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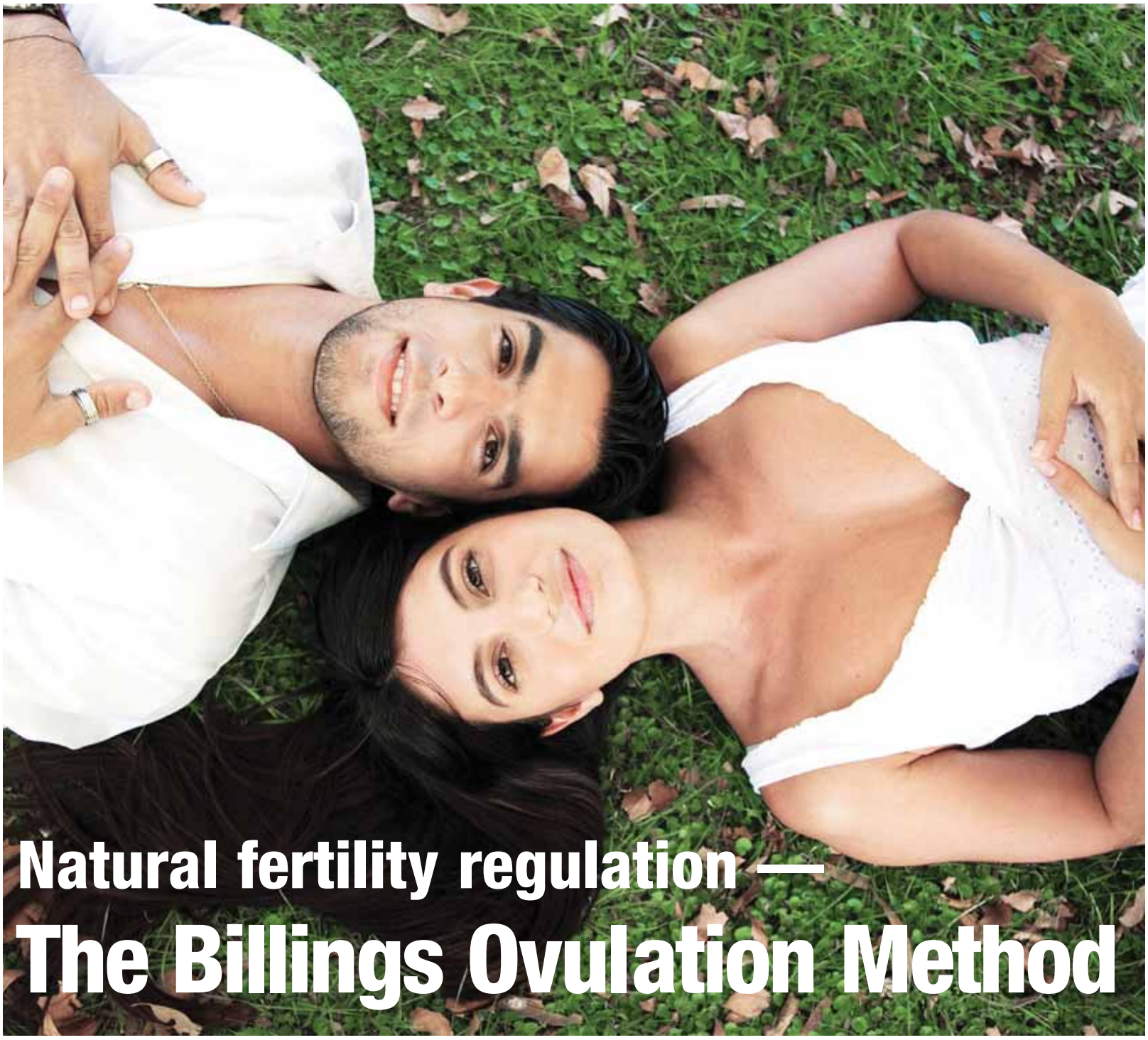

Natural fertility regulation — The Billings Ovulation Method

inside

The authors

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Background

MORE than 50 years ago, Dr John Billings recognised the association between changes in cervical mucus and fertility. By asking women to record the pattern of vulval discharge throughout the length of their cycles, Billings realised that it could be recognised when a women was fertile, regardless of cycle length.

The science of fertility has leapt ahead in the intervening years, but management of fertility remains a burning issue for many couples.

The Billings Ovulation Method

In the mid-20th century, the idea of concentrating on ovulation as the significant event in the menstrual cycle was considered revolutionary. That ovulation occurred about two weeks before menstruation had already been established. However, irregular cycles and delayed ovulation meant this information was an inexact guide to fertility. The recognition in the early 1960s by Dr Evelyn Billings of the pattern of pre-ovulatory infertility — an unchanging pattern of either dryness or discharge — helped eradicate these uncertainties.

Further research confirmed the validity of the Billings Ovulation Method and the rules of the method have remained unchanged since that time. In the 1970s, on the recommendation of the WHO, the Drs Billings changed the name of their method from the Ovulation Method to the Billings Ovulation Method to identify the method based on their discovery.

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How to treat – natural fertility regulation — the Billings Ovulation Method

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Two Melbourne scientists, Professor James B Brown and Professor Henry Burger have collaborated and validated the hormonal basis of the Billings Ovulation Method.[1] Professor Erik Odeblad from Sweden independently validated the clinical findings of the Drs Billings in the 1970s.[2]

The understanding of the science of infertility is ongoing, with the collaboration of Brown and Odeblad in measuring and documenting the precise patterns of ovarian and pituitary hormones and studying the role the cervix plays in fertility.

