

# Timing Intercourse to Achieve Pregnancy: Current Evidence

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**Physicians who counsel women for preconception concerns are in an excellent position to give advice to couples regarding the optimal timing of intercourse to achieve pregnancy. The currently available evidence suggests that methods that prospectively identify the window of fertility are likely to be more effective for optimally timing intercourse than calendar calculations or basal body temperature. There are several promising methods with good scientific bases to identify the fertile window prospectively. These include fertility charting of vaginal discharge and a commercially available fertility monitor. These methods identify the occurrence of ovulation clinically and also identify a longer window of fertility than urinary luteinizing hormone kits. Prospectively identifying the full window of fertility may lead to higher rates of conception. Proper information given early in the course of trying to achieve pregnancy is likely to reduce time to conception for many couples, and also to reduce unnecessary intervention and cost. (Obstet Gynecol 2002;100:1333–41. © 2002 by The American College of Obstetricians and Gynecologists.)**

Identifying the days of the menstrual cycle when sexual intercourse may result in pregnancy is of high clinical relevance for most couples who desire pregnancy. Many couples desire to time conception as precisely as possible to plan the approximate date of birth. In addition, over 10% of couples in the United States have difficulty achieving pregnancy.<sup>1</sup> Although the majority of these couples need medical intervention, some of them may achieve pregnancy by having intercourse during the days when conception is most likely to occur (ie, during the fertile window). Relevant data regarding the probability of intercourse on specific days relative to ovulation

(ie, the definition of the fertile window) have only recently become available.<sup>2–4</sup>

The purposes of this paper are to discuss new data regarding the fertile window, to provide an overview of the various methods of identifying ovulation and the fertile window, including their physiologic basis, advantages, and disadvantages, to summarize the evidence regarding their application for couples trying to achieve pregnancy, and to make a clinical recommendation for use based on the evidence. Our primary purpose is to update physicians who are in a position to advise patients who desire to conceive. We also discuss the implications of timed intercourse for the identification and definition of infertility, and briefly discuss the important question of when further evaluation and treatment for infertility may be indicated.

## THE FERTILE WINDOW

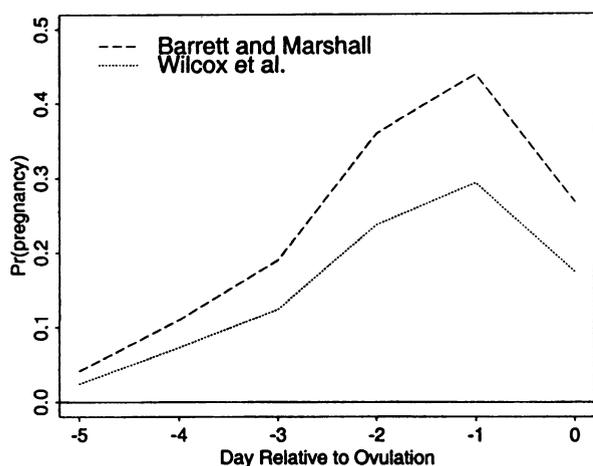
Recent research has defined the days of the menstrual cycle during which intercourse is mostly likely to result in pregnancy. Conception is possible from intercourse beginning about 5 days before ovulation extending through the day of ovulation.<sup>2,3</sup> However, conception on the day after ovulation has never been documented.<sup>5</sup> This implies that ova may only be fertilizable in vivo for less than a day because spermatozoa can survive for up to 6 days in properly estrogenized cervical mucus.<sup>6</sup> Studies of the timing of fertilization in vitro, including intracytoplasmic sperm injection, also suggest that mature human ova (in metaphase II) have a more limited optimum fertilization window than previously appreciated (hours instead of days).<sup>7</sup> Data indicate that by 16 hours after oocyte recovery, fertilization by standard insemination is poor.<sup>8</sup> Indeed, in vitro fertilization programs generally inseminate ova within 2–6 hours of ovum retrieval in an attempt to optimize fertilization rates. Further, current evidence indicates that the highest probability of clinically evident conception occurs with intercourse 1 or 2 days before ovulation, rather than the day of ovulation itself.<sup>3,5</sup>

