# MENSTRUAL HEALTH & PCOS LAB ORDER SET IDEAS

**HOW TO USE THIS ORDER SET**

Select the panel(s) that match the clinical scenario. Check individual orders. RPMS/EHR codes are placeholders. You will need to update to your facility's lab catalog. Fasting specimens require patient preparation instructions at scheduling. Print or load into your EHR order set builder.

**IMPORTANT:** Pelvic or ovarian ultrasound is NOT part of routine PCOS evaluation in AFAB adolescents. Do not include in this order set unless there is a specific additional clinical indication (pelvic mass, primary amenorrhea with structural concern, suspected POI).

## A INITIAL MENSTRUAL IRREGULARITY WORKUP

*Order for ALL AFAB adolescents presenting with menstrual irregularity, amenorrhea, or irregular cycles persisting > 3 mo*

► **Mandatory first step:** Urine β-hCG must be collected before all other labs, regardless of reported sexual activity history.

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **Urine β-hCG (pregnancy test)** | PREG-U | Urine (random) | *FIRST — collect before all other labs* |
| ☐ | **TSH (thyroid-stimulating hormone)**<br>*Hypothyroidism mimics PCOS and disrupts menstrual cycles* | TSH | Serum (SST) | *Any time of day; fasting not required* |
| ☐ | **Free T4** | FT4 | Serum (SST) | *Same draw as TSH* |
| ☐ | **Prolactin**<br>*Hyperprolactinemia: galactorrhea, headache, menstrual disruption* | PROLAC | Serum (SST) | *Morning preferred; avoid same-day strenuous exercise* |
| ☐ | **LH (luteinizing hormone)**<br>*Low LH + low FSH → consider hypothalamic/pituitary cause* | LH | Serum (SST) | *Early follicular phase if cycles present* |
| ☐ | **FSH (follicle-stimulating hormone)** | FSH | Serum (SST) | *Early follicular phase if cycles present* |
| ☐ | **Estradiol (E2)**<br>*Low E2 + high FSH → evaluate for POI* | ESTR | Serum (SST) | *Same draw as FSH/LH* |

**CLINICAL DECISION RULES**

| | | |
|---|---|---|
| **IF** TSH elevated | → | **THEN** Add free T4 (if not already ordered). Thyroid treatment may resolve menstrual irregularity. Endo referral PRN. |
| **IF** Prolactin elevated (> ULN) | → | **THEN** Repeat in AM fasting state (exclude stress artifact). Consider medication etiology. If confirmed, add MRI pituitary. |
| **IF** FSH ≥ 25 IU/L | → | **THEN** Repeat FSH + E2 at least 1 month later to confirm POI. Add → Panel D (POI workup). Do NOT diagnose POI on single draw. |
| **IF** LH + FSH both low or low-normal with amenorrhea | → | **THEN** Consider functional hypothalamic amenorrhea (FHA), anorexia/restrictive eating, or relative energy deficit/heavy exercise load. Add nutrition screen. |

## B PCOS DIAGNOSTIC PANEL — HYPERANDROGENISM

*Order when AFAB adolescent has menstrual irregularity + clinical hyperandrogenism (hirsutism, acne, acanthosis nigricans) persisting > 1 year post-menarche*

► **Diagnosis reminder:** PCOS requires 2/3 Rotterdam criteria. Typically, hyperandrogenism and menstrual irregularity in adolescents.

Sources: Pereira-Eshraghi & Vuguin PIR 2024; Rastogi & Rome PIR 2021; Barriga & Montiel 2021; Barrett et al. PIR 2025; Fraga et al. PIR 2024. IHS RPMS lab reference: BHIE/CPRS lab catalog. AI used for formatting- content created and reviewed by ECHO team.

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **Total testosterone**<br>*Use lab's age- and pubertal-stage-specific reference range* | TTEST | Serum (SST) | *Early AM (7–9 AM); fasting preferred* |
| ☐ | **Free testosterone** | FTEST | Serum (SST) | *Same draw as total testosterone* |
| ☐ | **SHBG (sex hormone-binding globulin)**<br>*Low SHBG increases bioavailable androgen* | SHBG | Serum (SST) | *Same draw* |
| ☐ | **DHEAS (dehydroepiandrosterone sulfate)**<br>*Elevated DHEAS suggests adrenal androgen excess* | DHEAS | Serum (SST) | *Any time; fasting not required* |
| ☐ | **Androstenedione**<br>*Add if total/free T not elevated but clinical hyperandrogenism present* | ANDRO | Serum (SST) | *Early AM preferred* |
| ☐ | **Morning 17-hydroxyprogesterone (17-OHP)**<br>*Screen for nonclassic CAH; elevated 17-OHP → cosyntropin stim test* | 17OHP | Serum (SST) | *EARLY AM (7–9 AM) — follicular phase if possible* |