Efficacy of the Billings Ovulation Method

The first published trial of the Billings Ovulation Method was from Tonga in 1972.[3] This revealed a 0.5% method-related pregnancy rate (ie, pregnancies occurring despite correct use of the method) with a 1% teaching-related pregnancy rate (ie, pregnancies resulting from incorrect teaching of the method, or misunderstanding of the method by the user).

This trial confirmed the rules of the method as well as the importance of accurate teaching and understanding of the signs and symptoms of fertility.

In 1976-78 an independent trial was conducted by the WHO, in five countries (India, the Philippines, New Zealand, Ireland and El Salvador).[4,5] This study had two phases: 869 couples entered the three-month 'teaching phase', and 725 couples continued in the 13-cycle 'effectiveness phase', with a total of 10,215 cycles in the entire study.

The teaching phase showed that in the first cycle of charting, 93.1% of women were able to record an identifiable ovulatory mucus pattern denoting fertility, and that by the third cycle of charting, 97.1% of women had an excellent or good interpretation of the method.

The results for the entire study were a method-related pregnancy rate of 2.2 pregnancies per 100 woman years (hwy) and a total pregnancy rate of 22.3 pregnancies/hwy. The total Pearl Index of 22.3/hwy comprised:

- Conscious departure from the rules of the method: 15.4/hwy.
- Inaccurate application of instructions: 3.9/hwy.
- Method failure: 2.2/hwy.
- Inadequate teaching: 0.3/hwy.
- Uncertain: 0.5/hwy.

Conscious departure from the rules of the method will always present difficulties in assessing a pregnancy rate for natural fertility regulation, as couples may choose to change their motivation from avoiding pregnancy when they know the woman is fertile. A more realistic way of assessing of whether a natural method is successful is to identify both the method-related pregnancy rate and the teaching-related pregnancy rate.

A later study of the Billings Ovulation Method in 1996-97 conducted in China showed a method-related pregnancy rate of zero and a teaching-related pregnancy rate of 0.5%.[6] In this study, which reflects current stringent teacher-training requirements, the total pregnancy rate was the same as the teaching-related pregnancy rate.

What is clear from all these studies is that couples wishing to use the Billings Ovulation Method to prevent pregnancy should be made aware of the importance of gaining accurate information and assistance from an experienced accredited teacher of the method to achieve success.

The efficacy of using the Billings Ovulation Method to achieve pregnancy is currently being studied.

Billings Ovulation Method – glossary of terms

Basic infertile pattern (BIP)	The unchanging pattern of dryness or discharge indicating relative inactivity of the ovaries before a follicle begins to mature
Breakthrough bleeding	Bleeding caused by a constantly raised oestrogen level — may be time of high fertility
Continuum	Normal variants of ovarian activity experienced by every woman during her reproductive life, from menarche to menopause (JB Brown)
Fertile (infertile) phase	Time when intercourse can (cannot) result in pregnancy
Implantation bleeding	Bleeding at embryo implantation
Luteal phase	Interval of time between ovulation and menstruation — 11 to 16 days in a fertile cycle
Ovum survival	Maximum of 24 hours
Peak	Correlates closely to the time of ovulation. Last day on which slippery mucus is present
Pockets of Shaw	Small pockets or folds in lower end of vagina which, under the influence of progesterone, dehydrate any discharge leaving the vagina
Rules	Specific guidelines to achieve or avoid pregnancy
Sperm survival	From a very limited time to 3-5 days, depending on type of cervical mucus present at time of intercourse
Withdrawal bleeding	Bleeding caused by withdrawal of oestrogen in the pre-ovulatory phase
G mucus	Closes the cervix during the infertile times of the cycle, preventing entry of sperm and infection
P mucus	Liquefies G mucus at beginning of fertile phase, allowing entry of sperm. Liquefying effect of P mucus close to the time of ovulation dissolves L and S mucus, causing lubricative sensation at the vulva
L mucus	Present throughout the fertile phase. Supports P and S mucus and attracts low-quality sperm, which are then eliminated
S mucus	Provides nourishment for high-quality sperm and channels for sperm transport
S crypts	Most sperm are transported to S crypts where they are locked in by L mucus for up to two days, at which time crypts are non-secretory and sperm immotile. P mucus unlocks S crypts enabling sperm to continue movement to fallopian tubes

Hormonal basis of the Billings Ovulation Method

CHANGES in cervical mucus are controlled by the changing production of oestradiol and progesterone during the ovarian cycle. The woman's observations of her cervical mucus are in effect self-bioassays for these hormones.

The ovulatory cycle can be divided into two phases: from the beginning of menstruation until the day of optimal fertility in that cycle ('the peak'), and from the peak until the beginning of the next menstruation (the luteal phase).

The interval between ovulation and the next menstruation is 11-16 days in a fertile cycle, but the length of the pre-ovulatory phase will vary and may be extended, resulting in long cycles, for example, in breastfeeding, perimenopausal women or women suffering ovarian dysfunction such as polycystic ovary syndrome.

During the time of fertility, the cervix produces mucus that is conducive to sperm selection, transport and survival, progressing over a variable number of days to a slippery sensation at the vulva. The last day on which this slippery mucus is present, whether in large or minimal quantities, is the peak. Genital contact over the fertile phase has the potential to result in pregnancy.

Women using the Billings Ovulation Method are taught to be aware of the sensation of the vulva and any visible discharge as they go about their daily activities and to record this information each evening. The woman's record gives her information about the current state of her fertility, regardless of cycle length or reproductive life stage and the likely day of ovulation.

This information is valuable for all women, whether they are wishing to avoid pregnancy or conceive. It is also of particular benefit in enabling women to monitor their reproductive health, as they will quickly be alerted to any abnormal discharge and seek early medical management.

The Billings Ovulation Method is incompatible with any barrier methods of contraception, including withdrawal, as valid observations are compromised. Internal examinations or touching of mucus do not form part of the Billings Ovulation Method, as these can give inaccurate information.

