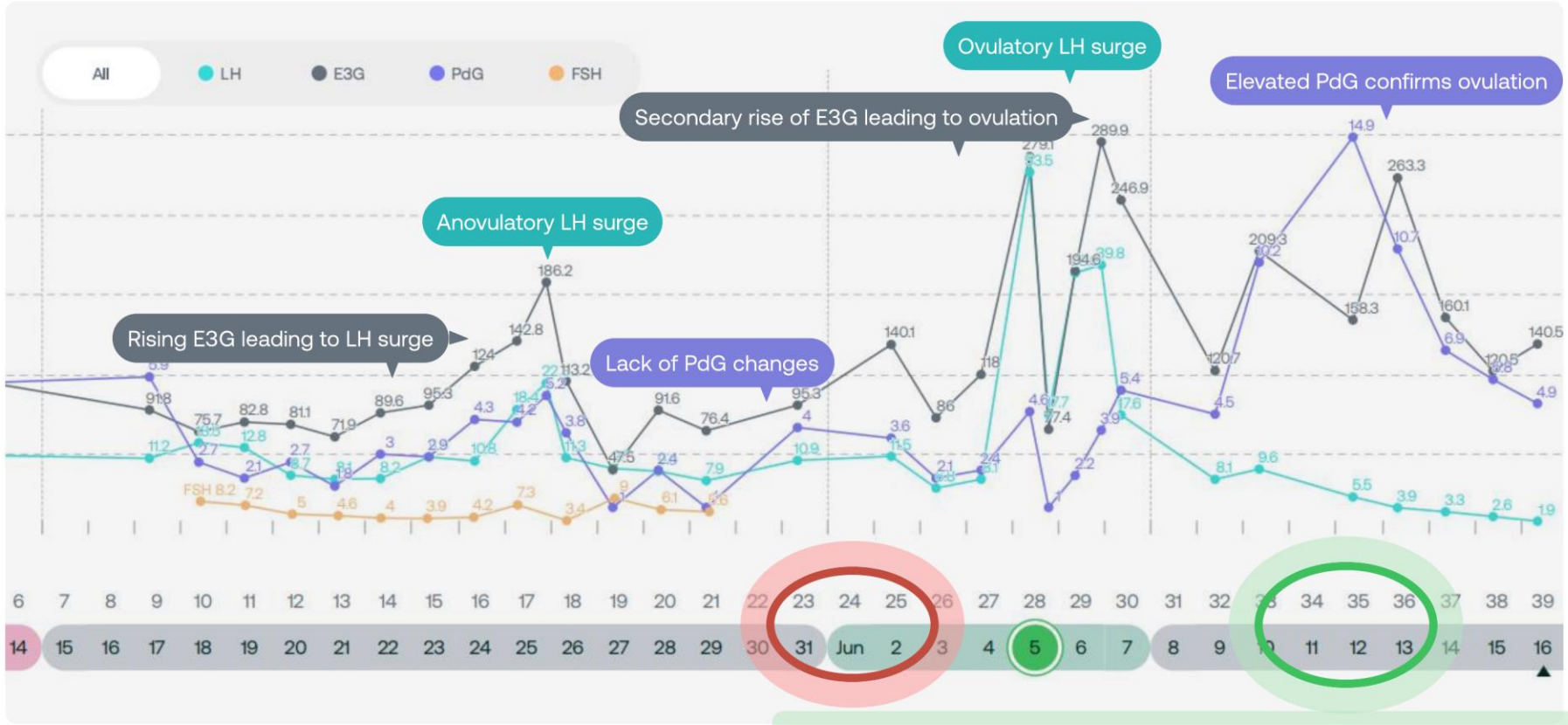
LH-Only Testing vs. Comprehensive Hormone Data: Impact on Timing and Clinical Interpretation

Relying on 5–7 days after LH surge to estimate mid-luteal timing can lead to misinterpretation without full hormone context

Mira data discovered

Coordinated E3G elevation with an LH surge on CD 17 and CD 18. Suspicion for unsuccessful attempt due to a lack of FSH and LH coordination. Determined to be non-ovulatory due to a lack of PdG changes.

Second LH surge on CD 28–30 determined to be ovulatory due to PdG changes following the LH surge.



Inaccurate 5-7 days after LH only testing

Accurate mid-luteal:

Personalized 5-7 days after ovulation
Serum results would truly be assessing mid-luteal progesterone and estrogen production

Why Single Time-Point Testing Can Mislead Hormone Interpretation

Same patient. Different conclusions. Depends on when you test

Patient Details

45 female

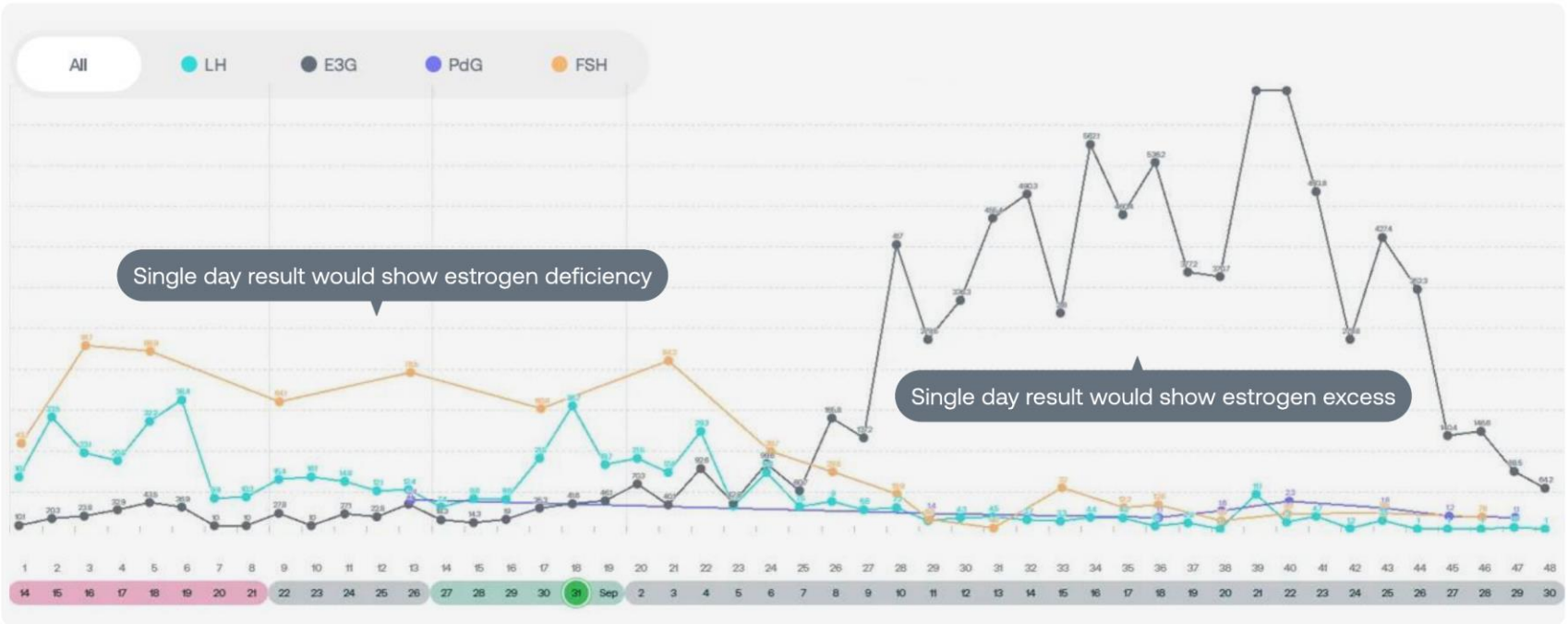
Irregular cycles

Mira data discovered

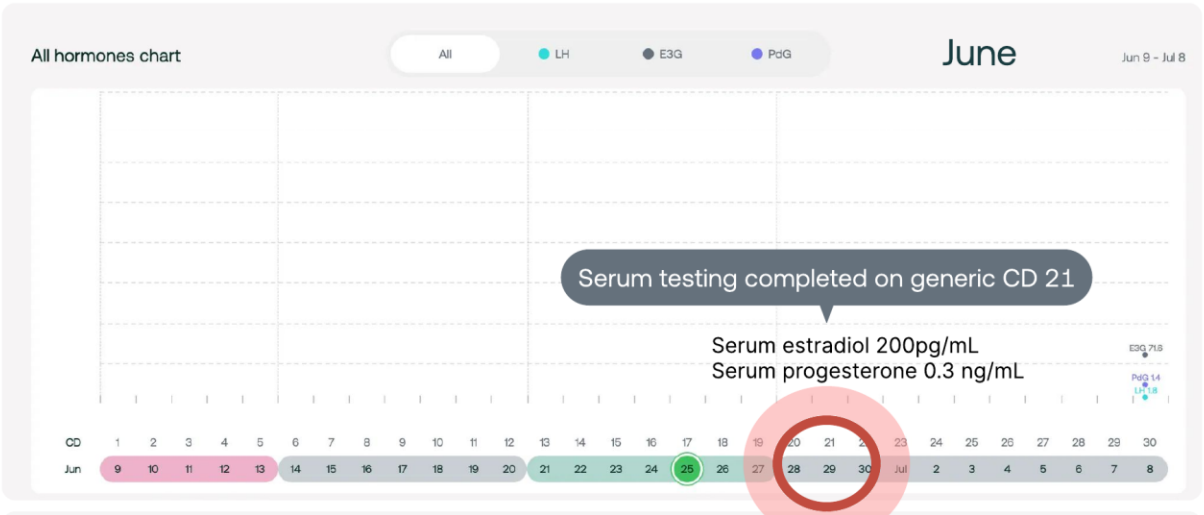
Initially elevated FSH and LH levels with low E3G

