

Centre for Menstrual Cycle and Ovulation Research at Eight: 2010 CeMCOR Anniversary Celebration



by Dr. Jerilynn C. Prior, Scientific Director, Centre for Menstrual Cycle and Ovulation Research

CeMCOR started with an idea—ovulation and progesterone are extremely important, although neglected. That notion has grown into a vibrant, virtual organization that has, for the first time, shown that **oral micronized progesterone (Prometrium®) is safe and effective treatment for hot flushes and night sweats in healthy menopausal women** (1). We have also just obtained Canadian Institute of Health Research support to do a similar randomized controlled trial of Prometrium® for Perimenopausal Night Sweats. Many causes for celebration!

Before 2002 I was a single physician doing research with various others investigators from the University of British Columbia (UBC) and Simon Fraser University (SFU). I dreamed that by formally working with others we could reach out to share what we learn with women everywhere, and be more effective in accomplishing key scientific studies.

When the Centre for Menstrual Cycle and Ovulation Research (CeMCOR) was founded in May of 2002, our vision was "*To reframe scientific knowledge of the menstrual cycle and ovulation in a woman-centred context.*" Over the last eight years, CeMCOR has made major progress in showing that progesterone as well as estrogen is important, not just for women's fertility and reproduction, but also for general health and well being throughout women's entire lifecycle. This is the only research centre, anywhere in the world, with a research focus on ovulation and that studies the physical and emotional-social causes and effects of ovulation disturbances on women's overall health.

Major achievements

- CeMCOR completed the first randomized, controlled trial in 2009 showing that oral micronized progesterone (Prometrium®) is highly effective treatment for hot flushes/night sweats in 133 healthy early menopausal women (1). In 2010, this research was chosen by The Endocrine Society, one of about 12 presentations out of over 6,000, to highlight in a press conference. This achievement is even more remarkable because it was accomplished with individual, private donations to CeMCOR.
- The Estrogen Errors—Why Progesterone is Better for Women's Health written by Susan Baxter, PhD (Vancouver medical writer and lecturer at SFU) and Jerilynn C. Prior MD was published in 2009 by Praeger Press, a major USA library publisher (2). This book emphasizes the major error in thinking that

estrogen is women's only important female hormone while ignoring progesterone. The Estrogen Errors has been acclaimed by Dr. Susan Love, breast cancer researcher, author and health advocate, Christianne Northrup, popular women's health educator and author, and Judy Norsigian, Executive Director of Our Bodies Ourselves, Boston's historic women's health book collective (www.estrogenerrors.com).

- ❑ Canadian Institutes of Health Research (CIHR) in 2010 awarded CeMCOR scientists a 4-year major operating grant to conduct a **randomized controlled trial of Prometrium® for perimenopausal hot flashes/night sweats**. This will be the first trial of a potential hot flush treatment that focuses solely on women who are in this important midlife reproductive transition.

Scientific Publications

CeMCOR scientists have published 55 peer-reviewed scientific articles (almost eight a year) over the last eight years in such scientific journals as the Journal of Clinical Endocrinology and Metabolism, Journal of Women's Health, Pharmacotherapy, Archives of Internal Medicine, Journal of Bone and Mineral Research, Osteoporosis International, J. Adolescent Health, J Psychosomatic Obstetrics and Gynecology, European J. of Obstetrics and Gynecology and Reproductive Biology, Clinical Science and Quality of Life Research.

Notable papers are:

- ❑ Jennifer Bedford PhD (newly graduated from UBC and trained by nutrition professor Susan Barr and myself): "*A prospective exploration of cognitive dietary restraint, subclinical ovulatory disturbances, cortisol and change in bone density over two years in healthy young women*" J. Clinical Endocrinology and Metabolism in press, 2010. This work confirms in 127 younger women (mean age 22), earlier Prior research with women in their mid-30s, that women whose cycles make less progesterone, but still are regular, lose hip bone density and don't gain as much spine bone density.
- ❑ Shirin Kalyan PhD (CeMCOR Post-Doctoral Fellow, now Research Associate) published an important study: "*Cardiovascular and Metabolic Effects of Medroxyprogesterone Acetate versus Conjugated Equine Estrogen after premenopausal hysterectomy with bilateral ovariectomy*" Pharmacotherapy 2010; 30: 442. This randomized, blinded one-year study for the first time directly compared these two common menopausal treatments for effects on heart disease risk. It documented greater weight gain, and higher levels of inflammatory markers and triglycerides (heart health risks) in those on estrogen compared with medroxyprogesterone.
- ❑ Jerilynn C. Prior and Christine L. Hitchcock (CeMCOR Research Associate) with biostatistical colleagues from SFU published: "*Medroxyprogesterone and Conjugated Estrogen are Equivalent for Hot Flashes: a 1-yr randomized controlled trial following premenopausal ovariectomy*" Clinical Science 2007

(3). This first randomized comparative trial documented that medroxyprogesterone is similarly effective in control of hot flushes as estrogen, the gold standard hot flush treatment.