This is illustrated in Figure 1, which comes from a reanalysis of two previous studies of women achieving pregnancy, one based on basal body temperature, and the other based on urinary hormones.<sup>2</sup> The latter study has been widely quoted as indicating that the highest probability of conception occurred on the day of ovulation, but that earlier analysis included clinically unrecognized early pregnancy losses and also did not fully account for measurement errors.<sup>3,5</sup> Another large dataset has recently confirmed this pattern of the probability of conception relative to ovulation.<sup>4</sup>

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**Figure 1.** Probability of clinically recognized pregnancy resulting from a single act of intercourse by timing of intercourse relative to estimated day of ovulation (day 0). Data are from two separate studies: Barrett and Marshall<sup>9</sup> and Wilcox et al.<sup>2</sup> Details of the data and analysis are given in Dunson et al.<sup>3</sup> (Reprinted with permission from Dunson D, Baird D, Wilcox A, Weinberg C. Day-specific probabilities of clinical pregnancy based on two studies with imperfect measures of ovulation. *Hum Reprod* 1999;14:1835–9. © European Society of Human Reproduction and Embryology. Reproduced by permission of Oxford University Press/Human Reproduction.)

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What may this mean clinically? We suggest that if the more recent data analyses are correct, then a single act of intercourse during the fertile window that occurs on the day of ovulation may by chance occur sufficiently late in the 24-hour period that the ovum may have already lost its ability to become fertilized. This contrasts to a single act of intercourse during a cycle occurring on the day before ovulation. With normal sperm longevity, there would be capacitated sperm present in the female reproductive tract before, during, and after ovulation, increasing the chance of fertilization. Therefore, prospective methods that identify the approach of ovulation before it occurs would be expected to result in higher conception rates.

### Timing and Frequency of Intercourse During the Fertile Window

Intercourse on multiple days throughout the 6 days of the “fertile window” raises the overall probability of conception further, though not additively.<sup>2–4</sup> In couples of apparently normal fertility, daily intercourse during the fertile window is preferable to less frequent intercourse because each day of intercourse raises the proba-

bility of pregnancy. Although sperm concentrations drop with increasing frequency of intercourse, in most men performing daily intercourse the drop does not reach a threshold that would reduce the added conception benefit of each act of daily intercourse.<sup>2</sup> Whether intercourse less often than daily would be of benefit in men with baseline low sperm concentrations has not been studied.

Because sperm counts are maximized after about 5 days of abstinence, couples may be advised to abstain from intercourse for 5 days before the beginning of the fertile window. This would theoretically maximize the sperm count at the first act of intercourse during the fertile interval and throughout the rest of the interval. However, this has not been studied empirically.