Then E3G rises and FSH is suppressed

Anovulatory cycle



The Risk of Testing Without Context: Misinterpretation → Misaligned Treatment



Snapshot Testing (No Context)

Serum drawn on generic CD21

No confirmation of cycle phase

“High estrogen” + low progesterone

Treatment initiated based on assumed luteal phase: EstroDIM daily × 2 months and progesterone prescribed by calendar timing (7 days pre-menses)

Longitudinal Data (With Context)

Coordinated E3G changes with an LH surge on CD 19/20; lack of PdG changes so anovulatory pattern

NOTE: “High estrogen” on CD21 was likely follicular—not luteal—and therefore normal.

By accurately identifying ovulation and the luteal phase, Mira supports correctly timed progesterone use, rather than relying on generic protocols (e.g., “start progesterone 7 days before the period”), which may miss the true luteal window.

Poor response to suboptimal treatment due to poorly timed diagnostics observed with Mira

Mira Data Discovers

Extended follicular phase characterized by low E3G levels

Inadequate E3G rise leading to a small LH surge (CD 24)

Progesterone supplementation initiated without luteal confirmation

Findings suggest an anovulatory or severely poor ovulatory cycle

NOTE: “High estrogen” on CD21 was likely follicular—not luteal—and therefore normal.

By accurately identifying ovulation and the luteal phase, Mira supports correctly timed progesterone use, rather than relying on generic protocols (e.g., “start progesterone 7 days before the period”), which may miss the true luteal window.

Note: Mira identified worsening hormone coordination with a delayed ovulatory attempt on CD 24, indicating a poor response to EstroDIM.

This suggests the intervention was likely inappropriate due to reliance on poorly timed, single-point serum testing.

04

Correlate Symptoms with Hormone Patterns

Correlate Symptoms with Hormone Patterns

Phase specific symptoms
after hysterectomy

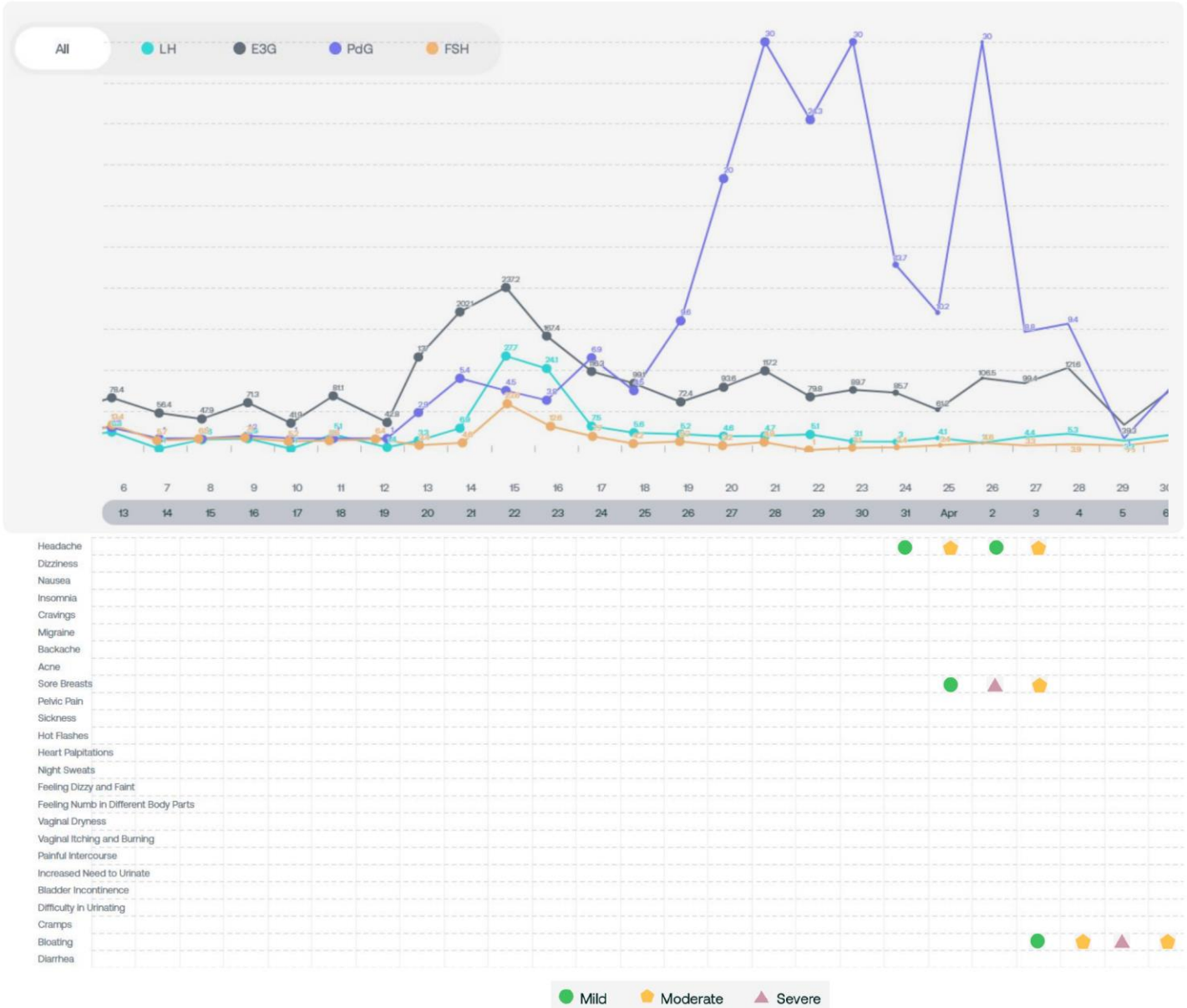
Mira data discovered

Coordinated E3G rising toward LH surge

LH surge on March 22 and 23

Rising PdG confirms ovulatory event

The patient tracked her symptoms and noted headaches, bloating, breast tenderness, fatigue, and irritability during the luteal phase.