**CLINICAL DECISION RULES**

| | | |
|---|---|---|
| **IF** Total or free testosterone > 2× upper limit of normal | → | **THEN** Add adrenal imaging (CT adrenal) AND pelvic ultrasound to evaluate for androgen-secreting tumor. Urgent endocrinology referral. |
| **IF** Morning 17-OHP > 2 ng/mL (200 ng/dL) | → | **THEN** Order cosyntropin (ACTH) stimulation test to rule out nonclassic congenital adrenal hyperplasia (CAH). Do not diagnose CAH on 17-OHP alone. |
| **IF** DHEAS markedly elevated (> 3× ULN) | → | **THEN** Consider adrenal source; add adrenal imaging. Refer endocrinology. |
| **IF** All androgens normal but clinical hirsutism present | → | **THEN** Document mFG score. Ask about hair removal. Consider idiopathic hyperandrogenism or skin sensitivity. Reassess after 6 months. |

## C METABOLIC & DIABETES SCREENING PANEL

*Order for ALL AFAB adolescents with PCOS or at-risk for PCOS. ALSO order when evaluating irregular menses in patients with known T1DM or T2DM. AI/AN communities have elevated T2DM baseline.*

► **AI/AN clinical context:** PCOS carries a 4× relative risk for T2DM compared to BMI-matched peers. AI/AN adolescents already face elevated community T2DM rates. T1DM disrupts menstrual cyclicity as a glycemic complication. Screen at every menstrual health visit. Fasting labs require scheduling coordination.

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **Fasting glucose**<br>*Normal < 100; prediabetes 100–125; T2DM ≥ 126 mg/dL* | GLU-F | Serum or plasma (gray-top) | *FASTING ≥ 8 hours* |
| ☐ | **Fasting insulin**<br>*Calculate HOMA-IR: [glucose × insulin] ÷ 405; ≥ 3.0 suggests insulin resistance* | INS-F | Serum (SST) | *FASTING ≥ 8 hours (same draw as glucose)* |
| ☐ | **HbA1c (glycated hemoglobin)**<br>*Prediabetes 5.7–6.4%; T2DM ≥ 6.5%. Also monitor glycemic control in known T1DM/T2DM.* | HBA1C | Whole blood (EDTA/purple-top) | *Any time; fasting not required* |
| ☐ | **Fasting lipid panel**<br>*PCOS associated with dyslipidemia; screen at diagnosis and annually* | LIPID | Serum (SST) | *FASTING ≥ 12 hours preferred* |
| ☐ | • Total cholesterol | | | |

Sources: Pereira-Eshraghi & Vuguin PIR 2024; Rastogi & Rome PIR 2021; Barriga & Montiel 2021; Barrett et al. PIR 2025; Fraga et al. PIR 2024. IHS RPMS lab reference: BHIE/CPRS lab catalog. AI used for formatting- content created and reviewed by ECHO team.

| | | | | |
|---|---|---|---|---|
| ☐ | • LDL cholesterol (calculated) | | | |
| ☐ | • HDL cholesterol | | | |
| ☐ | • Triglycerides | | | |
| ☐ | **ALT (alanine aminotransferase)**<br>*Screen for non-alcoholic fatty liver disease (NAFLD) — PCOS comorbidity* | ALT | Serum (SST) | *Fasting not required* |
| ☐ | **AST (aspartate aminotransferase)** | AST | Serum (SST) | *Same draw as ALT* |

**CLINICAL DECISION RULES**

| | | |
|---|---|---|
| **IF** Fasting glucose 100–125 mg/dL OR HbA1c 5.7–6.4% | → | **THEN** Diagnose prediabetes. Intensify lifestyle counseling (traditional foods/movement). Increase metformin consideration. Rescreen in 6 months. |
| **IF** Fasting glucose ≥ 126 mg/dL OR HbA1c ≥ 6.5% | → | **THEN** Diagnostic for T2DM. Confirm with second test. Refer diabetes care team. Discuss impact on menstrual health with patient. |
| **IF** Known T1DM with HbA1c > 8% and menstrual irregularity | → | **THEN** Document menstrual irregularity as T1DM complication. Coordinate with diabetes team re: glycemic optimization. Consider COCP for cycle regulation. |
| **IF** Triglycerides > 150 mg/dL or LDL > 130 mg/dL | → | **THEN** Refer to nutrition/dietitian. Discuss heart-healthy traditional foods. Rescreen lipids in 3–6 months. Consider endocrinology referral. |

## D PREMATURE OVARIAN INSUFFICIENCY (POI) WORKUP

*Order when: amenorrhea ≥ 3 months + age < 40, OR FSH elevated on initial screen. POI is rare in adolescents (1 in 10,000 under age 20) but has serious long-term consequences if missed.*

▶ **ACOG criteria for POI evaluation:** Menstrual irregularity ≥ 3 consecutive months + FSH ≥ 25 IU/L on TWO draws at least 1 month apart + low or low-normal estradiol. Do not diagnose POI on a single FSH.