Research grants and funding support

CeMCOR scientists from 2002-2008 have earned over 1.4 million dollars in peer reviewed research funds from CIHR, Vancouver Foundation, Canadian Breast Cancer Research Foundation, Lohn Foundation (through the BC Cancer Agency), Sharon Stewart Aniridia Foundation (through UBC) and Women's Hospital's Women's Health Research Institute.

For example:

- ❑ CIHR—International Opportunities Grant; Canadian-Norwegian collaboration on the epidemiology of ovulation & reproduction—this large epidemiology study in mid-Norway has obtained timed sera for progesterone and estradiol in over 2,000 women in the population and will, for the first time, document how frequently women in any one cycle do not make progesterone (ovulate) in an unselected population.

- ❑ CIHR—Population Tools; Validation of molimina by questionnaire as an indicator of ovulation for population-based studies. This research enrolled over 600 premenopausal women not taking hormonal contraception, documented their menstrual cycle experiences over one cycle and collected urinary hormone data. This large database of information has already discovered that women's self-knowledge is likely not sufficient for accurate prediction of ovulation, and that major, probably inherited differences in steroid metabolism strongly influence hormone levels.

Other funding support—total donations of \$950,000+

Three individual donors have each provided over \$10,000 to CeMCOR, with two regularly donating yearly operating funds of \$100,000 and \$50,000. The CeMCOR Endowment Fund, also despite the recent recession, is earning interest on over \$50,000.

Book sales

Estrogen's Storm Season (published by CeMCOR) sales have netted over \$40,000 in royalties. In addition, Estrogen's Storm Season has just been translated into Portuguese and will shortly be published (paper and e-book format) from a Brazilian publisher. CeMCOR will receive royalties. The Estrogen Errors sales also provide US\$3.00 per book in CeMCOR royalties.

Training the next generation to understand / value normal, ovulatory cycles

CeMCOR advances knowledge in a collaborative, multi-disciplinary way that encourages participation. Since 2002, CeMCOR has trained 5 PhD students (although Georgina Hale MD, in Sydney Australia, was an unofficial trainee). We have also trained 5 Masters students from UBC and SFU as well as one each from

Memorial U. in Newfoundland and University of Toronto. In addition, CeMCOR has taught clinical women's reproduction research to 6 post-doctoral research fellows (2 PhD and 4 MD) as well as worked with 11 paid and many more volunteer research assistants. Finally, CeMCOR over the years has had assistance from more than 52 volunteers and over 4000 research participants.

Transforming science into helpful information

The CeMCOR website (www.cemcor.ubc.ca), founded in the fall of 2003, has provided a plain-language, practical way to share new information with and provide support for thousands of women. This site is without advertisement and provides almost 250 pages of unique information. Over 1200 pages are read a day by people on every inhabited continent.

In 2008, after completing the Menstruation and Ovulation Study we obtained CIHR support for public education and created Youtube clips that are accessible through the CeMCOR website. Through viewing these, women learn to understand their own cycles by keeping the freely available Menstrual Cycle Diary®. Over 3000 people have so far accessed these video clips.

Estrogen's Storm Season—stories of perimenopause, the unique, award-winning book authored by Prior and published by CeMCOR, is an innovative way to share accurate information about the higher estrogen and lower progesterone changes during perimenopause as fictitious yet accurate-to-women's-experience stories. Furthermore, these stories show women the potential to partner with their physicians in working to find strategies that allow them to survive the chaotic and mysterious changes of this universal midlife transition.

Summary

In CeMCOR's first 8 years, this still-small research centre (one MD, two PhDs, several research assistants and an academic administrative assistant) has collaborated widely, extended its reach internationally and been productive of new and innovative research about the added importance of progesterone physiology to normal estrogen levels in women's health. With ongoing research, and the recently funded perimenopause controlled trial, progesterone's roles in bone, breast and cardiovascular health promise to become increasing clear.

Reference List

- (1) Prior JC, Hitchcock CL. Progesterone For Vasomotor Symptoms: A 12-Week Randomized, Masked Placebo-Controlled Trial In Healthy, Normal-Weight Women 1-10 Years Since Final Menstrual Flow. Endocrine Society Abstracts . 2010. Ref Type: Abstract
- (2) Baxter S, Prior JC. The Estrogen Errors: Why Progesterone is Better For Women's Health. Westport: Praeger Publishers, 2009.
- (3) Prior JC, Nielsen JD, Hitchcock CL, Williams LA, Vigna YM, Dean CB. Medroxyprogesterone and conjugated oestrogen are equivalent for hot flushes: a 1-year randomized double-blind trial following premenopausal ovariectomy. Clin Sci (Lond) 2007; 112(10):517-525.