Correlate Symptoms with Hormone Patterns

E3G deficiency and E3G excess in the same anovulatory cycle

Patient Details

45 female

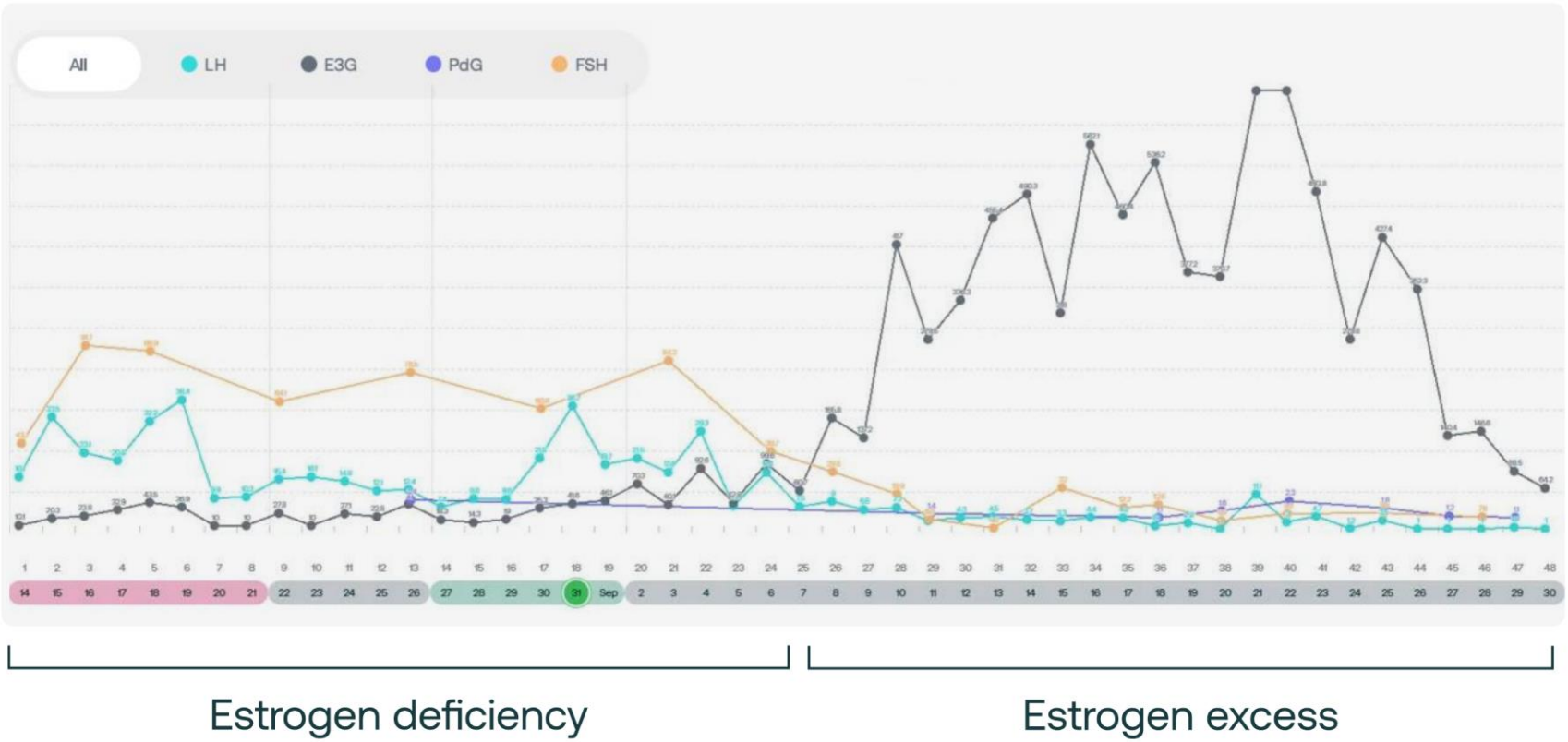
Irregular cycles

Mira data discovered

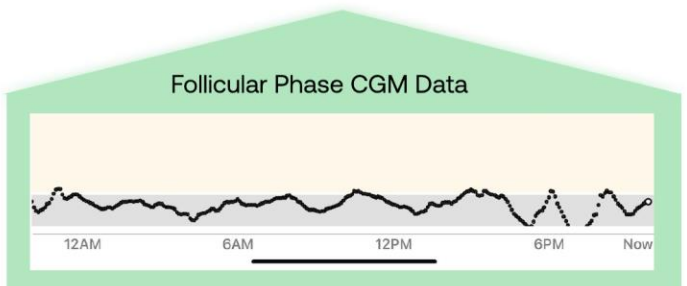
Initially elevated FSH and LH levels with low E3G

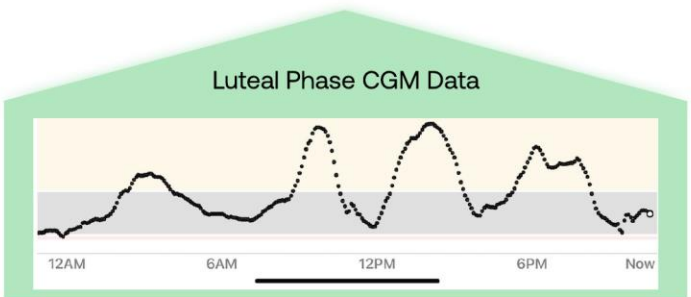
Then E3G rises and FSH is suppressed

Anovulatory cycle



How hormone monitoring offers personal insights into blood glucose patterns across the menstrual cycle





Study findings: Identified significant associations between blood glucose levels and menstrual cycles.

Consistent, regardless of factors like step count, estrogen levels, cravings, fatigue, or sleep issues.

Glucose levels peaked during the luteal phase and declined in the late-follicular phase.

Highlights the importance of considering menstrual cycle phases when interpreting glucose levels.

Behavioral Adjustments: Individuals may need to adjust behaviors (e.g., diet, sleep) based on their menstrual cycle, particularly during the luteal phase when glucose levels are higher and food cravings are stronger.

Lin, G., Siddiqui, R., Lin, Z., Blodgett, J. M., Patel, S. N., Truong, K. N., & Mariakakis, A. (2023). Blood glucose variance measured by continuous glucose monitors across the menstrual cycle. NPJ Digital Medicine, 6, 140. https://doi.org/10.1038/s41746-023-00884-x

05

Interventions and Treatment: Leveraging Hormone Trends Guide Clinical Interventions

Evaluating Intervention Options

Leveraging Hormone Trends Guide Clinical Interventions

Consider

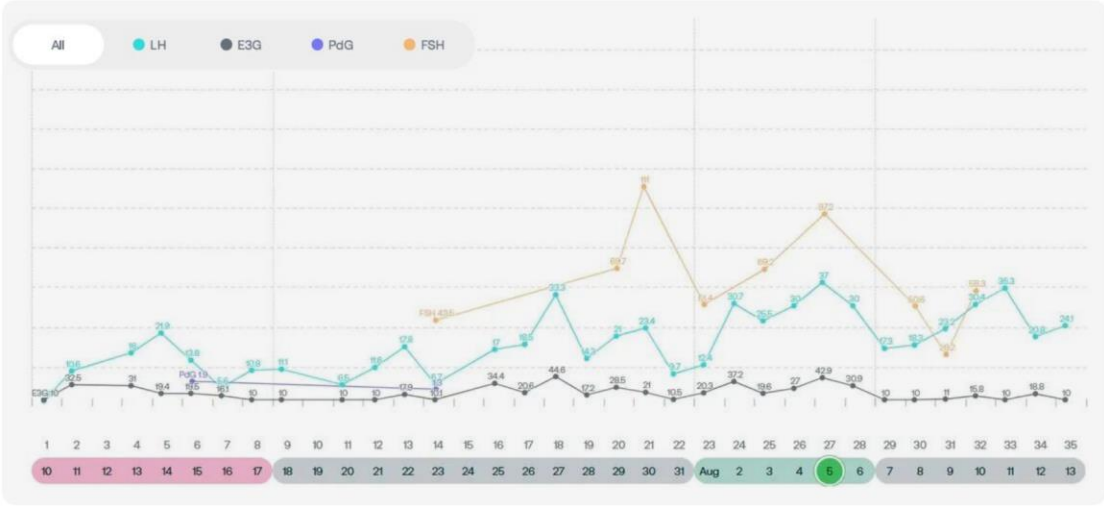
Timed-cyclic progesterone

Physiologic HRT or phase-specific HRT

Consider

Estrogen therapy

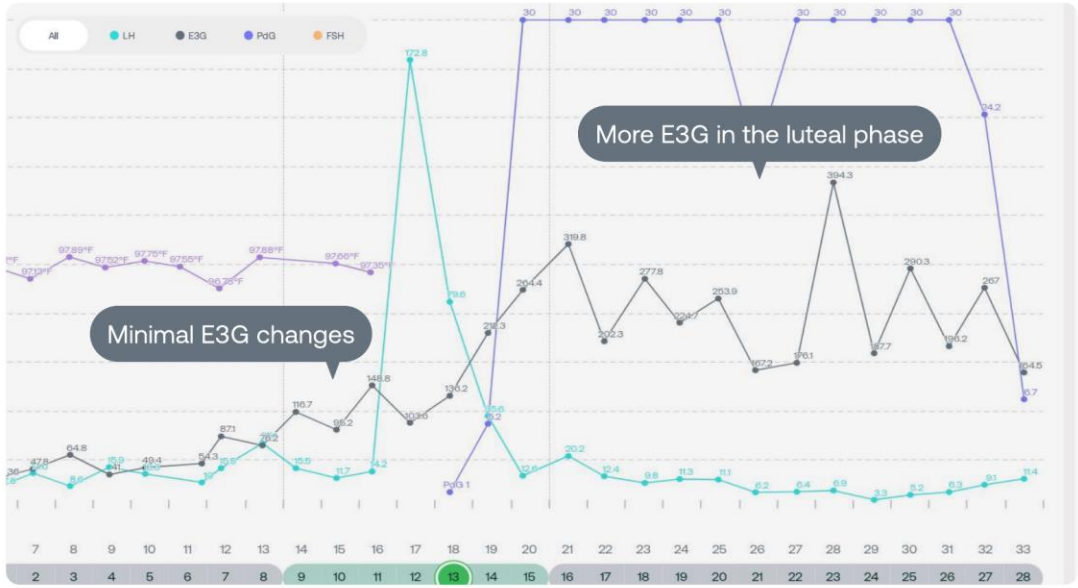
Generic cyclic or daily progesterone



Note: E3G and PdG values within a typical or expected range do not exclude the need for HRT. Instead, Mira trends help inform clinical decision-making regarding the most appropriate therapy type, timing, and initiation strategy. Patients may experience symptoms of hormone deficiency despite values appearing within range.