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **FSH (follicle-stimulating hormone) — REPEAT**<br>*Must confirm on 2 separate draws ≥ 1 month apart for POI Dx* | FSH | Serum (SST) | *At least 1 month after initial elevated result* |
| ☐ | **Estradiol (E2) — REPEAT**<br>*Low E2 + elevated FSH → hypergonadotropic hypogonadism* | ESTR | Serum (SST) | *Same draw as FSH repeat* |
| ☐ | **Karyotype (chromosomal analysis)**<br>*Turner syndrome (45,X) is most common X-linked POI cause* | KARYO | Whole blood (green/hep) | *Once, after POI confirmed on 2 draws* |
| ☐ | **FMR1 premutation testing (fragile X)**<br>*Most common single-gene cause of POI; 15–24% of carriers develop POI* | FMR1 | Whole blood (EDTA) | *Once, after POI confirmed* |
| ☐ | **Adrenal antibodies — anti-CYP21 (21-hydroxylase)**<br>*Identifies autoimmune cause; also screens for associated Addison's disease* | ADAB | Serum | *Once, after POI confirmed* |
| ☐ | **Prolactin** | PROLAC | Serum | *If not already obtained* |
| ☐ | **TSH**<br>*Autoimmune thyroiditis commonly co-occurs with autoimmune POI* | TSH | Serum | *If not already obtained* |
| ☐ | **Bone density (DXA)**<br>*Estrogen deficiency → accelerated bone loss; critical in adolescents* | DEXA | Imaging order | *At POI diagnosis; repeat per endocrinology* |

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**CLINICAL DECISION RULES**

| | | |
|---|---|---|
| **IF** POI confirmed (FSH ≥ 25 IU/L × 2 draws, low E2) | → | **THEN** Initiate hormone therapy (HT) promptly — transdermal estradiol preferred. Add cyclic progestogen after 2 years or when breakthrough bleeding occurs. Refer to adolescent endocrinology. Counsel patient and family regarding fertility implications. |
| **IF** Turner syndrome confirmed on karyotype | → | **THEN** Refer pediatric cardiology (aortic anomalies), endocrinology, genetics. Annual cardiovascular risk factor screening. |
| **IF** FMR1 premutation confirmed | → | **THEN** Genetic counseling for patient and family. Counsel on 15–24% lifetime POI risk for carriers; implications for siblings. |
| **IF** Anti-CYP21 antibodies positive | → | **THEN** Monitor for adrenal insufficiency (Addison's). Annual cortisol/ACTH testing. Endocrinology referral. |

## E NONCLASSIC CAH CONFIRMATION — COSYNTROPIN STIMULATION

*Order when morning 17-OHP > 2 ng/mL (200 ng/dL) on initial screen. Nonclassic CAH can mimic PCOS. Requires coordination with endocrinology.*

▶ **Pre-test protocol:** Cosyntropin stimulation test is the gold standard for CAH diagnosis. Perform in the morning (7–9 AM). Patient should be off OCPs for ≥ 4 weeks if possible. Draw baseline, then administer cosyntropin 250 mcg IV/IM, then draw 60-minute sample.

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **Baseline 17-OHP (pre-cosyntropin)**<br>*Baseline sample required before stimulation* | 17OHP-0 | Serum (SST) | *T = 0 min, 7–9 AM, before cosyntropin* |
| ☐ | **Cosyntropin (synthetic ACTH) 250 mcg IV or IM** | COSYN-250 | Administration order | *Administer immediately after T=0 draw* |
| ☐ | **17-OHP post-cosyntropin**<br>*Key diagnostic sample* | 17OHP-60 | Serum (SST) | *T = 60 minutes after cosyntropin* |
| ☐ | **Cortisol (baseline)**<br>*Confirms adrenal responsiveness* | CORT-0 | Serum (SST) | *Same T=0 draw* |
| ☐ | **Cortisol (post-cosyntropin)**<br>*Normal: cortisol ≥ 18 mcg/dL at 60 min* | CORT-60 | Serum (SST) | *T = 60 minutes* |
| ☐ | **Androstenedione (baseline)**<br>*Elevated in CAH and PCOS — helps differentiate* | ANDRO | Serum (SST) | *T = 0 draw* |

**INTERPRETATION THRESHOLDS**

| STIMULATED 17-OHP | INTERPRETATION | ACTION |
|---|---|---|
| < 1,000 ng/dL | Nonclassic CAH unlikely | PCOS more likely. Manage per PCOS guidelines. |
| 1,000–1,200 ng/dL | Borderline / nonclassic CAH possible | Pediatric endocrinology referral. Genetic testing (CYP21A2). |
| > 1,500 ng/dL | Consistent with nonclassic CAH | Endocrinology referral. Consider hydrocortisone or OCP+spironolactone for symptom management. |
| ≥ 10,000 ng/dL | Consistent with simple virilizing classic CAH | Urgent endocrinology. Full CAH workup including mineralocorticoid function. |