Women using the Billings Ovulation Method are taught to be aware of the sensation of the vulva and any visible discharge as they go about their daily activities.

Rules of the Billings Ovulation Method

IN the Billings Ovulation Method couples need to use only four rules to achieve or avoid pregnancy throughout the woman's reproductive life (see box below). Application of the four rules in the phases of the menstrual cycle is as follows.

Pre-ovulatory infertile phase

Ovarian/pituitary activity

During the latter half of the preceding cycle, high output of oestradiol and progesterone by the corpus luteum suppresses production of FSH and LH by the pituitary. As the production of oestradiol and progesterone wanes at the end of the cycle, this suppression is removed and the FSH levels rise. FSH stimulates a group of ovarian follicles into active growth. After several days of growth the follicles start producing oestradiol.

Cervical response

Until the developing follicles start to produce oestradiol, the cervix is occluded by G mucus, which is a natural barrier to

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Rules of the Billings Ovulation Method

There are four simple rules. Three relate to the pre-ovulatory phase, and one to the post-ovulatory phase.

Early Day Rule 1	Avoid intercourse on days of heavy menstrual bleeding.
Early Day Rule 2	Alternate evenings are available for intercourse when these days have been recognised as infertile, ie, basic infertile pattern (BIP).
Early Day Rule 3	Avoid intercourse on any days of discharge or bleeding that interrupt the BIP. If ovulation is not confirmed, allow three days from return of the BIP before resuming intercourse.
Peak rule	From the beginning of the fourth day after the peak until the end of the cycle, intercourse is available every day at any time.

To achieve pregnancy

Apply the Early Day Rules. This enables the change to the fertile pattern of mucus to be recognised. Intercourse is then postponed until slippery sensation occurs. This allows optimal fertility to be identified, so intercourse should occur while the slippery sensation is obvious at the vulva and for one or two days past the peak.

To avoid pregnancy

Apply:

- Early Day Rules
- Peak rule

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sperm. Its high viscosity makes it a mechanical plug that closes the cervical canal, which is also narrowed at this time by the fibromuscular system in the cervix. Pregnancy cannot be achieved at this time, as sperm survival is very short and G mucus prevents transit of sperm, which are quickly phagocytosed.

The woman's record

The woman recognises this time of infertility by awareness of an unchanging pattern of dryness or a sensation or discharge that is the same day after day. This pattern of unchanging symptoms is termed the basic infertile pattern (BIP) and corresponds to low oestrogen levels.

Billings Ovulation Method management

The couple applies:

- Early Day Rule 1: avoid intercourse on days of heavy menstrual bleeding:
  - — fertility may begin during menstruation, and bleeding could obscure mucus.
  - — ovulation can occur as early as day 5 of the cycle.
- Early Day Rule 2: alternate evenings are available for intercourse when infertility (BIP) has been recognised:
  - — evening intercourse allows the woman to assess the state of her fertility during the day.
  - — seminal fluid the day after intercourse may mask any change from her BIP.

Fertile phase

Ovarian/pituitary activity

An intermediate level of FSH production must be exceeded before a follicle is finally boosted into its full ovulatory response, and a maximum level must not be exceeded, otherwise multiple ovulations occur.

The dominant follicle racing towards ovulation produces rapidly increasing amounts of oestradiol, which stimulate production of cervical mucus and growth of the endometrium.

As the oestradiol suppresses FSH production, support for the lesser follicles is removed and the dominant follicle is selected. A maturation mechanism is turned on to make the dominant follicle receptive to the second pituitary gonadotrophin, LH.

Cervical response

The cervix responds to rising oestradiol levels by producing mucus from different crypts throughout its length. The various types of mucus have different crystalline structures. Sperm survival may now be extended to 3-5 days.

At the beginning of the fertile phase, P mucus dissolves the G mucus, allowing sperm to enter the cervix.

L mucus, present throughout the whole fertile period, forms a flexible mechanical support for the more fluid S mucus that appears later. It acts as a filtering system by capturing and eliminating low-quality sperm, allowing only the high-quality sperm to reach and fill the S crypts.

S mucus is secreted from S crypts in the upper half of the cervix and is present in string-like formations in the cervical canal both before and up to three days after ovulation. S mucus provides channels for sperm transport to the S crypts and nourishment for the high-quality sperm.

After intercourse, some sperm travel directly to the uterine cavity, but most are conveyed to the S crypts, where they are then locked in by L mucus for up to two days, at which time these crypts are non-secretory and the sperm immotile. Through this action both L and S mucus co-operate to bring about propagation of optimal sperm.

Shortly before ovulation, the P crypts secrete P mucus, which dissolves the L and S mucus, releases sperm locked in the crypts and conveys them to the body of the uterus. It is also responsible for the very lubricative vulval sensation, often without visible mucus, which enables the peak to be easily identified.

After intercourse, some sperm travel directly to the uterine cavity, but most are conveyed to the S crypts, where they are locked in by L mucus for up to two days.

The woman's record

The woman recognises the beginning of her fertile phase by a change in sensation at the vulva and in the visible mucus. Close to ovulation, the sensation becomes slippery, although visible mucus may diminish or disappear and there may be a heightened sensitivity and swelling of the vulva. The woman's charted record will reveal a changing, developing pattern, reflecting the cervical response to rising oestrogen levels.

Billings Ovulation Method management

Early Day Rule 3 — avoid intercourse on any day of discharge or bleeding that interrupts the BIP. If the peak is not recognised, allow three days from return of the BIP before resuming intercourse.