### Frequency of Intercourse if Fertile Window Is Unknown

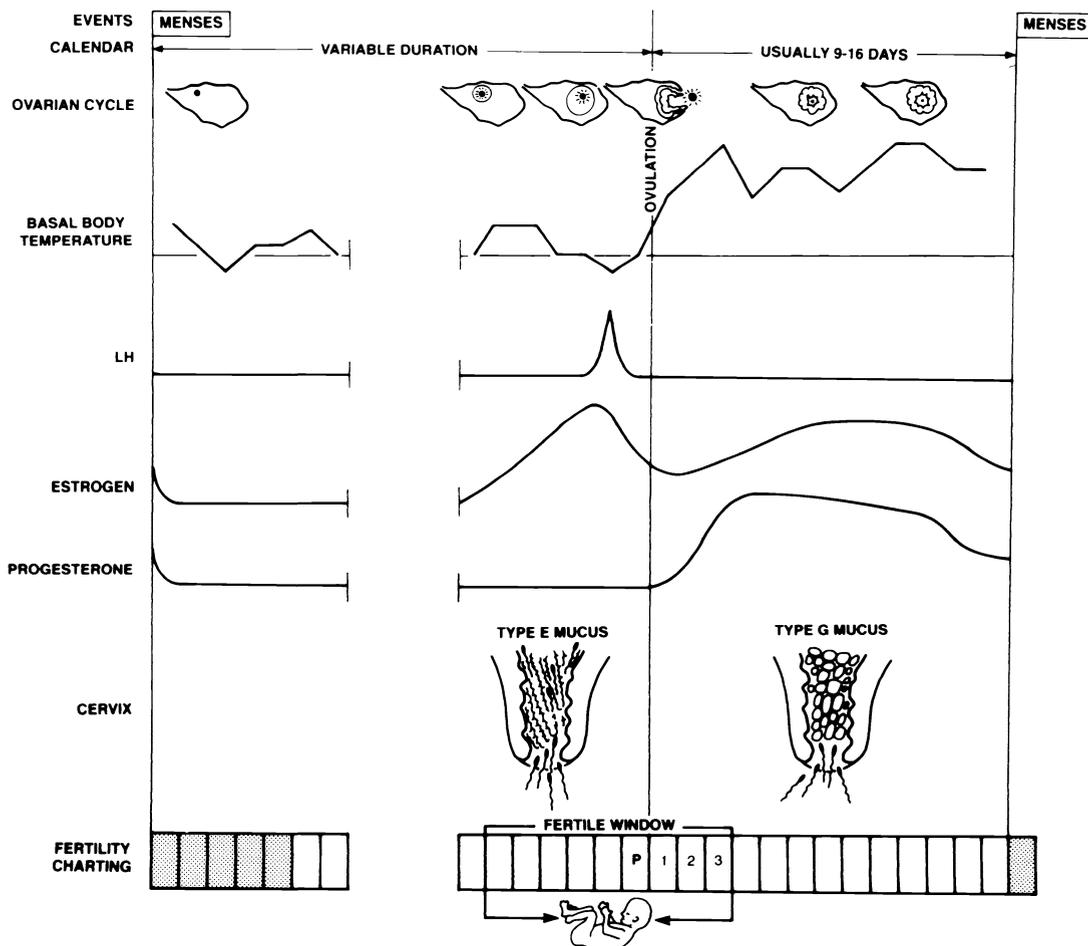
An alternative approach to identifying the fertile window is simply to have frequent intercourse throughout the menstrual cycle. Wilcox et al proposed that simply having intercourse consistently two to three times per week will likely result in one or two acts of intercourse occurring during the fertile window, and that this should be sufficient for couples of normal fertility to conceive.<sup>2,10</sup> However, this approach may be less satisfactory for couples who wish to be certain of timing intercourse correctly, and it provides less accurate documentation for the physician. Further, it may be more difficult for some couples to maintain a schedule of regular intercourse constantly throughout the cycle than to assure a high frequency of intercourse during the fertile window.

### IDENTIFYING THE FERTILE WINDOW

To optimize the timing of intercourse during the fertile window, a couple must be able to identify this 6-day interval before and including the day of ovulation. Traditional and widely used means of identifying the day of ovulation and the fertile window include basal body temperature and calendar calculations. Newer means include serial ovarian ultrasound, monitoring of hormones in urine, and fertility charting of vaginal discharge. The physiologic basis for these approaches is illustrated in Figure 2. Each of these is summarized in Table 1 and is described below in more detail. We also briefly describe several other approaches to identifying the fertile window that are currently marketed or in development.

#### Calendar Calculations

Calendar calculations do not identify the actual approach of ovulation, but are based on statistical averages



**Figure 2.** Physiologic parameters of the menstrual cycle that can be used to identify days during which intercourse may result in pregnancy (the fertile window). LH = luteinizing hormone; P = peak day.

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around which there is large variation, both between women and within the same woman. Most of the variability in cycle length occurs in the preovulatory portion of the cycle (Figure 2), though there is also some post-ovulatory variability. For example, in a previously referenced study of women with normal fertility trying to get pregnant,<sup>2</sup> only 30% had their entire fertile window (as determined by urinary hormones) completely within days 10 and 17 of the menstrual cycle, and on each day between cycle days 6 and 21, at least 10% of women with regular cycles were within their fertile window.<sup>10</sup> Even on the day of expected menses (by calendar calculation), about 3% of women with regular cycles were still in their fertile window. These considerations make calendar calculations unreliable for the purpose of timing intercourse to conceive.

