

# THE CONTINUUM OF OVARIAN ACTIVITY

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For most of her reproductive life, a woman will experience fertile ovulatory cycles. However, all women will experience infertile variants of the ovulatory cycle, particularly during breastfeeding, approach of menarche and menopause, periods of stress, and during and after hormonal contraception. The hormone patterns and therefore the symptoms in these infertile cycles differ from the fertile ovulatory cycle. Recognizing these variants is particularly important for pregnancy achievement.

The ovulatory cycle has been extensively studied, but the other variants have been largely overlooked as they are not predictable. Large numbers of cycles were needed to be studied so that the variants could be documented and their mechanism, frequency and impact on the mucus symptoms and fertility determined. Professor Brown's concept of the Continuum has done this, providing information on all phases and variants of reproductive life.

## **Cycle Variants**

### *1. Early ovulation*

Fully ovulatory cycles as short as 19 days occur with oestrogen values already rising on day 1 and the fertile phase beginning during menstruation.

### *2. No ovarian activity – amenorrhoea*

FSH production to the threshold level may be delayed, causing lengthening of the cycle. The FSH levels remain below threshold and no follicle begins the rapid growth phase. Little oestradiol is produced, and the cervix remains unstimulated. Continuous BIP is experienced.

### *3. Anovulation – oestrogen peak*

In this situation the developing follicles produce oestradiol and the follicle develops as in an ovulatory cycle. The discharge changes and FSH levels rise to exceed the threshold required for follicle stimulation but the ovulatory mechanism fails and no LH is released. Follicle atresia results, oestradiol levels drop, BIP returns, no progesterone is produced and no Peak day identified. Depending on the amount of oestradiol produced and the sensitivity of the uterine endometrium of the individual, there may or may not be sufficient stimulation of the endometrium to result in oestrogen withdrawal bleeding.

#### *4. Anovulation – constant raised oestrogen levels*

The rise in FSH production above the threshold may arrest before the intermediate level is exceeded, resulting in chronic development of follicles but none selected for ovulation.

The stimulated uterine endometrium may break down as oestrogen break-through bleeding.

2 possible outcomes:

a) The feed-back mechanism corrects itself, FSH exceeds intermediate level, and a follicle is boosted to ovulation. The final rapid rise in oestradiol output to pre-ovulatory oestradiol peak stops the bleeding. As the woman is about to ovulate, she is in a phase of high fertility during this bleed.

b) Follicles remain in a state of chronic stimulation with oestradiol stabilizing at levels less than those of the pre-ovulatory peak. The discharge shows fertile characteristics but does not progress. Stimulated uterine endometrium may break down as oestrogen break-through bleeding, sometimes at regular 28-day intervals or the FSH may return to sub-threshold levels with return of the BIP.

#### *5. Luteinized Unruptured Follicle (LUF)*

In this situation a follicle develops and changing mucus pattern is experienced but no Peak is identified. Some LH is released but not in sufficient amount to cause ovulation. The LH that is produced results in small amount of luteinization of the follicle and a small amount of progesterone is produced for a short time. LUF may or may not be followed by bleeding.

#### *6. Ovulation occurs – Cycle infertile: Inadequate luteal phase*

In this situation ovulation occurs and the Peak symptom is usually identified. Progesterone levels rise above those seen in a LUF, but progesterone is not sufficient to produce a fully formed corpus luteum - deficient luteal phase. This situation may also occur if progesterone reaches normal post-ovulatory values but falls prematurely so that menstruation occurs 10 days or less after ovulation - short luteal phase.

Both cycles are ovulatory but infertile. Both are followed by menstruation. Brown states that the inadequate luteal phase (deficient and short) is the most common cause of temporary infertility and makes up approximately 10% of all ovulatory cycles.

These cycle variants have been listed as if they were separate entities. Actually, one merges into the next, so there is a continuous gradation - from no follicular activity, through follicular activity without an LH surge, through increasing maturation of the ovulatory mechanism, to the fully fertile ovulatory cycle. This is the pattern at menarche; the reverse occurs at menopause.

These cycle variants do not necessarily repeat themselves from cycle to cycle. For example, with approach of menopause or during stress, the woman may experience periods of amenorrhoea, anovular ovarian activity or LUFs, interspersed with fertile ovulatory cycles. As none of these infertile variants can be predicted at the beginning of the cycle, the woman must be observant of her symptoms at all times. She

can never assume that she can dispense with the Rules of the Billings Ovulation Method® which handle every type of cycle encountered.

### **Billings Ovulation Method® Management of Cycle Variation**

The woman's chart reveals whether the cycle is a fertile ovulatory cycle or one of the variants. Fertility and infertility is understood on a day by day basis regardless of the length of the cycle, and fertility is managed by following the 4 Rules. Bleeding is recognised as one of the four types - menstruation, breakthrough with high oestrogens, oestrogen withdrawal, or implantation. Any other bleeding can be recognised as an aberration and should be investigated.