Monitoring Progress: Before and After Treatment

In a patient with irregular cycles, menorrhagia, and elevated prolactin, Mira revealed a suboptimal E3G pattern. After treatment, hormone tracking showed improved follicular E3G rise and normalized luteal phase levels.



Before Treatment

Minimal E3G changes prior to the LH surge

LH surge on CD 17 and CD 18 triggering ovulation

Supplemental progesterone given after the LH surge

Abnormal elevated E3G in the luteal phase

After Treatment- Conception cycle

Improved follicular E3G changes prior to ovulation

LH surge on Nov 17th

Supplemental progesterone given after the LH surge

Conception cycle

Mira data helps enable provider-directed protocols

Abnormal E3G during an anovulatory cycle

Patient Details

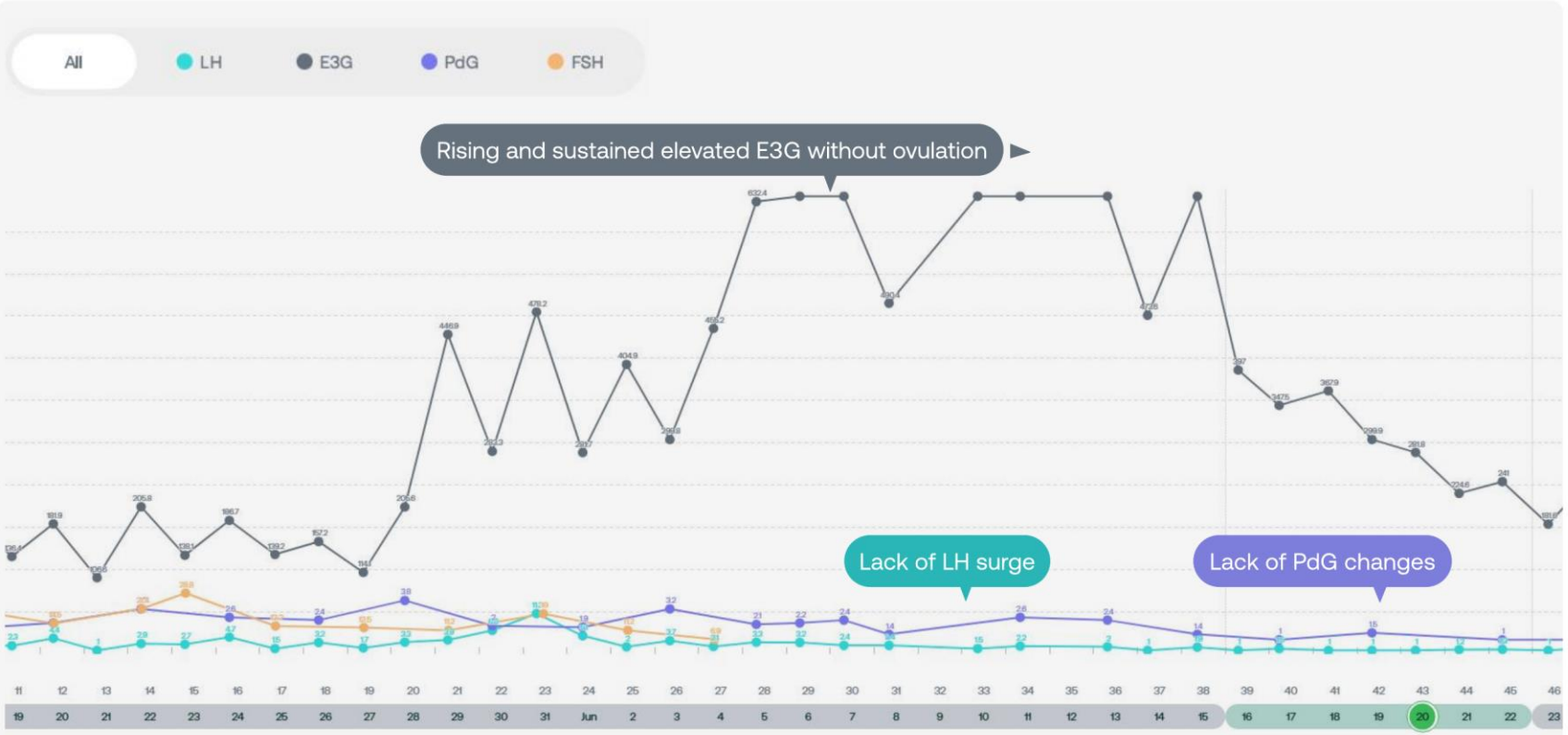
49 year old with ongoing elevated E3G

Mira data discovered

Rising and sustained elevated E3G without coordinated LH surge

Lack of PdG changes

Anovulatory cycle



06

Monitoring HRT

- High FSH risk
- Absorption: Serve as a proxy marker of estrogen absorption and physiologic effect
- FSH monitoring
- Help identify inadequate FSH suppression despite therapy
- Reduce prolonged exposure to persistently elevated FSH, which has been associated in the literature with bone, cardiometabolic, and cognitive risk markers

Beyond Symptom Relief: Assessing True HRT Response

A multi-marker approach combining symptom changes with hormone feedback to evaluate physiologic response and long-term risk modification

Symptom Improvement

Confirms patient comfort and quality of life
Supports treatment tolerability and adherence

Mira E3G changes*

Rising E3G may serve as a proxy for estrogen therapy absorption

Note: E3G alone should not be used to determine HRT dose adjustments but may help identify endogenous estrogen production above baseline HRT exposure.

FSH reduction

Reduced FSH may lower risk

May indicate favorable cardiometabolic, skeletal, and cognitive risk modulation

Optimal HRT response occurs when symptom improvement and hormone feedback move in the desired direction together.

*For information about how different types of HRT affect Mira data review our guide here.