Any change from the BIP indicates ovarian activity; from this point, one of two things can happen:

- The most usual change reflects the rise and peak of oestrogen, and the peak being recognised. The peak rule for the post-ovulatory phase is applied.
- If the change is follicular activity without ovulation, the peak will not be recognised and the BIP returns. A count of three days from this return of the BIP allows time for the hormones to stabilise at a low level and confirm infertility. Rule 2 is then applied while the BIP persists.

Ovulation

Ovarian/pituitary activity

High oestradiol levels activate a positive feedback mechanism in the hypothalamus, causing the pituitary gland to release a surge of LH, initiating ovulation about 37 hours after the beginning of the surge, or 17 hours after its peak. The oestradiol level reaches a peak about 36 hours before ovulation then falls abruptly, with the progesterone level beginning to rise as a result of the follicle luteinisation. The ovum is fertilisable for up to 24 hours after ovulation.

Ovulation is most likely to occur on the day of the peak, occasionally on the day after the peak, and rarely on the second day after the peak. Couples count to the third day after the peak to allow for ovum survival from the possibility of ovulation occurring on the second day after the peak.

Cervical response

The rising progesterone level strongly inhibits the oestrogen effect and stimulates the cervix to once again produce G mucus. Over the three days following the peak, the cervix is gradually occluded by the increasing G mucus. However L, S and P mucus are still present and channels for sperm transport still exist.

The rise in progesterone causes the pockets of Shaw to be activated to produce manganese, which extracts moisture from any discharge passing through the vagina.[6] This action causes the abrupt change from the slippery lubricative sensation that defines the peak.

The woman's record

The peak indicates the optimal fertile time in the cycle and is identified as the last day of the slippery sensation at the vulva, after a developing mucus pattern of variable length. It is identified in retrospect on the day of change when the sensation at the vulva will be dry or sticky and no longer wet and slippery.

Any visible mucus may now appear thicker, reflecting the dehydrating actions of the pockets of Shaw. It is important that no internal mucus observation is performed, as this will bypass the Pockets of Shaw and give inaccurate information.

Billings Ovulation Method management

Peak rule — from the beginning of the fourth day after the peak until the end of the cycle, intercourse is available every day at any time.

Luteal phase

Ovarian and pituitary activity

After ovulation the ruptured follicle is transformed into the corpus luteum and production of progesterone increases rapidly (approximately doubling each day), together with a second rise in oestradiol output, which in turn changes the endometrium to secretory.

About seven days after ovulation, if pregnancy has not occurred, production of both oestradiol and progesterone begins to decline, resulting in menstruation and a luteal phase of 11-16 days in a fertile cycle. Pregnancy is suggested when no menstruation has occurred by day 17 past the peak. Implantation bleeding may occur from day 6 after ovulation.

Cervical response

By the beginning of the fourth day after the peak, the cervix is occluded by G mucus, which remains in place until just before menstruation, when it is dislodged to allow the menstrual flow.

