

Women's Health in Endocrinology—need for a Professorship

Background

Innovative data says that *healthy aging is about women's entire life cycle*. An intricate balance of estrogen (E2) and progesterone (P4) levels create the human menstrual cycle. E2 causes cell growth while P4 stimulates cell maturation. Although E2 levels are increasing over cycle, P4 is higher for only 10-16 days after egg-release. Balanced E2 and P4 levels during 30-45 years of cycling allow fertility, plus support biochemical and immune balance aiding aging well by decreasing heart, brain, bone and cancer risks.

A predictable, 21-35-day cycle is understood to mean “all is well”—and that E2 and P4 levels are balanced. However, new *CeMCoR* evidence shows that many cycles are without ovulation and P4 release¹. Ovulation and P4 production are clinically silent² within regular and seemingly normal menstrual cycles.

Why do *silent* ovulatory disturbances occur despite regular, normal-length cycles?

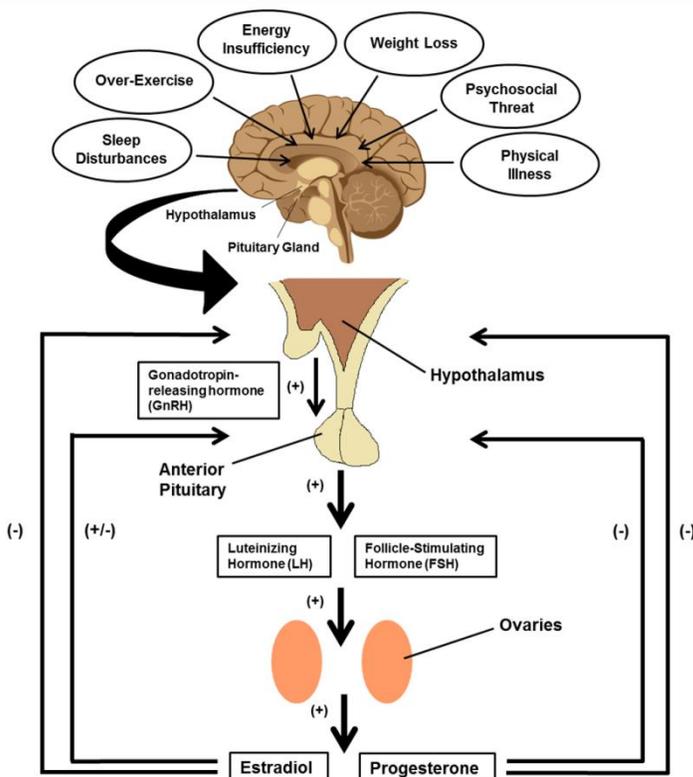
The common reason is that the brain perceives a “threat” or something stressful³. Responding disturbances are adaptable, small, fit the intensity of the stress and *reversible*—few women have amenorrhea (low E2 and P4) but silent ovulatory disturbances (normal E2 but low P4) are common, especially in adolescence⁴.

Why are silent ovulatory disturbances within regular cycles *important*?

For a start, they cause *infertility*.⁵ Through 30-45 menstruating years both E2 and P4 are needed to prevent bone loss⁶ and an increased risk for osteoporosis⁷, to aid stroke/dementia prevention⁸, decrease heart disease⁹ and endometrial¹⁰ and breast cancer¹¹ risks.

Ovulation Disturbance Pathophysiology Cascade

- Given that women have inferior status in a gendered world
- Given that inferior status causes stigma that negatively alters all societal relationships
- Given that social stigma relates to depression, anxiety, self-harm, and lower emotional resilience
- Given that all stressors (nutritional, emotional, social, economic, and illness/pain) suppress women's reproduction



- Given that stress-related reproductive suppression is incremental and adaptive—the most common suppression is through silent ovulatory disturbances within regular cycles. *Thus to be healthy across their entire life cycles*, cycling women need progesterone as well as estrogen. *Women's inequity-associated stressors cause decreased well-being, infertility and increased long-term risks for osteoporosis, heart disease and cancer.*

We need a *professorship* in Women's Health in Endocrinology to ensure the continued unique research and knowledge translation performed by the Centre for Menstrual Cycle and Ovulation Research (www.cemcor.ca). Also, we need this leadership to develop a widely available, inexpensive and convenient test of ovulation so it can be documented cycle-by-cycle across the many cycling years.

References: 1. Prior JC *PLoS One* 2015;10:e0134473; 2. Prior JC *Int J Environ Res Public Health* 2018;15; 3. Prior JC *Baillieres Clin Endocr Metab* 1987;1:299; 4. Metcalf MG *J Endocrinol* 1983; 97:213-9; 5. Rich-Edwards JW *Am J Obstetrics Gynecology* 1994;171:171-7; 6. Li, D. *Epidemiol Rev* 2014;36:147; 7. Prior JC *Climacteric* 2018;21:366-74; 8. Gibson CL, 1997;50: 275-81 9. Yang HP *Br J Cancer* 2015;112:925-33; 10 Fournier A *Br J Cancer* 2015;112:925-33; 11. Asi N *Syst Rev* 2016;5:121.