Screening: Identifying hormone deficiency and/or excess

Abnormal E3G during an anovulatory cycle

Patient Details

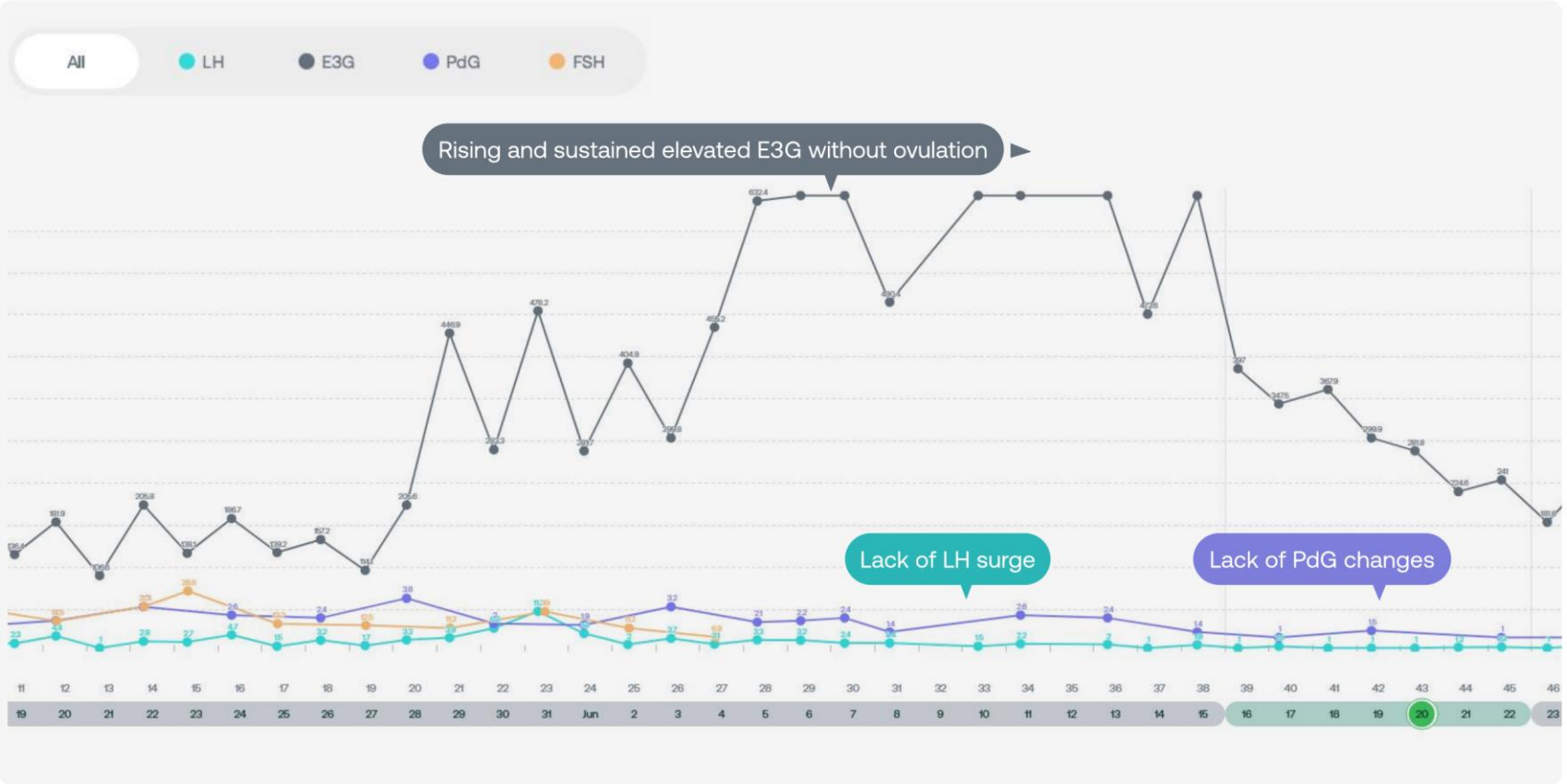
49 year old with ongoing elevated E3G

Mira data discovered

Rising and sustained elevated E3G without coordinated LH surge

Lack of PdG changes

Anovulatory cycle



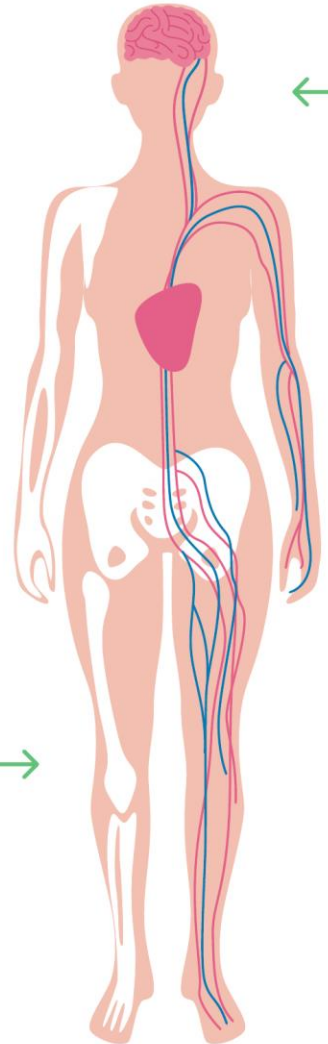
Clinical Outcomes Linked to FSH Levels independent of Estradiol

Bone

Higher FSH associated with ↑ bone turnover & ↓ BMD, independent of estradiol[11]

Fracture risk

Higher FSH predicts hip fracture, even after adjusting for sex hormones[12]



Neurological

FSH increases amyloid & tau production; blocking FSH is neuroprotective[16–17]

Cardiovascular

Elevated FSH associated with more aortic plaques & lipid accumulation[14–15]

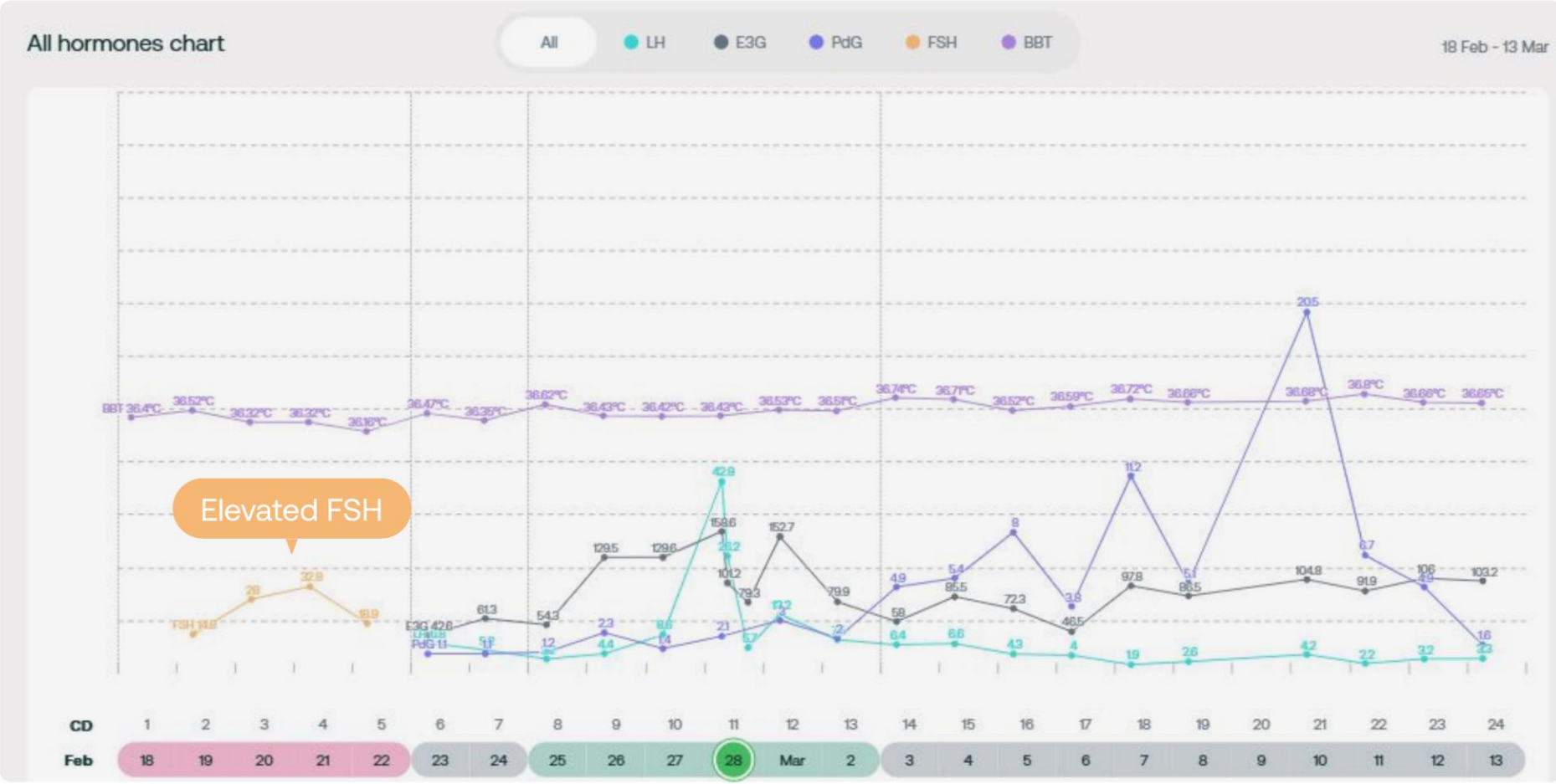
References: 11. Randolph et al., SWAN, 2004–2006. 12. Gooding et al., 2024. 14. Munir et al., 2012. 15. Celestino et al., 2013. 16. Xiong et al., 2022. 17. Xiong et al., 2023

Clinical Examples: Elevated FSH as a Risk Indicator

Mira data discovered

Elevated FSH on CD 2-5

Remaining hormones are coordinated in an ovulatory cycle



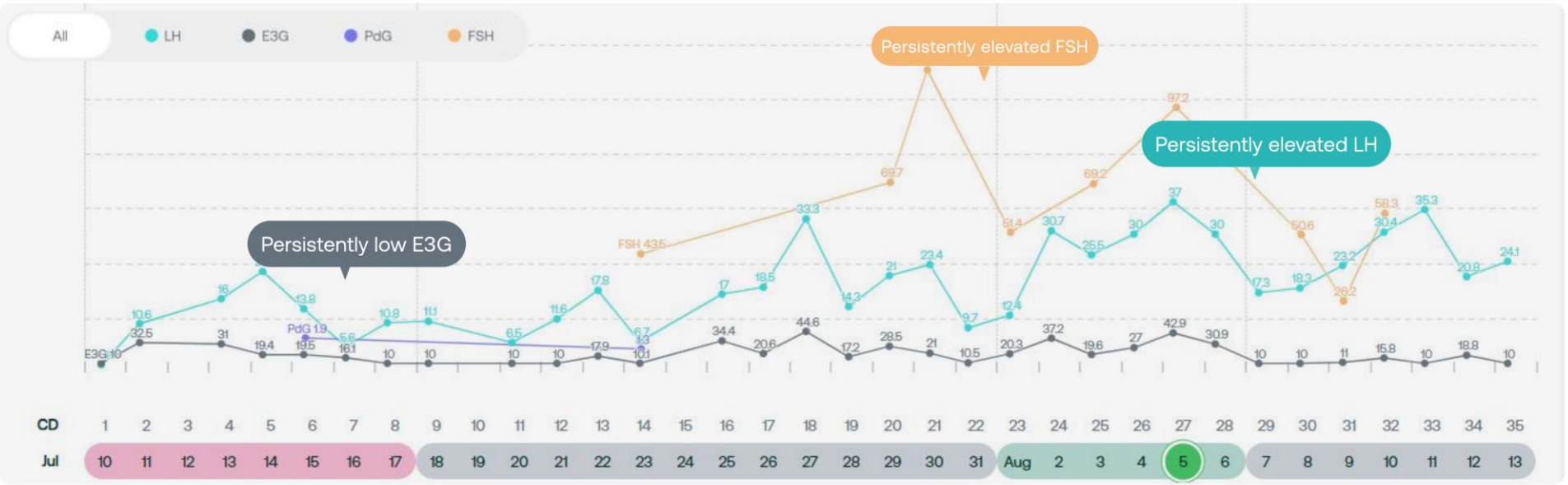
Clinical Examples: Elevated FSH as a Risk Indicator