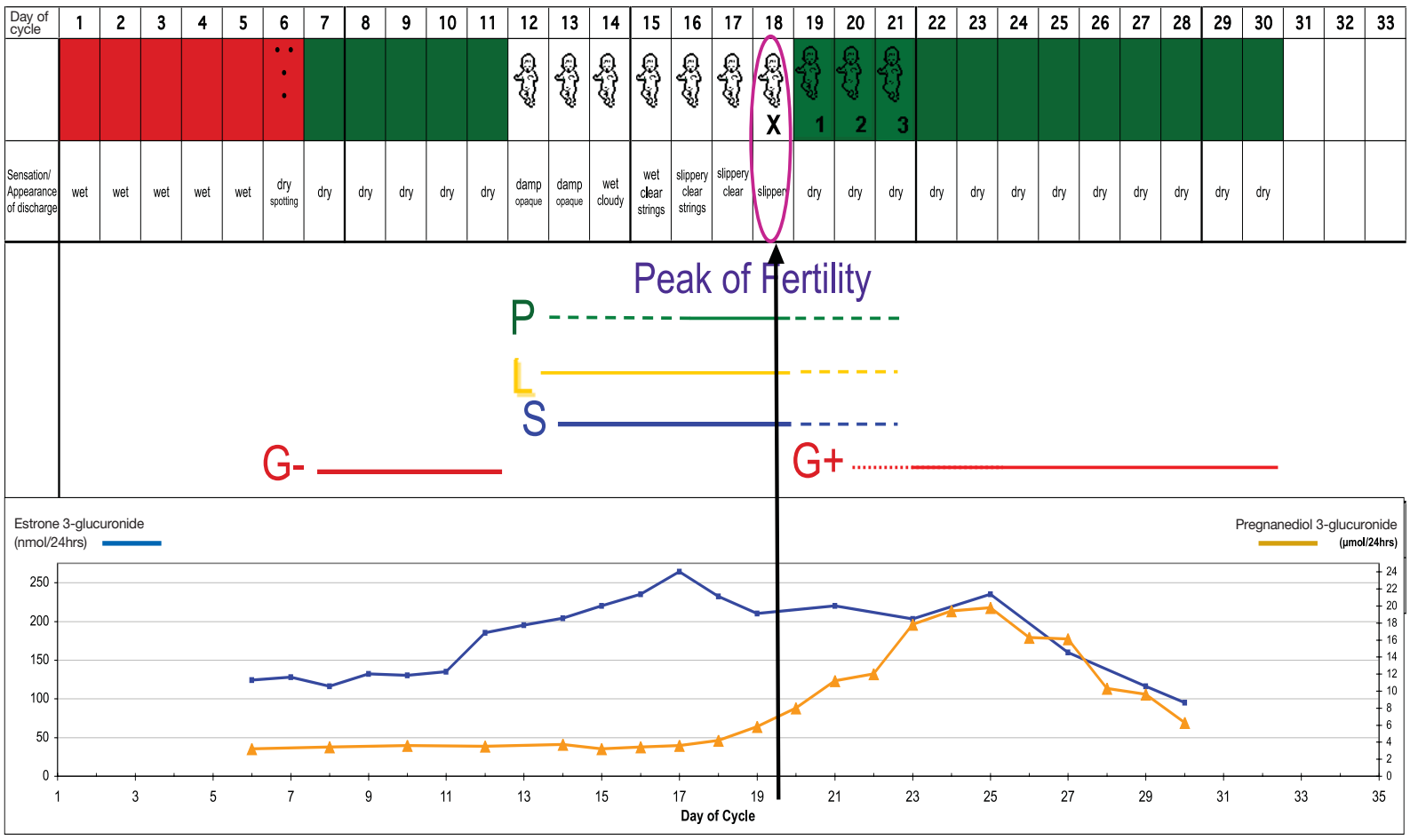
The woman's record

For the three days after the peak, the record will indicate an absence of the slippery sensation. Just before menstruation, one or two days of a wetter sensation may be recorded (reflecting progesterone level falling faster than oestrogen level). From the fourth day past the peak until the beginning of menstruation, the couple experiences absolute infertility.

Billings Ovulation Method management

Because ovulation has already occurred, fertility is over for this cycle. Intercourse is available at any time until menstruation.

Figure 1: Ovarian/cervical responses to women's recorded symptoms.



The continuum

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 those of the fertile ovulatory cycle. Recognising these variants is particularly important for achieving pregnancy.

The ovulatory cycle has been extensively studied, but the other variants have been largely overlooked, as they are not predictable. Large numbers of cycles needed to be studied so that the variants could be documented and their mechanism, frequency and impact on the mucus symptoms and fertility determined. Brown's concept of 'the continuum' has done this, providing information on all phases and variants of reproductive life.[7]

The four absolutes for fertility

- Fertility is associated with rapid changes in hormone production. Anything static must be infertile. This is the basis for the BIP.
- Once ovulation has occurred, a very powerful mechanism operates within a short time interval to prevent a further ovulation: multiple ovulations occur only within this one day of ovulation.
- Pregnancy is proof of ovulation. The post-ovulatory rise in progesterone output that produces the peak symptom is the next best proof of ovulation.
- In the absence of pregnancy, bleeding always follows ovulation, provided the uterine endometrium is responsive to hormone stimulation.

Adapted from: Brown JB. *The fertility absolutes*, Melbourne: WOOMB, 2006: www.woomb.org/omrrca/BOMvCrMS.pdf (page 17)

Cycle variants

Early ovulation

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

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. The women experiences a continuous BIP.

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.

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, resulting in oestrogen breakthrough bleeding.

There are two possible outcomes:

- The feedback 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.
- Follicles remain in a state of chronic stimulation, with oestradiol stabilising 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, resulting in oestrogen breakthrough bleeding, sometimes at regular 28-day intervals, or the FSH may return to sub-threshold levels with return of the BIP.

Luteinised 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 sufficient in amount to cause ovulation.The LH that is produced results in minor luteinisation of the follicle and a small amount of progesterone is produced for a short time. LUF may or may not be followed by bleeding.

Ovulation occurs but 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 are 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 inade-

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quate luteal phase (deficient or short) is the most common cause of temporary infertility and makes up about 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. Vigilant application of the rules of the Billings Ovulation Method enable her to 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 four rules.

Bleeding is recognised as the four types listed in the glossary on page 18 — menstruation, breakthrough with high oestrogen, oestrogen withdrawal, or implantation. Any other bleeding can be recognised as an aberration and should be investigated.

Using the Billings Ovulation Method to achieve pregnancy naturally

THE Billings Ovulation Method provides valuable information for the subfertile couple, as it allows the woman to identify the time of maximum fertility in each cycle.

A five-year Australia-wide study on use of the Billings Ovulation Method to achieve pregnancy has examined the efficacy of the Billings Ovulation Method in assisting couples to achieve pregnancies and is currently being prepared for publication.

The study included 384 consecutive couples, regardless of cycle length, age or reproductive history, with 64 women lost to follow-up. In addition to education about the Billings Ovulation Method, clomiphene was used by 26 women to correct persistent infertile cycle variants. For some, time was necessary to allow adequate cervical response to ovulatory hormones after stopping contraceptive use.

Results of the study were as follows:

- 82% of all couples had no prior knowledge of their signs of fertility. In response to the survey questionnaire after use, 95% stated that the Billings Ovulation Method had given them greater understanding of fertility and infertility.
- The confirmed pregnancy rate was 78.3%, with an average of 4.7 months from initial instruction to conception.
- The average time trying to achieve pregnancy before entering the study was 15 months.
- Of the 384 couples, 207 (54%) had known infertility factors; the confirmed pregnancy rate in this group was 65%.
- Fourteen of 37 couples who had previously unsuccessfully used IVF or other assisted reproductive technologies (38%) achieved pregnancy.
- Of 48 women aged 38-46, 32 (66%) achieved pregnancy.

Advice is often given to have intercourse around day 14, which may miss the fertile phase altogether. All couples wishing to achieve pregnancy should be offered the opportunity to learn their optimal fertility.

Pre-session questionnaires completed by doctors before attendance at our Menarche to Menopause Active Learning Modules reveal a lack of current knowledge on the science and signs of fertility. This, coupled with the fact that only 18% of couples wishing to conceive had a prior knowledge of their signs of fertility, indicates the importance of disseminating accurate information on the significance of mucus and cervical health for fertility.

What about urinary ovulation predictors?

These devices can be useful in identifying the time of ovulation, but their use can become expensive. There are also some limitations in their use. The LH surge is only a predictor of ovulation — the woman may or may not ovulate even though the LH has surged (eg, in an LUF, despite the LH surge, ovulation does not occur). This is particularly common for the woman with polycystic ovary syndrome. When the woman is not aware of her signs of fertility, she has to guess the appropriate time to use the predictor, resulting in negative results because she is either ovulating earlier or much later in the cycle than she expects.