### Serial Ovarian Ultrasound

Ovarian follicular ultrasound (by transvaginal scanning) is highly accurate for identifying the approach and occurrence of ovulation. By serial examination, the development of the follicle can be tracked, and rupture can usually be documented. However, its high cost and limited availability preclude its routine use for couples to trying to achieve pregnancy.

### Basal Body Temperature

Basal body temperature is a time-honored technique to document ovulation, but the temperature rise usually occurs after ovulation (up to several days after), making it nearly impossible to identify the days of fertility to achieve pregnancy within the same cycle prospective-

**Table 1.** Methods to Time Intercourse to Seek Pregnancy

Method	Mechanism	Fertile window identified	Cost* (\$)	Advantages	Disadvantages
Calendar calculations	Makes estimate based on average cycle length or previous cycle	Depends on calendar formula used	<10	Inexpensive	Inaccurate; many women have more cycle variability than is accommodated by calendar calculations
Basal body temperature	Identifies rise in temperature that occurs after ovulation	Very limited; basal body temperature usually does not rise until after ovulation	10	Inexpensive	Does not prospectively identify the approach of ovulation; taking temperature at same time every day may be considered by some to be inconvenient
Urine LH kits	Identifies urine LH surge that occurs on average 18–24 h before ovulation	Usually limited to 36 h	420	Precisely identifies time of ovulation	Identifies only a small part of the fertile window; may not identify the days of highest probability of conception
Creighton Model FertilityCare System or Billings Ovulation Method	Identifies the changes in vaginal discharge from cervical fluid that correspond with ovarian hormones and the potential for sperm survival	Usually 5–7 d before ovulation and the estimated day of ovulation	130	Prospectively identifies complete fertile window; gives information about sperm survival; applies to any cycle length	Requires health education to learn and use; may take 1 mo to learn to use proficiently; observations made during routine bathroom use may be considered by some to be inconvenient
Ovarian Monitor	Identifies the rises in urinary EIC and PdG	Usually 6–7 d before ovulation and the estimated day of ovulation	260	Prospectively identifies complete fertile window; applies to any cycle length	Requires about 15 min a day to use; not available in the United States
ClearPlan Easy Fertility Monitor	Identifies the rises in urinary E3G and urine LH surge	Usually 3–6 d before ovulation and the estimated day of ovulation	380	Prospectively identifies complete fertile window; simple to use	Does not apply to women with irregular cycles; additional test strips needed for each cycle of use
OvaCue	Salivary electrical resistance falls with increasing estrogen levels; vaginal electrical resistance rises with ovulation	Usually 4–10 d before ovulation and the estimated day of ovulation	470	Device can be used indefinitely without additional supplies needed in each cycle	Requires use of both oral and vaginal probes for complete definition of fertile window and confirmation of ovulation
Monitoring of salivary ferning	Increase in ferning occurs with rising estrogen levels	Unclear	40–150	Simple to use	Available data suggest that these devices are unreliable

LH = luteinizing hormone; EIC = estrone conjugates; PdG = pregnanediol-glucuronide; E3G = estrone-3-glucuronide.

\* Approximate cost in US \$ based on 6 mo of use. Costs may vary depending on local prices and availability.

ly.<sup>11</sup> Some women have basal body temperature charts that are unreliable or difficult to interpret, especially women with infertility.<sup>12</sup> Interrater reliability in interpretation of temperature curves has been found to be poor.<sup>13</sup> Several computerized devices based on basal body temperature have been developed, which rely on the time of the basal body temperature shift in the previous cycle to estimate the time of ovulation in the subsequent cycle, and several of these devices (such as

Bioself [Bioself Inc., Thônex, Switzerland] and Sophia Ltd. [Japan]) have been approved by the United States Food and Drug Administration for use to achieve pregnancy. Data on the clinical reliability of these devices to achieve pregnancy are extremely limited.<sup>14</sup>

