

TOP TAKEAWAYS

Female-Specific Life Course Approach to the Prevention and Management of Cardiovascular Disease

A Deep Dive on the 2026 AHA/AAP/ACOG/SMFM Presidential Advisory

Framework presented by the American Heart Association in collaboration with the American Academy of Pediatrics, American College of Obstetricians and Gynecologists, and the Society for Maternal-Fetal Medicine

SECTION A: Scope, Gap, and Framework

1. CVD is the leading threat to women's health, yet female-specific risk remains under-recognized.

CVD is the leading cause of death in women worldwide, accounting for >400,000 US deaths annually. Maternal mortality is rising, with CVD a leading cause. By 2050, prevalence of hypertension (49→59%), obesity (44→61%), diabetes (15→25%), and CVD (11→14%) in women is projected to rise.

2. Fragmented care and under-recognition of female-specific biology drive the gap.

Girls and women receive care fragmented across pediatrics, adolescent medicine, primary care, Obstetrics/Gynecology (OB/GYN), Maternal-Fetal Medicine (MFM), neurology, endocrinology, and cardiology. Female-specific aspects of CV health, especially exposure to endogenous and exogenous sex hormones as systemic modulators of CV biology, remain inconsistently integrated into clinical practice.

3. A multi-society collaboration established a unified Female Life Stage framework.

The AHA convened a Science Advisory Group in collaboration with AAP, ACOG, and SMFM. The compendium on Women's Cardiovascular Health includes a Presidential Advisory detailing the Female Life Stage construct, scientific rationale, implementation opportunities, and priorities for research, education, advocacy, and policy; a scientific statement providing evidence synthesis and a science advisory outlining a roadmap for comprehensive centers of excellence in women's health.

4. The framework integrates hormonal, psychosocial, and cardiovascular health across the life course.

Physiologic changes in sex hormones define clinically distinct life stages: perimenarche (S1), ovarian cycling (S2), perimenopause (S3), postmenopause (S4) – each informing female-specific screening, prevention, and management. The peripregnancy period and exposure to exogenous hormone therapy can be considered as cross-cutting modifiers. The documents discuss female-specific clinical opportunities after onset of menarche; thus premenarche (S0), while a foundational period to long-term CV health, does not have sex-specific guidance for CV health.

5. Sex hormones are systemic modulators of physiology, are not limited to reproductive function, and impact cardiovascular function.

Estrogen receptors (ER α , ER β , G-protein ER) are expressed in vasculature, myocardium, adipose, and brain. Estradiol modulates vascular tone via nitric oxide and prostacyclin, regulates endothelial function, and influences thrombosis, lipid metabolism, insulin sensitivity, and inflammation. Progesterone influences vascular smooth muscle and sympathetic tone.

6. Apply three complementary CV constructs across stages.

(1) Life's Essential 8 for CV health assessment (with sex-specific BMI/BP percentiles in adolescents); (2) CKM Syndrome staging (with sex-specific thresholds for waist circumference and HDL-C); (3) sex-specific PREVENT equations for adults 30–79 years.

SECTION B: Key Messages by Female Life Stage

S0: PREMENARCHE (Foundational)

S0 is a foundational period for anticipatory guidance.

S0 represents the period before menarche when anticipatory counseling for the onset of menarche and optimal health behaviors can shape long-term CV health trajectories.

S1: PERIMENARCHE

Hormonal Health: S1 is the earliest window in which female-specific CV markers are clinically detectable.

Estradiol rises and sex-divergence in lipids, body fat distribution, and vascular compliance emerges. Disorders of menarche timing, anovulation, hyperandrogenism, and heavy menstrual bleeding may be the first indicators of CV risk. Early menarche <10 years is a female-specific risk enhancer in the 2026 AHA/ACC/Multi-Society Dyslipidemia Guideline.

Psychosocial Health: Sex-based mental health divergence emerges in early adolescence.

By age ~17, girls have at least twice the odds of depression vs. boys, closely tied to changes with puberty and hormonal health. Eating disorders and disordered eating are more prevalent in girls, with median onset ~12 years. Poor psychosocial health and poor CV health behaviors in adolescence are common – prevention and early detection matter.