Mira data discovered

E3G initially elevated, then declines as LH and FSH rises and remains persistently elevated

Mira data discovered

Persistently low E3G and persistently elevated and fluctuating LH and FSH



During Mira

Leveraging FSH Monitoring in HRT

44F POI: Ongoing elevated FSH

Initial Mira Data

Tried different combinations of estradiol patch then switched to estradiol gel, continued to have symptoms and FSH elevated and fluctuating.

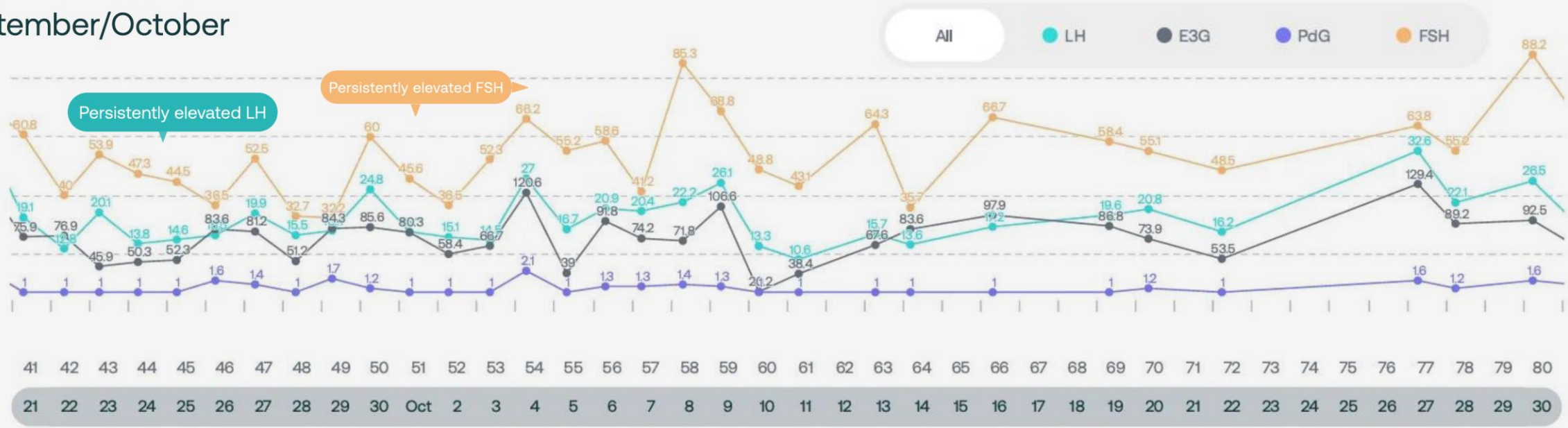
Follow-up Mira Data

Intermittent hormone checks reveal that FSH remains suppressed

During Mira

Continuation of a Prolonged Cycle in Late Perimenopause (Last Menses in August; CD 41-80)

September/October



Mira data discovered

Persistently elevated FSH and LH

Generally low and uncoordinated E3G patterns

Anovulatory pattern

Note: Perimenopause symptoms began in early 2025, with a marked exacerbation in September characterized by frequent daytime and nighttime hot flashes.

This change coincided with a shift in Mira data, showing elevated FSH and reduced E3G.

Case report: Tracking Ovarian Recovery After Kidney Donation in Perimenopause

Using continuous hormone data to monitor the return of ovarian function and optimize HRT timing

Case Report of Dr. Bianca Chiara

Patient Background and History

Before Mira

Female, 46 years old, BMI 22

Hashimoto dx postpartum, in remission, significant mold exposure, and IBS/SIBO in remission

1 child, conceived naturally at 40yo used Vitex for progesterone support

- Medications:
- Copper IUD x 5 yrs
- Cyclic OMP x 2 yrs
- Testosterone transdermal cream x 1 year
- Motegrity
- Low dose naltrexone (LDN)

Cycle History Overview

- 30s:
  - Regular 28–29 day cycles
  - No PMS symptoms
- Age 42:
  - Cycles shortened to 23–26 days
  - New onset of premenstrual breast tenderness
- Initial Interventions & Outcomes:
  - Began cyclic oral micronized progesterone (OMP) → improved breast tenderness
  - Added ovarian bioregulators and epitalon → cycle length extended back to 27–29 days

Patient Situation

Before Mira

Donated left kidney to sister 1/9/25. Intraoperative clamping of left ovarian and adrenal vessels (due to left sided anatomy relative to the kidney and main vessels). “Very difficult dissection.”

Symptoms:

- Severe fatigue and cognitive dysfunction
- Did not bleed for about 3 months after donating her kidney
- Breasts became flat and mushy

Previous Diagnostics/Labs:

- 2023 Dutch sex hormones fairly normal for age with optimal 2-oh estrogen metabolism path predominate
- Labs done many times 2024/2025 thyroid, nutrients, iron, cmp, cbc, crp = all normal
- Breasts: bilateral microcysts & microcalcifications, benign
- Two simple right ovarian cysts

Recent Labs:

- FSH 50s
- Estradiol in the 30s

Interventions

Before Mira

Lifestyle

Started flax seeds daily in smoothie and using broccoli sprout powder most days

Supplements and medications

Estradiol patch

Daily oral micronize progesterone

Restarted ovarian bioregulators

Problem

She wanted an efficient way to monitor whether her clinical strategies were supporting her hormonal health and “reviving” ovarian function.

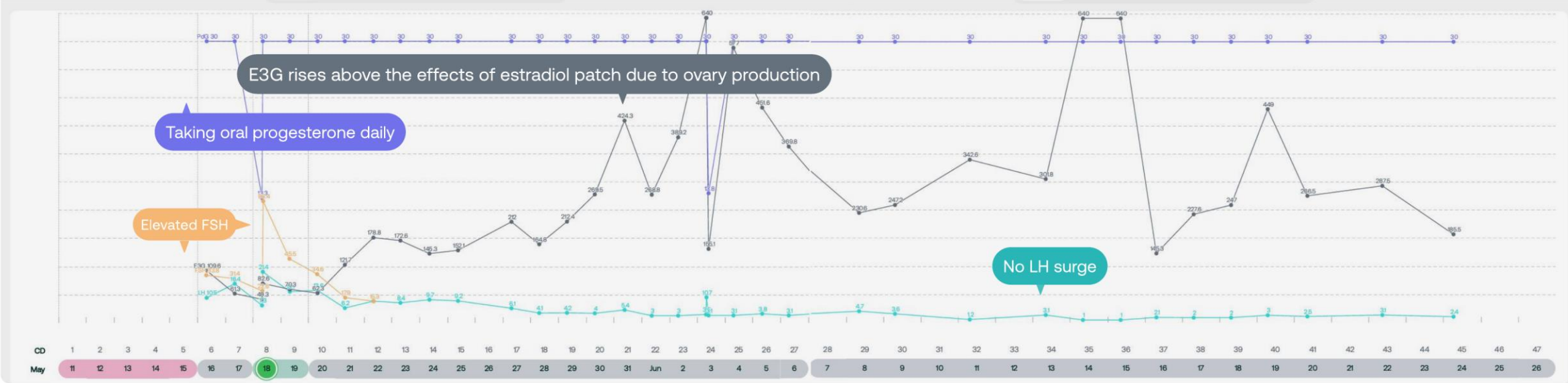
Weekly blood draws were burdensome and still too infrequent to capture meaningful hormonal shifts or confirm whether her endogenous hormone production was returning.

This need for accessible, frequent, at-home hormone monitoring led her to Mira.

Monitoring ovarian function return

During Mira

Mira data during interventions



Mira data discovered

Initially elevated FSH and LH
FSH trends down as E3G rises

Note: Patient is taking oral progesterone making PdG reach the upper threshold.