#### Urine Luteinizing Hormone (LH) Kits

Kits for home measurement of urine LH are commercially available from a variety of companies.<sup>15</sup> Urine LH

is an accurate prospective marker for ovulation. The rise in urine LH occurs on average about 24 hours before ovulation, although there is significant variability in this (from about 16 hours to 48 hours before ovulation).<sup>16</sup> Therefore, in a significant proportion of women, the time of highest probability of conception may have already passed by the time the LH surge is detected (Figure 1). A common protocol for couples having difficulty achieving pregnancy is to advise men to abstain for several days when possible before the anticipated LH surge to accumulate a higher volume ejaculate for insemination. However, these days of abstinence appear to be the most fertile days for intercourse. Even if the LH surge identifies a day with good probability of conception, the brief window of time identified prospectively limits the opportunity to have multiple acts of intercourse before ovulation. In a randomized trial, no difference in conception rates was found between using basal body temperature or urine LH to time artificial insemination in couples with infertility.<sup>17</sup>

### Ovarian Monitor

A number of methods have been developed to directly measure multiple hormonal markers of fertility in the clinical setting. The first system (and probably the best studied) was developed in Australia, and is known as the Ovarian Monitor (St. Michael NFP Services Pty. Ltd., Victoria, Australia). This system is based on an enzyme immunoassay for urinary metabolites of estrogen and progesterone. The beginning of the fertile window is marked by the rise in estrogen above a certain threshold,<sup>18</sup> and the end is marked by the rise in progesterone above a threshold (Figure 2).<sup>19</sup> This assay system has been shown to be accurate in clinical use,<sup>20</sup> but it requires that a woman collect her urine specimen to a standard volume, and spend about 10–15 minutes running the assay on days that she is checking her fertility status. This system is not currently available in the United States.

### ClearPlan Easy Fertility Monitor

The ClearPlan Easy Fertility Monitor (Unipath Diagnostics Inc., Waltham, MA) is based on an enzyme immunoassay for the estrogen metabolites estrone-3-glucuronide and LH in the urine. It is designed for simplicity and requires that a woman dip a test strip into her urine stream for 3 seconds while voiding, cap it, and place it in the computerized monitor where it renders a reading and interpretation within 5 minutes. The monitor identifies a time of “high” fertility coinciding with the initial rise in estrogen, usually 1–5 days before the urine LH surge (Figure 2). The monitor identifies the day of

the LH surge and day immediately after as days of “peak” fertility, and the second day after the LH surge as 1 more day of “high” fertility. In a validation study of the ClearPlan Easy Fertility Monitor involving 150 cycles, the measurement of urinary hormones correlated very closely to serum levels, and ovulation was detected by ultrasound within the 2 days of “peak” fertility in 91% of cycles. In no cases did ovulation occur before “peak” fertility.<sup>21</sup> A separate validation study found close correlation between the results of the monitor and laboratory measurements from urine. In 66% of cycles, the LH surge detected by the monitor was on the day of the LH surge detected by laboratory analysis, whereas in 24% it occurred on the day before.<sup>22</sup>

For many cycles, it is likely that the 2 days of “peak” fertility identified by the ClearPlan Easy Fertility Monitor do not fully coincide with the 2 days when intercourse is most likely to result in pregnancy. As illustrated in Figure 1, the 2 days with the highest probability of pregnancy will probably be the day before the LH surge and the day of the LH surge itself. However, the monitor identifies the day of the LH surge and the day immediately after as the days of “peak” fertility. Because the computer algorithm in the monitor also incorporates some calendar calculations, it is not suitable for use in women with cycles longer than 42 days or shorter than 21 days. This device has been approved by the United States Food and Drug Administration for use to time intercourse to achieve pregnancy and is available for retail sale in the United States. Studies are underway to assess its clinical effectiveness to achieve pregnancy.