## F STI & SEXUAL HEALTH SCREENING

*Order per AAP guidelines for all sexually active AFAB adolescents. Offer to all adolescents regardless of disclosed sexual activity — many do not disclose. Collect with urine or vaginal swab; speculum not required.*

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|

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| | | | | |
|---|---|---|---|---|
| ☐ | **Urine β-hCG (pregnancy)**<br>*Collect before any other labs* | PREG-U | Urine (random) | *MANDATORY at every visit* |
| ☐ | **GC/Chlamydia NAAT**<br>*No speculum needed; self-collected vaginal swab acceptable and preferred* | GCCT-NAAT | Urine (first-catch) or vaginal swab | *Annually (all sexually active) or per symptoms* |
| ☐ | **HIV antibody/antigen (4th generation)**<br>*Offer opt-out; document consent per state law* | HIV-AG-AB | Serum or fingerstick | *One-time screen ages 13–65; rescreen if new risk factors* |
| ☐ | **Syphilis RPR (rapid plasma reagin)**<br>*Confirm positive RPR with treponemal test (FTA-ABS or TPPA)* | RPR | Serum (SST) | *If high-prevalence area or symptoms* |
| ☐ | **Trichomonas vaginalis (NAAT or rapid Ag)**<br>*Rapid Ag test: sensitivity 93%, specificity 97.5%; results in 10 min* | TRICH | Vaginal swab or urine | *If vaginal discharge, odor, or pruritis* |
| ☐ | **Hepatitis B surface Ag + sAb + cAb** | HBPANEL | Serum | *If unvaccinated or unknown vaccination status* |
| ☐ | **Hepatitis C antibody** | HCVAB | Serum | *If IVDU history, born to HCV+ parent, or exposure* |
| ☐ | **Vaginal pH + KOH / wet prep**<br>*Point-of-care; can be clinician or self-collected* | VAGPH | Vaginal swab | *If discharge, odor, or vulvovaginal symptoms* |

**STI TREATMENT REMINDERS**

► **Pelvic Inflammatory Disease (PID):** If cervical motion tenderness + uterine/adnexal tenderness on exam: treat empirically without waiting for STI results (ceftriaxone + doxycycline ± metronidazole per current CDC STI guidelines).

## G ONGOING MONITORING — ESTABLISHED PCOS

*Order at each follow-up visit (typically every 3–6 months). Adjust frequency based on treatment changes and clinical response.*

| ✓ | ORDER / TEST NAME | EHR / RPMS CODE | SPECIMEN | TIMING / CONDITION |
|---|---|---|---|---|
| ☐ | **HbA1c** | HBA1C | Whole blood | *Every 6–12 months if stable; every 3 months if T2DM or adjusting metformin* |
| ☐ | **Fasting glucose + insulin** | GLU-F / INS-F | Serum (fasting) | *Every 6 months if insulin resistance present* |
| ☐ | **Fasting lipid panel** | LIPID | Serum (fasting) | *Every 12 months if stable; sooner if abnormal at baseline* |
| ☐ | **ALT/AST** | ALT / AST | Serum (SST) | *Every 12 months (NAFLD surveillance)* |
| ☐ | **Total testosterone + SHBG**<br>*Monitor treatment response* | TTEST / SHBG | Serum (SST) — AM | *Every 6–12 months or when adjusting treatment* |
| ☐ | **17-OHP (if CAH excluded but 17-OHP was borderline)** | 17OHP | Serum — AM | *Every 12 months until pattern established* |
| ☐ | **Blood pressure**<br>*Elevated BP is a PCOS comorbidity* | BP-VITALS | In-office | *Every visit* |
| ☐ | **BMI** | ANTHRO | In-office | *Every visit* |
| ☐ | **Mental health screen (PHQ-A, GAD-7, or equivalent)**<br>*Depression and anxiety are recognized PCOS comorbidities* | MH-SCREEN | Self-report | *Every 6 months or per clinical concern* |
| ☐ | **Bone density (DXA)**<br>*DMPA carries bone density caution in adolescents — monitor if used > 2 years* | DEXA | Imaging | *At diagnosis if POI confirmed; every 2 years if on DMPA* |

Sources: Pereira-Eshraghi & Vuguin PIR 2024; Rastogi & Rome PIR 2021; Barriga & Montiel 2021; Barrett et al. PIR 2025; Fraga et al. PIR 2024. IHS RPMS lab reference: BHIE/CPRS lab catalog. AI used for formatting- content created and reviewed by ECHO team.