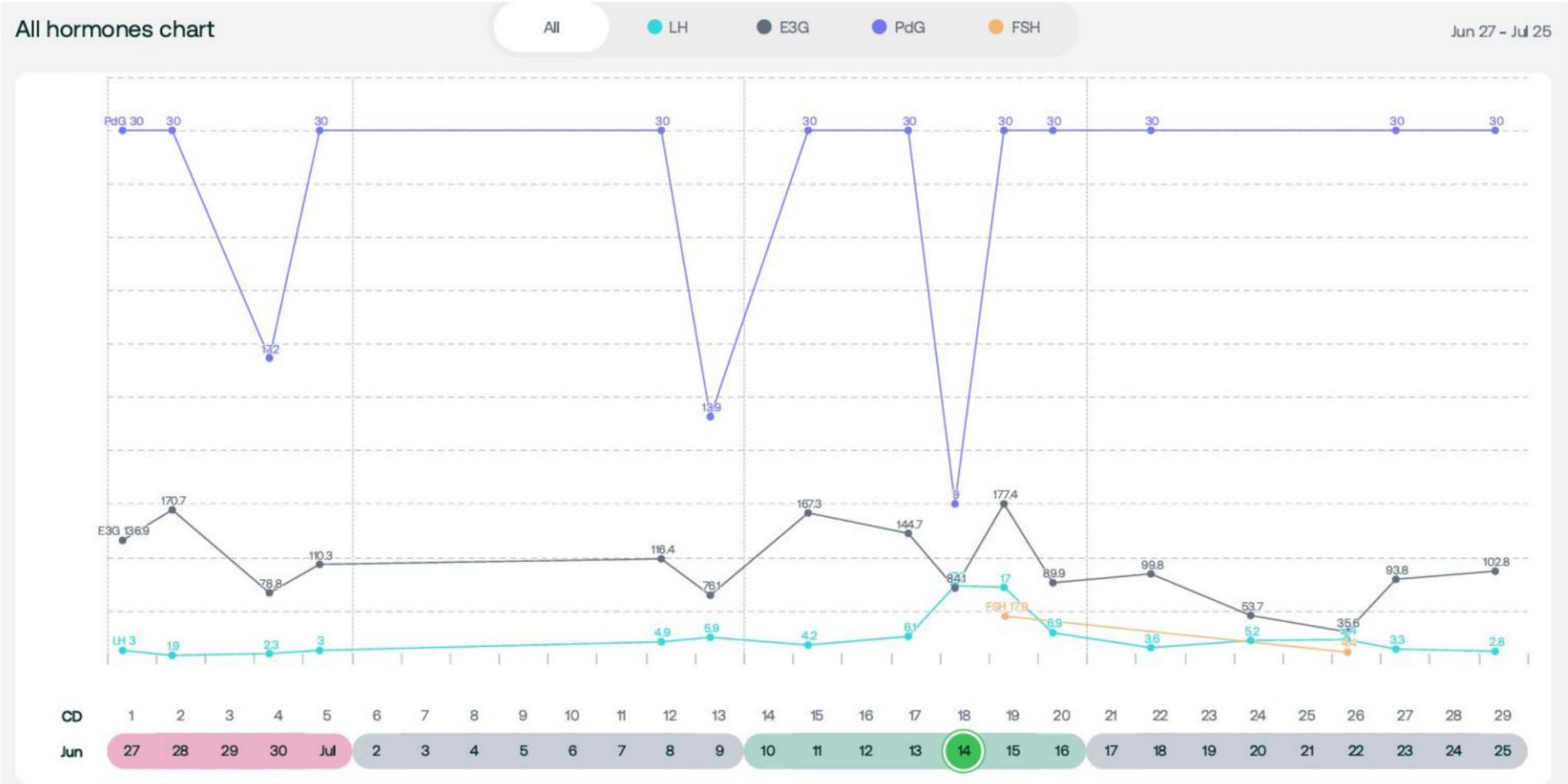
Interpretation:

About 3 weeks into the patch + bioregulators, she noted a rise in E3G on Mira. She paused the patch and repeat labs showed estradiol ~450 pg/mL, confirming the elevated E3G.

During Mira

Monitoring progress throughout treatment and interventions

Return of hormone coordination, suspected ovulatory cycle



Note: Patient is taking oral progesterone making PdG reach the upper threshold.

Mira data discovered

Hormone coordination and cycle length improvement from 47 days to 29

Lower overall E3G levels with ovulatory LH surge on CD 18 and CD 19

Luteal phase 10 days

Interpretation:

Moving forward was able to return to timed-cyclic progesterone. Did not restart estradiol patch.

Provider Testimonial

Dr. Bianca Chiara, MD, ABFM, IFMCP
Certified Functional Medicine Practitioner

“As a functional medicine MD I need data to provide individualized treatment plans. The ease of urine for home tracking of hormones daily with immediate data points is very gratifying and useful. In my case it allowed me to better understand what my ovaries are now doing after the trauma of surgery a few months ago and intervene where I can and know when not to intervene and not to use more estrogen for example.

Being able to follow hormones also helps me understand why I feel how I do and why it can change so much week to week.

I have been dismissed by multiple physicians in this process and this understanding gives them some peace of mind. Mira had made everything so much easier for me.”

Mira Enables Hormone Insight at Every Stage of Care

First Contact / Intake

Identify early hormone patterns and clinical signals

Engage patients prior to the first visit with objective data

1 First Appointment

Guide diagnostic selection based on initial hormone patterns

Optimize timing of diagnostic testing

2 Lab Review Appointment

Bridges single time-point labs with longitudinal hormone patterns for more accurate interpretation

Reveals trends not captured in traditional testing

Enables monitoring of treatment response (before vs after)

3 Symptom or Situation Changes

Correlate symptoms with real-time hormone patterns

Identify physiologic drivers of new or changing symptoms

Differentiate hormonal vs non-hormonal symptom drivers

Ongoing Monitoring

Track hormone trends over time without repeat lab visits

Identify early physiologic shifts before symptom progression

Provider-directed care plans enable patients to adjust interventions based on observed hormone patterns

Longitudinal Hormone Tracking: The Necessary Piece in Women's Health

Provides context for single-point lab testing (serum, saliva, dried urine)

Integrates hormone data with physiologic and biometric markers (sleep, HRV, exercise, recovery, metabolic markers)

Enables phase-specific treatment interventions

Applicable for patients without menstrual bleeding (hysterectomy, uterine ablation, certain IUDs)

Mira

The Foundational Tool for Longitudinal Hormone Assessment Enabling precise, real-time clinical decision-making

Validates patient experience and promotes engagement

Monitors and optimizes response to HRT

Correlates symptoms with real-time hormone patterns

Supports early identification and screening of hormonal abnormalities

Improves diagnostic timing (e.g., mid-luteal testing 7 days post-ovulation vs. generic CD21)

Book a meeting with our clinical team and claim your free sample

1. Meet with our clinical team

Scan the QR code to meet with our team, to learn how to use Mira with your patients and to arrange your free trial

