PMDD | POLICY COUNCIL

Because Premenstrual Dysphoric Disorder is Too Serious to Ignore

The Science of PMDD

There is no single, established explanation for what causes Premenstrual Dysphoric Disorder (PMDD) or how it works. Scientists have promising theories, but the body of biological research is not large enough to provide definitive answers. More research is urgently needed to identify the mechanisms of PMDD, understand why people respond differently, and develop better treatments. Below are active scientific hypotheses, not a definitive account of what causes PMDD.

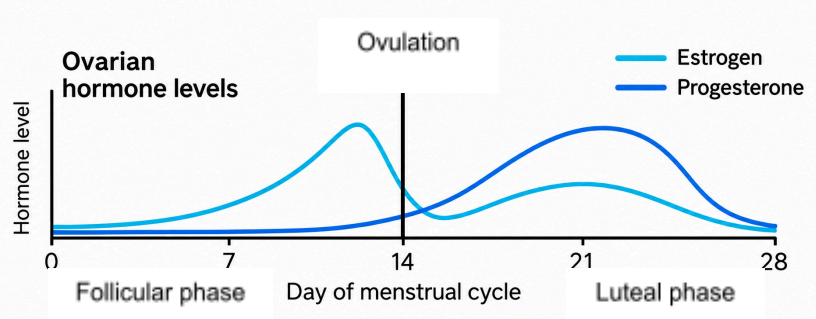
HORMONES & BRAIN CHEMISTRY

Hormone sensitivity

Most experts agree that individuals with PMDD have a heightened brain sensitivity to normal estrogen and progesterone shifts in the luteal phase.

ALLO and GABA-A

Progesterone produces allopregnanolone (ALLO), which usually promotes calm. Altered GABA-A receptor responses to ALLO may instead contribute to distress.



OTHER BIOLOGICAL PATHWAYS

Estrogen and serotonin

Estrogen influences serotonin signaling and emotional regulation. Changes in this pathway may help explain cyclical depression, anxiety, and irritability.

Genetics and brain circuits

Inherited differences may influence hormone sensitivity. Scientists are also studying brain networks involved in memory, impulse control, and emotion.

POTENTIAL CONTRIBUTING FACTORS

Immune and inflammatory signaling

Cycle-related immune changes may interact with hormone-sensitive brain systems. Elevated levels of inflammatory markers have been observed in some people with PMDD, which may interact with hormone sensitivity and worsen symptoms like fatigue and mood swings.

Stress, environment, and nutrition

Chronic stress, trauma, and lifestyle factors may affect symptom severity. Imbalances or deficiencies in nutrients such as magnesium, calcium, vitamin D, iron, and B vitamins have been linked to increased PMDD severity. These nutrients are essential for maintaining proper hormone balance, neurotransmitter function, and reducing inflammation.

WHAT SCIENTISTS STILL NEED TO LEARN

Researchers do not yet know whether PMDD is one disorder with a common mechanism or several biological subtypes. Larger, long-term studies of hormone responses, brain activity, genetics, and molecular biomarkers are needed to explain individual differences and guide more targeted treatments. This PMDD Policy Council is working to pressure the US government to create dedicated research programs and fund critical clinical research.

Sources: Jerin Sultana et. al. *"Updated insight into the pathophysiology of premenstrual dysphoric disorder and therapeutic approaches,"* Journal of Affective Disorders, 2026. The PMDD Project "What is PMDD?" 2026 ; PMDDInfo "The biology of PMDD," 2026.