Who should be referred to a Billings Ovulation Method teacher?

REFERRAL to a Billings Ovulation Method teacher can be suitable for couples trying either to achieve or avoid pregnancy.

The chart should reflect the life-stage of the woman; for example, she may have a short luteal phase and/or inadequate mucus symptom because she is weaning from breastfeeding or has stopped using hormonal contraception, when the chart would be reflecting one of the variants of the continuum.

Alternatively if the chart does not reflect her life stage but rather ovarian dysfunction, the Billings Ovulation Method teacher would recommend further medical investigation.

The persistence of cycle abnormalities may be due to metabolic or endocrine abnormalities or other diseases that require further assessment. Simple blood tests such as prolactin levels or thyroid function can often detect the cause of suppressed fertility; 50-60% of women with PCOS have an impaired insulin response to an oral glucose test.

Professor Pilar Vigil, Faculty of Biological Sciences, Catholic University of Chile, states:

> "Women with ovulatory dysfunctions associated with irregular cycles and abnormal mucus patterns will not usually resume normal cycling spontaneously without appropriate treatment. Follow-up studies have shown that, in the absence of treatment, these conditions only worsen with time. Self-knowledge acquired by learning the Billings Ovulation Method is an invaluable tool for women willing to achieve a healthy reproductive system state."

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Online resource

- www.woomb.org

Case studies

Case from a GP

Abnormal cycles with possible thyroid abnormalities

A 28-YEAR-old woman presented for medical review after referral by her Billings Ovulation Method instructor. Her charting had shown several months of abnormal cycles, with excessive thick and sticky mucus during the time of presumed BIP and no obvious changing developing pattern suggestive of ovulation.

In one cycle, bleeding was noted immediately following fertile symptoms, then resumption of fertile symptoms noted straight after the bleeding. Progesterone measurements confirmed that ovulation had occurred, but the charting was obviously confusing.

The woman had a three-year-old daughter and a history of two miscarriages in the previous 12 months, which had caused considerable anxiety and some depressive

symptoms. Other history revealed longstanding fatigue and steady weight gain, but otherwise good general health.

Examination showed a BMI of 25kg/m^2, blood pressure 110/70mmHg, pulse 80 beats/minute and regular, and possible diffuse thyroid enlargement although clinically she was euthyroid. Pelvic examination and Pap smear were normal.

General pathology testing revealed normal results, apart from thyroid function tests, which initially showed a TSH level of 4.39mIU/L (normal range 0.5-4mIU/L) with normal T3 and T4 levels. Repeat measurements revealed a TSH level of 6.14mIU/L, again with normal T3 and T4 levels. Anti-thyroglobulin antibodies were elevated, consistent with mild primary hypothyroidism of autoimmune origin or Hashimoto's disease.

In view of her symptoms, treatment was started with thyroxine 100µg daily. In the following months her TSH level returned to the normal range, associated with lessening of her fatigue and anxiety and gradual return of her cycles to a normal pattern. Pregnancy and normal delivery of her second child occurred in the next year.

Case from the authors

Irregular cycles prompt a timely Pap test

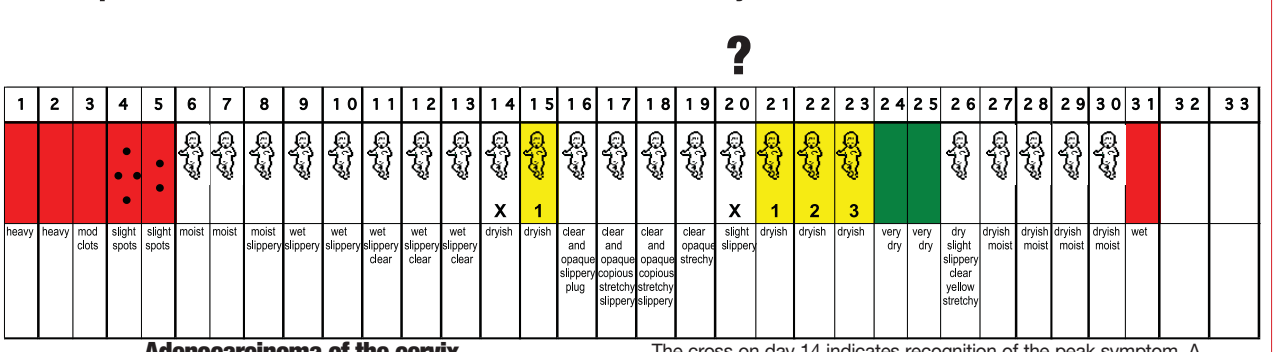
A WOMAN in her early 30s, an experienced Billings Ovulation Method user, reported that her cycles were regular and normal in respect to the changing fertile mucus pattern, the peak and the subsequent menstruation.

However, after the peak in two recent cycles, she noticed a return of mucus with fertile characteristics that she called copious, stretchy and slippery (see figure 2). This clearly signified a cervical abnormality to the woman, which prompted a visit to her doctor for investigation.

A Pap test revealed adenocarcinoma cells. Colposcopic examination reported dysplasia. A cone biopsy confirmed an adenocarcinoma in the cervical canal and a total hysterectomy was performed. The common iliac and pelvic lymph nodes were examined microscopically, with no evidence of metastatic cancer present.

Eleven years later she is still alive and attributes this to her understanding, through the Billings Ovulation Method, of her normal physiology.

Figure 2: Monitoring reproductive health.



