

## Women's Health in Endocrinology—need for a Professorship

### Background

The human menstrual cycle is created by an intricate balance of estrogen (E2) and progesterone (P4). E2 causes cell growth and P4 stimulates cell maturation. Although E2 levels are low and increase across the cycle, P4 is increased after egg-release for only 10-16 days. Balanced E2 and P4 during 30-45 years of cycling allow fertility, plus support biochemical and immune/inflammatory balance and provide cardiovascular, brain, bone and cancer protection for menopause and ageing.

A predictable, 21-35-day cycle is understood to mean all is well—E2 and P4 are balanced. BUT *new Centre for Menstrual Cycle and Ovulation Research evidence shows many cycles are without ovulation and P4 release*<sup>1</sup>. Within regular cycles, ovulation and P4 production are clinically silent<sup>2</sup>.

### Why do silent ovulatory disturbances occur in regular cycles?

The common reason is the brain perceives a “threat”<sup>3</sup>. Disturbances are adaptable, incremental and reversible—few women have amenorrhea (low E2/P4) but silent ovulatory disturbances (normal E2/low P4) are common, especially in adolescence<sup>4</sup>.

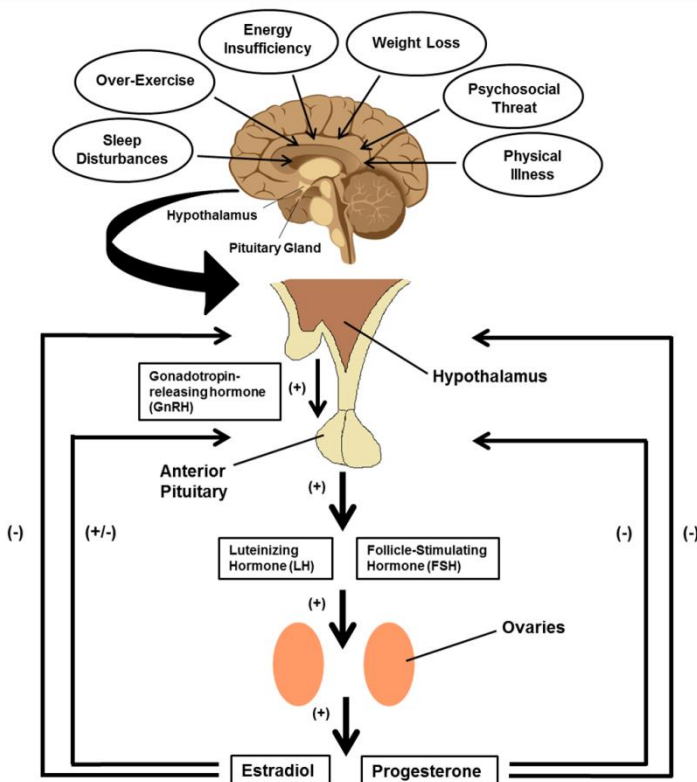
### Silent ovulatory disturbances in regular cycles are important. Why?

They cause **infertility**! Through 30-45 menstruating years both E2 and P4 are needed to prevent bone loss<sup>5</sup> and osteoporosis<sup>6</sup>, aid stroke/dementia prevention<sup>7</sup>, decrease heart disease<sup>8</sup> and endometrial<sup>9</sup> and breast cancers<sup>10</sup>.

### Ovulation Disturbance Pathophysiology Cascade

- Given that women have inferior status in a gendered world
- Given that inferior status causes stigma that alters all societal relationships
- Given that social stigma relates to depression, anxiety, self-harming behaviours and decreased 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 silent ovulatory disturbance
- Thus to be healthy, women always need progesterone as well as estrogen

Women's inequity and associated stressors cause decreased well-being, infertility and long-term osteoporosis, heart disease and cancer.



A professorship in **Women's Health in Endocrinology** is needed to develop a widely available, inexpensive and convenient test of ovulation so it can be documented cycle by cycle. This professorship is also needed to ensure the continued unique research and knowledge translation performed by the Centre for Menstrual Cycle and Ovulation Research (website, [www.cemcor.ca](http://www.cemcor.ca)).

References: 1. Prior JC *PLOS One* 2015;10(8):e0134473; 2. Prior JC *Int J Environ Res Public Health* 2018;15(5); 3. Prior JC *Baillieres Clin Endocr Metab* 1987;1:299-317; 4. Prior JC *Women's Reproductive Health* 2016;3(2):73-92; 5. Li, D. *Epidemiol Rev* 2014;36(137):147; 6. Prior JC *Climacteric* 2018;21:366-74; 7. Gibson CL, *Neuroscientist* 2009;15(4):324-332; 8. Prior JC *Journal of Restorative Medicine* 2014;3:85-103; 9. Yang HP *Br J Cancer* 2015;112(5):925-933; 10. Fournier A *Br J Cancer* 2015;112(5):925-933