Cardiovascular Health: Biologic changes with perimenarche and psychosocial pressures jointly shape CV health in girls.

Hormonal changes alter lipids, body composition, insulin resistance, and BP in sex-specific ways. Current pediatric screening uses age/sex percentiles for BMI/BP but do not account for pubertal stage. Lipid and glycemia screening are not indexed to sex or pubertal stage.

S2: REPRODUCTIVE YEARS OR OVARIAN CYCLING

Hormonal Health: Routine hormone measurement is not a screening tool; targeted work-up is appropriate when dysregulation is present.

Menstrual cycle variability is common. Anovulation, irregular cycles, heavy menstrual bleeding, dysmenorrhea, or severe PMS warrant evaluation. ACOG designates the menstrual cycle as a vital sign—abnormalities may be the earliest accessible marker of diabetes, CKM syndrome, and CVD risk.

Heavy menstrual bleeding affects 20–30% of young women and is the most common cause of iron deficiency in S2 (~50% prevalence when present); iron deficiency, even without anemia, impairs CV health behaviors and risk.

PMOS (formerly PCOS) and heavy menstrual bleeding carry significant CV implications.

PMOS affects 10–13% of women and is associated with higher CVD risk through insulin resistance, visceral adiposity, and dyslipidemia.

Psychosocial Health: Cyclical fluctuations and psychosocial symptoms peak in S2.

PMS affects 20–30% and PMDD 3–8% of menstruating individuals. Median age of major depression onset is 25 years; ~40% of first episodes occur <20 years. Eating disorders—more prevalent in women—are associated with a 3- to 6-fold higher CVD risk.

Cardiovascular Health: Short-term overt CVD risk is low, but disruption of ovarian cycling signals risk.

Endogenous cycling provides relative atherosclerotic protection. Disruption of regular ovarian cycling has direct vascular and autonomic implications and may serve as an early marker of increased CVD risk. Sex-based differences in ACS presentation, pathophysiology (e.g., SCAD, MINOCA, INOCA), guideline-directed therapy delivery, and outcomes require awareness and consideration of hormonal health in management.

S3: PERIMENOPAUSE

Hormonal Health: Perimenopause is defined by hormonal variability and multiple physiologic changes, not simple decline in estrogen.

Median onset ~47 years; median menopause ~51 years. Estradiol is highly variable and often rises before declining. Hormone levels are not clinically useful for defining perimenopause. Vasomotor symptoms affect 50–80% of women; frequent/severe symptoms are associated with higher CVD risk. Sleep disturbance (40–50%), depressive symptoms (30%), and sleep-disordered breathing also increase.

NOTE: Cycle irregularity is not a reliable vital sign of perimenopause when exogenous hormone therapy is in use.

Psychosocial Health: Mood disorders intensify in S3 and impact CV health.

One in three perimenopausal women endorse clinically significant depressive or anxiety symptoms. Risk of depressive symptoms is 40% higher in those in S3 vs. those in S2. Caregiving burden, economic stress, and sleep disturbance compound risk and impair adherence to CV-healthy behaviors.

Cardiovascular Health: S3 is an inflection point for CVD risk acceleration and an opportunity for earlier prevention.

LDL-C and Lp(a) rise, HDL-C quality declines, and vascular remodeling occurs independent of chronologic aging. Visceral adiposity and insulin resistance increase. Hot flashes and sleep disturbance are independently associated with metabolic and vascular dysfunction.

S4: POSTMENOPAUSE

Hormonal Health: S4 spans ~40% of a woman's lifespan and warrants sustained CV focus.

Mean menopause age 51; mean life expectancy 81. Nearly 67 million US women are ≥ 50 years; ~6,000 enter menopause daily. S4 is defined by diminished ovarian activity and sustainably low estradiol by ~3 years post-final menstrual period, with multi-organ changes.

Psychosocial Health: Psychosocial stressors shift in S4 toward aging, chronic disease, and social transitions.

30% of postmenopausal women have depressive symptoms, 39% anxiety, and 42% insomnia. Drivers include disability, worsening health, grief, widowhood, poverty, and social isolation.