Adenocarcinoma of the cervix
Total hysterectomy performed
No evidence of metastatic cancer

The cross on day 14 indicates recognition of the peak symptom. A return of mucus with fertile characteristics with a change to dryish on day 21 alerted the woman to the possibility that ovulation had been delayed (hence the question mark). A further return to slippery mucus on day 26 indicated the need for medical investigation.

Learning about the Billings Ovulation Method or referring to Billings Ovulation Method practitioners

IN Australia, Billings Ovulation Method training is conducted by the Ovulation Method Research and Reference Centre of Australia Ltd (OMR&RCA).

Although many women have taught themselves the Billings Ovulation Method, the service of an accredited teacher is recommended and available to all women throughout Australia, either through face-to-face counselling in their own area or through telephone or Internet counselling services.

OMR&RCA is an accredited provider with the RACGP QA&CPD program and conducts category 1 educational activities for doctors and other health professionals.

Further information can be obtained by telephoning Billings LIFE on 1800 335 860 or visiting www.woomb.org

GP's contribution

DR MARTINE WALKER
Mosman, NSW

Case study

JESSICA, now 30, has only 2-3 periods a year, related to her diagnosis of PCOS. In her teens she underwent a loop electrosurgical excision procedure (LEEP) for treatment of CIN3. She presented to me for the first time in early 2008, complaining of an increase in her abdominal girth. Her fat tummy was, in fact, a 22-week pregnancy, which she and her partner were very happy to proceed with.

Now, with six-month-old Patrick weaned, she is not keen to be pregnant again for a while. She experiences migraine with aura, so oestrogen-containing contraception is contraindicated. Jessica is keen to avoid progesterone because of the risk of irregular bleeding.

Jessica and her partner feel that condoms are far too unromantic. Jessica's mother used "natural family planning" as Jessica was growing up and Jessica is keen to give it a try. Jessica has now returned to full-time work.

Questions for the authors

How accessible are accredited Billings

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Ovulation Method teachers around Australia — urban and rural? What time and financial commitment will Jessica and her partner need to make? Is it recommended that couples do revision courses over time?

Couples can access help with an accredited teacher throughout Australia either by face-to-face, telephone or internet teaching. There are teaching centres in all capital cities and in some rural areas. The Australia-wide toll-free number (1800 335 860) gives access to an accredited teacher in Melbourne Monday to Friday from 10am to 4pm. Access to internet teaching puts the couple in contact with a tutor who will guide them to interpret their chart. All teaching services cost $100, which includes personal assistance and necessary literature from initial instruction until autonomy. Follow-up sessions are usually recommended every 2-4 weeks until confidence is attained. Once autonomous, couples are encouraged to make further contact with their teacher if a change in reproductive lifestage causes confusion.

The theory of the Billings Ovulation Method is complex — is there any evidence on teaching the method to couples with intellectual disability?

The theory is complex but the practical application of the Billings Ovulation Method is simple. There has been no study undertaken on the success of the Billings Ovulation Method for couples with intellectual disability but many years of clinical practice have shown that these women can be taught to identify their fertile and infertile phases successfully. Teaching the husband is also very important so that he has an understanding and can help keep the

chart. Couples with an intellectual disability would require regular follow-ups with an accredited teacher to ensure they understand the four simple rules and how to apply them.

Does past treatment to the cervix such as a cone biopsy or LEEP interfere with the use of the Billings Ovulation Method?

This depends on how much damage has been done to the mucus-bearing crypts. There can be recovery but this is dependent on how radical the gland bed eradication has been. The S and P crypts are responsible for the propagation of sperm and if they are not functioning, fertile mucus will not be present. If mucus crypts are active, as must have been the case for Jessica's previous pregnancy, this will be revealed by the woman's chart.

Do vulval skin problems such as eczema, chronic discharges or use of vaginal lubricants interfere with use of the Billings Ovulation Method?

Women with chronic discharges have been able to use the Billings Ovulation Method successfully as the Method is based on identifying patterns. The chronic discharge will be present continuously and if there is no mucus present infertility will be revealed by the unchanging nature of the chronic discharge. Fertility will be identified by its changing nature. A woman with an intermittent discharge would learn to recognise her individual patterns at the time when this discharge was present.

This situation demands careful teaching and the woman would be encouraged to have regular contact with her Billings Ovulation Method teacher.

Vaginal lubricants, used to facilitate intercourse, would not interfere with the use of the Billings Ovulation Method.

Patrick is now three years old and Jessica is keen to be pregnant again. She has been using the Billings Ovulation Method but does not seem ever to detect signs of the fertile phase. She is discussing with her doctor the use of clomiphene. Does clomiphene exaggerate or alter the mucus changes throughout the menstrual cycle?

While some women using clomiphene record fertile symptoms, clomiphene can diminish the mucus over the fertile phase so Jessica would be encouraged to be alert for any changes in vulval sensation different from her BIP. She may only be aware of the slippery sensation for a short time on one day. Pregnancy can result from intercourse at this time if an ovulation with good hormone levels occurs. She would also be encouraged to identify any vulval swelling which would assist her to recognise ovulation. Jessica should also be informed that ovulation can occur as late as Day 21 in the clomiphene cycle. Jessica is probably experiencing long, irregular cycles associated with her PCOS. She would be encouraged to return to her Billings Ovulation Method teacher to discuss her chart to see if she is perhaps ignoring changes which may in fact indicate fertility.

How to Treat Quiz

Natural fertility regulation — the Billings Ovulation Method — 19 December 2008

INSTRUCTIONS

Complete this quiz online and fill in the GP evaluation form to earn 2 CPD or PDP points. We no longer accept quizzes by post or fax.

The mark required to obtain points is 80%. Please note that some questions have more than one correct answer.