### Changes in Cervical and Vaginal Discharge

One of the best established markers of ovulation is the changes in vaginal discharge that result from the changes in cervical mucus secretion throughout the menstrual cycle.<sup>23,24</sup> About 5–6 days before ovulation, estrogen is secreted in increasing amounts from the developing ovarian follicle. The estrogen rise over the 5–6 days before ovulation stimulates the uterine cervix to secrete type E (estrogenic) mucus, which is biochemically and biophysically designed to facilitate the transport and survival of sperm within the cervix. After ovulation, progesterone is secreted in increasing amounts by the corpus luteum. Progesterone stimulates the cervix to produce a different type of mucus, type G mucus, which is biochemically and biophysically designed to block the passage and prevent survival of sperm. This has led to the concept of a biologic valve for the cervix, which is turned on by estrogen and turned off by progesterone.<sup>25–27</sup>

## Fertility Charting of Vaginal Discharge

This biologic valve also results in a biomarker of vaginal discharge that women can easily use for fertility charting. Type E mucus is clear, stretchy, and slippery, and results in vaginal discharge with these same characteristics (in varying degrees), which first appears an average of 5–6 days before ovulation. Type G mucus results in minimal or no vaginal discharge, signaling that ovulation has occurred.<sup>24,26,27</sup> It has been found that women of diverse educational and cultural backgrounds can easily learn to review and interpret the changes in their external vulvar discharge to identify the onset of the production of type E mucus, and the “peak day” (which is identified 1 day later as the last day of any vaginal discharge that has type E characteristics).<sup>28</sup> It has also been demonstrated that the external observations made by women during routine use of the bathroom accurately reflect the changes in mucus secretion that occur at the level of the cervix.<sup>24</sup> The peak day as identified by women correlates well with the timing of ovulation ( $\pm 2$  or 3 days in all cases), as measured by serum hormones,<sup>29–31</sup> urinary hormones,<sup>29</sup> and follicular ultrasound (Figure 2).<sup>32</sup> The peak day has also been found to have reasonable inter-rater reliability in research.<sup>13</sup>

Although vaginal discharge changes are usually easy for women to learn and interpret, we recommend that for optimum understanding and application, women should learn how to observe these from a trained natural family planning teacher. Two systems that have published research documenting their effectiveness in teaching fertility charting to women are the Creighton Model FertilityCare System<sup>33</sup> and the Billings Ovulation Method<sup>34</sup> (Table 1). Other organizations teach the symptothermal method of family planning, which combines mucus observation with basal body temperature. There are also a variety of self-help books available to teach women how to monitor their vaginal discharge to chart fertility to achieve or avoid pregnancy (usually combined with basal body temperature), but the effectiveness of use based on learning from these books has not been empirically demonstrated. Most of these books recommend that a woman learn from a trained instructor where available.

There are three studies addressing the effectiveness of fertility charting of vaginal discharge to achieve pregnancy. A study of 50 couples of normal fertility who used the Creighton Model FertilityCare System to achieve pregnancy found that 76% did so within the first month.<sup>35</sup> However, this study did not include couples who tried unsuccessfully to achieve pregnancy. Another study of the Billings Ovulation Method suggested that couples of normal fertility who have intercourse on the

peak day have a 67% probability of pregnancy, and that intercourse up to 3 days before the peak day with favorable vaginal discharge resulted in a 55% probability of pregnancy.<sup>36</sup> However, this study was limited by relatively few pregnancies in this category, and by the fact that not all acts of intercourse were recorded. A recent study found that if intercourse occurs on any given day relative to ovulation, the presence of vaginal discharge from cervical mucus was associated with a two-fold increase in the probability of clinically evident conception as compared with no discharge.<sup>37</sup> This provides direct empirical evidence that the presence of vaginal discharge from type E mucus strongly correlates with the probability of conception. There are no published studies on the use of fertility charting to achieve pregnancy in couples with infertility, or with long or irregular cycles.

## Salivary Electrolytes and Ferning

As ovulation approaches and estrogen levels rise, the sodium and potassium concentrations in saliva change, resulting in changes in salivary electrical resistance. A device known as the CUE monitor (Zetek Inc., Aurora, CO) uses an oral probe to measure salivary resistance on a daily basis. It was shown to measure a peak in salivary resistance an average of 7.9 days (range 6–12) days before follicular collapse assessed by ultrasound in 42 cycles from ten women.<sup>38</sup> To confirm the occurrence of ovulation, the CUE monitor requires the use of a separate vaginal probe to measure a rise in vaginal electrical resistance (resulting from electrolyte changes in cervical mucus). In the previously mentioned study, the rise in vaginal resistance occurred within 1 day before or after ovarian follicular collapse. In another study of 21 cycles from 11 women, the CUE monitor and the associated interpretive algorithms identified a window of fertility that was nearly identical to that identified by the Creighton Model FertilityCare System.<sup>39</sup> A computerized version of this device, the OvaCue (Zetek Inc., Aurora, CO), automatically records and interprets readings and is commercially available. However, the invasive nature of the vaginal probe may limit the use of this device.