2. Trial a free sample

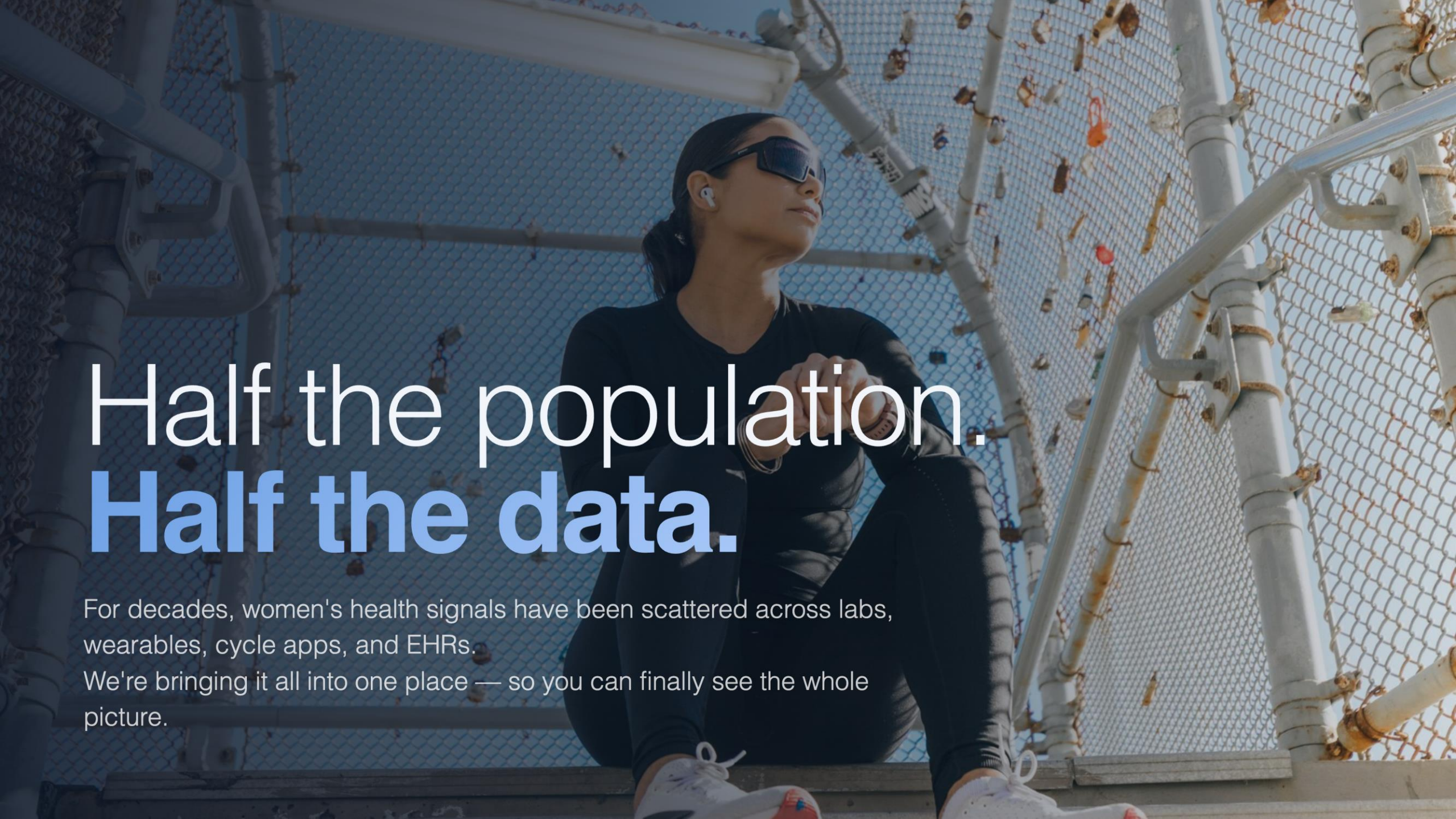
Experience Mira yourself or with a patient.

3. Become a partner

Offer discounted Mira products to your patients.

Quick *poll.*

In which clinical scenarios would *daily hormone tracking* add the most value in your practice?



Half the population.
Half the data.

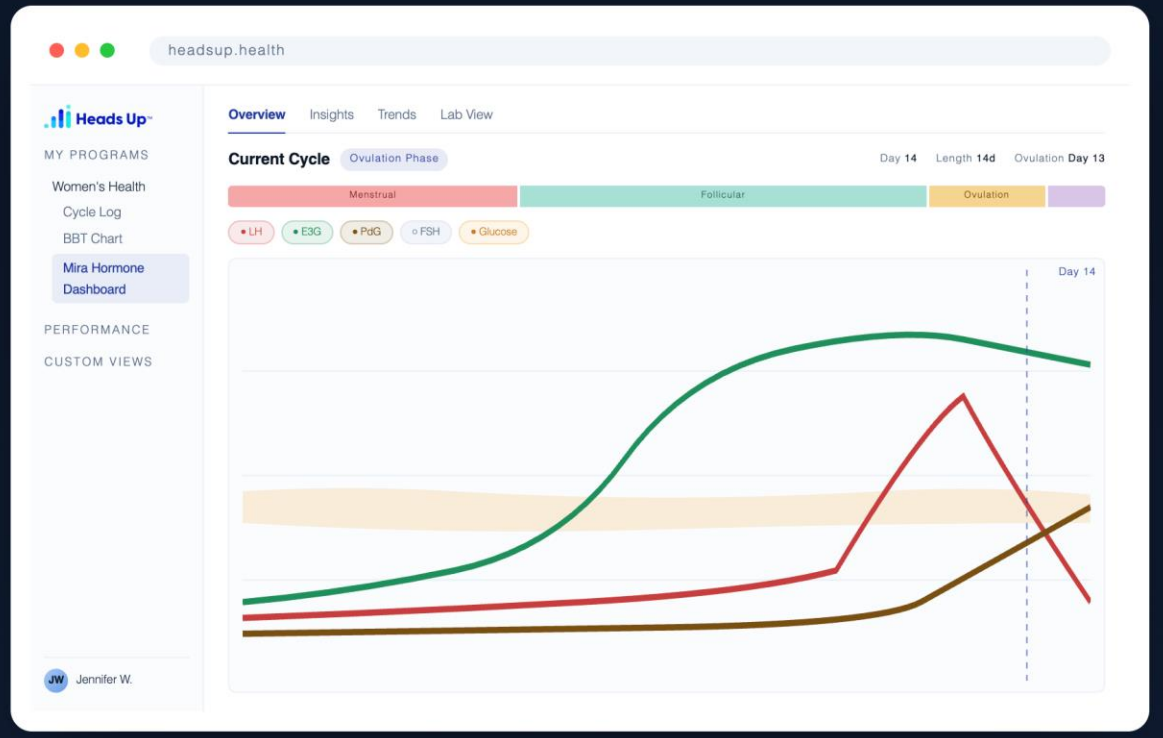
For decades, women's health signals have been scattered across labs, wearables, cycle apps, and EHRs.
We're bringing it all into one place — so you can finally see the whole picture.

LIVE DEMO

See it in action.

Women's health tracking on the Heads Up platform.
Mira data flowing in alongside labs and wearables.

MIRA → HEADS UP PRE-VISIT SUMMARIES COHORT TRACKING

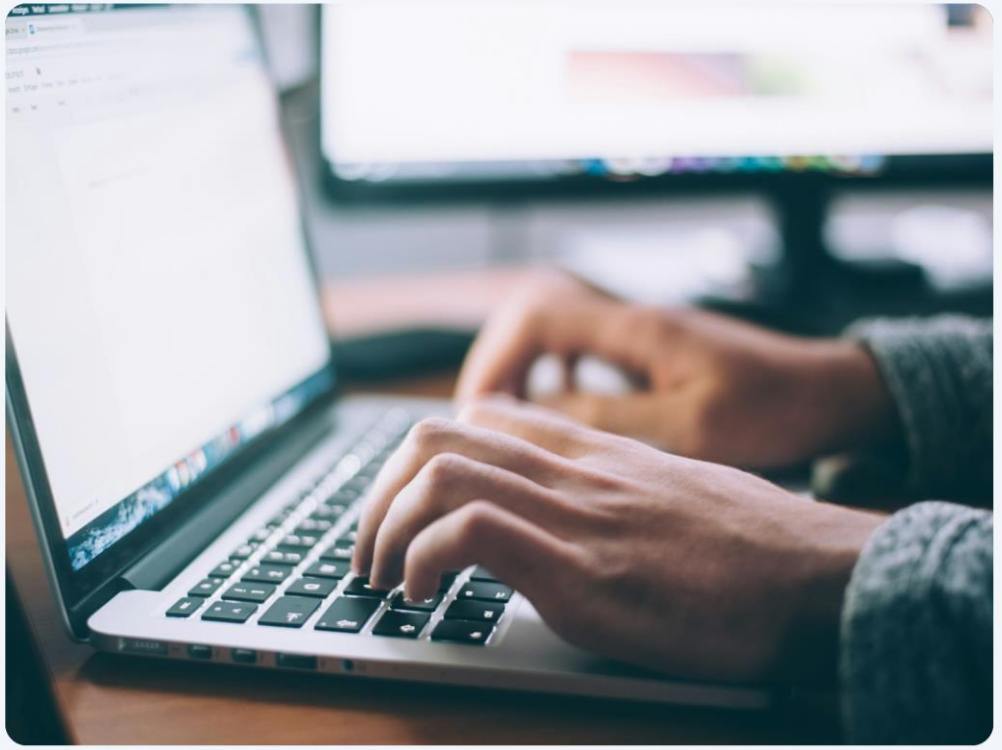


Quick *poll.*

Alongside hormone data, which of the following would you most want unified into a *single view* when evaluating a complex female patient?

Your *questions.*

Drop your questions in the chat. We'll take as many as we can.



Heads Up™ × mira

NEXT STEP

Book an *AI Readiness* Assessment.

A strategy call with our specialists, to map your women's health workflow into Heads Up.

BOOK ONLINE

headsuphealth.com
/request-a-demo

30-minute strategy call

OR IN CHAT

Tell us in the chat and we'll **reach out.**

Type "demo" and we'll follow up

Quick *poll.*

Would you like a *personalized demo* of the tools we covered today?

Heads Up™ × mira

SEE YOU NEXT TIME

FROM BOTH TEAMS

Thank you.

AI-powered clinical intelligence for women's health.

WEB

headsup.health

EMAIL

support@headsup.health

FOLLOW

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