Cardiovascular Health: S4 reflects cumulative exposures plus aging; overt CVD emerges for most women here.

Most first myocardial infarction (MI), stroke, and heart failure (HF) presentations occur in S4, but the risk has been building across the stages. HFpEF is more common in women. Premature ovarian insufficiency (POI) or premature menopause (<40 years) increases short- and long-term CVD risk. Use sex-specific PREVENT equations plus female-specific risk enhancers (age at menarche/menopause, APOs). Manage competing risks of polypharmacy, frailty, and falls when optimizing guideline-directed therapy.

SECTION C: Pregnancy

➤ The peripregnancy period is a CV modifier across life stages.

Defined as prepregnancy (12 months prior), pregnancy (~40 weeks), and postpartum (12 months after delivery; first 12 weeks = fourth trimester). Pregnancy acts as a physiologic stress test. Prepregnancy anxiety/depression/adverse childhood experiences (ACEs) increase adverse pregnancy outcome (APO) risk; perinatal mood and anxiety disorders affect ~20% during pregnancy and ~37% in the first 3 months postpartum.

➤ Harmonize hypertension definitions in the peripregnancy period.

Obstetric chronic hypertension ($\geq 140/90$ mm Hg) aligns with AHA/ACC Stage 2 hypertension. Alignment supports interdisciplinary communication and anticipatory guidance for low-dose aspirin in HDP prevention.

SECTION D: Exogenous Hormone Therapy

➤ Exogenous hormone therapy can be used for a variety of indications and is a pharmacologic modifier with CV implications.

Doses, formulations, and routes vary by indication (heavy bleeding, ovulation suppression, ART, menopause symptoms). Risk is modified by formulation and individual factors.

➤ Menopause hormone therapy (HT): timing and route matter.

HT does not restore physiologic cycling. CV risk is lowest with low-dose transdermal formulations. WHI post-hoc analyses suggest no increased ASCVD risk when HT is started in women <60 years or within 10 years of menopause. Vaginal therapy for genitourinary symptoms has minimal systemic absorption and no increased CV, thromboembolic, or cancer risk. $<5\%$ of US postmenopausal women currently use HT.

SECTION E: Managing cardiovascular risk

➤ **Optimize CV diagnosis using sex-specific considerations.**

Recognize CVD subtypes that disproportionately affect women: INOCA, MINOCA, SCAD, Takotsubo cardiomyopathy. Sex-specific diagnostic thresholds in CV imaging (e.g., aortic stenosis and regurgitation grading) are not widely used and may delay diagnosis.

➤ **Brain health in women is shaped by both CV risk factors and female-specific exposures.**

Stroke and dementia are the 3rd and 4th leading causes of death in US women. ~2/3 of Americans with Alzheimer disease are women. Menstrual disorders (PMOS, endometriosis), APOs, POI/early menopause, and high vasomotor symptom burden are associated with elevated stroke and dementia risk.

➤ **Recognize female-specific and female-predominant risk enhancers.**

POI / premature menopause (<40 years): prevalence ~1–3.5%; early menopause <45 years carries higher CVD risk; **physiologic hormone replacement with premature or early menopause is underutilized.**

Autoimmune disease: 80% of those affected are female; X-inactivation variations and sex hormone immunomodulation contribute; multiple autoimmune disorders independently raise CVD risk.

Breast and ovarian cancer: shared risk factors with CVD; cardiotoxicity from anthracyclines, trastuzumab, radiation, SERMs (VTE), and aromatase inhibitors (hypoestrogenism) requires integrated CV risk management across treatment and survivorship.

➤ **Implementation requires interdisciplinary, equitable, person-centered care.**

Reduce fragmentation through team-based, female-specific models (e.g., Comprehensive Centers of Excellence for Women's Cardiovascular Care). Priority strategies: increase clinical trial representation, expand culturally relevant care, enhance insurance coverage, address social drivers, leverage community and technology-enabled interventions.

Bottom line: a paradigm shift is required: Female Life Stage framework provides a unifying, person-centered approach across the life course beginning with menarche and through the years after menopause to optimize CV health for all girls, women, and their communities. AHA, AAP, ACOG, and SMFM jointly endorse this shared model.