ONLINE ONLY

www.australiandoctor.com.au/cpd/ for immediate feedback

1. Which TWO statements about the Billings Ovulation Method are correct?

a) Women using the Billings Ovulation Method are taught to be aware of the sensation of the vulva and any visible discharge
b) Internal examinations or touching of mucus do not form part of the Billings Ovulation Method
c) Once a woman has learned her typical cycle pattern, she does not need to observe her symptoms in every cycle
d) The Billings Ovulation Method is compatible with barrier methods of contraception

2. Lisa and Barry have a nine-month old boy. Lisa's menstruation has resumed and she is interested in using the Billings Ovulation Method to avoid another pregnancy at present, and asks how effective it is as a contraceptive. Which TWO statements about the efficacy of the Billings Ovulation Method as a contraceptive method are correct?

a) The teaching phase of the WHO study showed that by the third cycle of charting 67% of women had at least a good interpretation of the method
b) In the WHO study the method-related pregnancy rate was 12.2 pregnancies per 100 woman years (hwy)
c) In the WHO study the total pregnancy rate was 22.3 pregnancies/hwy
d) Couples wishing to use the Billings Ovulation Method to prevent pregnancy should be made aware of the importance of gaining accurate information and assistance from an experienced accredited teacher

3. Which TWO definitions of the terms used by the Billings Ovulation Method are correct?

a) The basic infertile pattern (BIP) is the unchanging pattern of dryness or discharge before an ovarian follicle begins to mature
b) The peak indicates the optimal fertile time in the cycle
c) G mucus acts as a filtering system by capturing and eliminating low-quality sperm
d) P mucus provides channels for transport of high-quality sperm

4. Which THREE statements about the hormonal basis of the Billings Ovulation Method are correct?

a) Changes in cervical mucus are controlled by the changing production of oestradiol and progesterone during the cycle
b) The ovulatory cycle can be divided into two phases: the pre-ovulatory phase and the luteal phase
c) The length of the pre-ovulatory phase is fixed at about two weeks, however length of the luteal phase may vary, resulting in long cycles
d) During the time of fertility, the cervix produces mucus that is conducive to sperm selection, transport and survival

5. Which TWO statements about the pre-ovulatory infertile phase of the menstrual cycle are correct?

a) During this phase FSH stimulates a group of ovarian follicles into active growth
b) The woman recognises this time of infertility by awareness of an unchanging pattern of dryness or discharge
c) Early Day Rule 1 is that intercourse is available on the days of heavy menstrual bleeding
d) Early Day Rule 2 is that intercourse is available every evening on days which have been recognised as infertile

6. Which TWO statements about the fertile phase of the menstrual cycle are correct?

a) When the dominant follicle is selected, it becomes the major producer of oestradiol, which in turns suppresses FSH production and support for the lesser follicles
b) Close to ovulation the woman will always notice both increased visible mucus and a slippery sensation at the vulva
c) Early Day Rule 3 is to avoid intercourse on any days of discharge or bleeding that interrupt the BIP
d) If ovulation is not confirmed, the couple can resume intercourse on the second day after the BIP has returned

7. Which TWO statements about ovulation are correct?

a) High oestradiol levels lead via positive feedback to the LH surge initiating ovulation
b) The peak is identified as the last day of the slippery sensation at the vulva
c) The peak can be predicted in advance based on mucus changes
d) Ovulation is most likely to occur on the day after the peak

8. Which THREE statements about the luteal phase of the menstrual cycle are correct?

a) After ovulation the ruptured follicle is transformed into the corpus luteum and production of progesterone increases rapidly
b) For the three days after the peak, the woman's record will indicate an absence of the slippery sensation
c) Just before menstruation, one or two days of a wetter sensation may be recorded
d) The peak rule is that from the beginning of the third day after the peak until the end of the cycle, intercourse is available every day

9. Which THREE statements about cycle variants and the Billings Ovulation Method are correct?

a) All women will experience infertile variants of the ovulatory cycle at some stage in their reproductive life time
b) In infertile cycles the peak may or may not be identified
c) Infertile variants of the menstrual cycle can be predicted at the beginning of the cycle
d) Using the Billings Ovulation Method, fertility and infertility is understood on a day-by-day basis regardless of the length of the cycle

10. Kathy, 37, and Tim, 38, are keen to start a family as soon as possible. They are interested in learning how to use the Billings Ovulation Method to maximize the chance of a pregnancy. Kathy's cycle length is 28-32 days. Which TWO statements are correct?

a) Kathy does not need to follow the Early Day Rules
b) Kathy should apply the Early Day Rules until she recognises the beginning of her fertile phase, and then postpone intercourse until the slippery sensation occurs
c) Kathy and Tim should be advised to have intercourse around day 14, as this will definitely be the most fertile time of Kathy's cycle
d) Kathy and Tim should have intercourse when Kathy is aware of the slippery sensation at the vulva and for 1-2 days past the peak

CPD QUIZ UPDATE

The RACGP now requires that a brief GP evaluation form be completed with every quiz to obtain category 2 CPD or PDP points for the 2008-10 triennium. You can complete this online along with the quiz at **www.australiandoctor.com.au.** Because this is a requirement, we are no longer able to accept the quiz by post or fax. However, we have included the quiz questions here for those who like to prepare the answers before completing the quiz online.

Australian Doctor Education.

HOW TO TREAT Editor: **Dr Martine Walker**
Co-ordinator: **Julian McAllan**
Quiz: **Dr Wendy Morgan**

NEXT WEEK Anorectal problems are one of the most common, and most commonly misunderstood, reasons for presenting to a colorectal surgeon. The next How to Treat looks at two of the most common anorectal conditions encounterd by GPs — anal fistula and anal fissure.The author is **Dr Stephen H Pillinger**, consultant colorectal surgeon, Royal North Shore Hospital, St Leonards, NSW.