The changes in salivary electrolyte concentrations may also change ferning patterns that can be observed in dried saliva. Theoretically, increased salivary ferning should indicate times of estrogen dominance and greater fertility. A variety of devices to observe the ferning patterns of dried saliva have been developed and marketed to identify days when intercourse can result in pregnancy. However, a small study of one such device found that although the “peak” salivary ferning correlated with the LH surge, the beginning and end of the fertile period could not be identified.<sup>40</sup> We could identify no other scientific studies of these devices.

Other devices are being developed to quantitatively assess changes in cervical mucus and associated properties.<sup>41</sup> However, none of these devices is yet commercially available.

### **CLINICAL RECOMMENDATION FOR COUPLES WANTING TO CONCEIVE**

Which of these methods should physicians recommend to couples trying to conceive with minimum time to pregnancy, or couples who would like to know the days when intercourse is most likely to result in pregnancy? There are currently no comparative studies to directly answer this question. However, based on the data that we have reviewed, we suggest that the most appropriate methods to identify the entire fertile window prospectively for the purpose of achieving pregnancy would be either fertility charting of vaginal discharge (specifically the Creighton Model Fertility*Care* System or the Billings Ovulation Method), or the ClearPlan Easy Fertility Monitor. Efficacy of the two approaches is likely to be comparable for most women. Some women may prefer the ClearPlan Easy Fertility Monitor because it is a “high-tech” device that takes little time to learn to use. Other women may prefer the fertility charting because it is low cost, puts them in tune with their body, and does not require devices. The ClearPlan Easy Fertility Monitor is not suitable for women with unusually long or short cycles (less than 21 days or more than 42 days). Fertility charting of vaginal discharge should be helpful to these women if they are ovulatory.

For couples who have some difficulty conceiving in a timely manner, or for women who have a history of irregular or infrequent cycles, the logical first step of evaluation is the ascertainment of ovulation. This can be accomplished with fertility charting of vaginal discharge or by urinary hormonal assessment. Thus, the prospective methods are able to accomplish two important steps simultaneously: the assessment of ovulation and the proper timing of intercourse for ovulation.

Alternatively, it is possible to use urine LH alone (for women with reasonably regular cycles) or basal body temperature alone to provide evidence for the occurrence of ovulation, and together with charting of intercourse on a calendar, to assess retrospectively whether a couple had appropriately timed intercourse during the fertile period. Urine LH or basal body temperature do not prospectively identify the full fertile period. Properly timed serum progesterone assay, endometrial biopsy, or ovarian ultrasound may also be used to confirm the occurrence of ovulation, but these approaches are more invasive and costly and should be reserved for cases where uncertainty remains despite previous approaches.

A study of physicians in Missouri found that for couples having difficulty conceiving, physicians were most likely to recommend the initial steps of basal body temperature or calendar calculations.<sup>42</sup> This suggests that physicians in the United States may currently be recommending methods that are less than optimal for timing intercourse to achieve pregnancy. (At the time this study was conducted, the ClearPlan Easy Fertility Monitor was not yet available in the United States, but both the Creighton Model System and the Billings Ovulation Method were widely available, as well as other sources of information and instruction for fertility charting of vaginal discharge.)

### **Implications of Timed Intercourse for Older Women Seeking Pregnancy**

One practical application of timed intercourse is for women without any known infertility factors except age-related diminished ovarian reserve. In this situation, aside from egg donation, advanced reproductive technologies such as superovulation and in vitro fertilization have limited utility.<sup>43</sup> Although prospective comparisons are lacking, advanced reproductive technologies appear to offer little advantage over well-timed intercourse alone when diminished ovarian reserve is documented, especially given their high cost. (Generally the dominant follicle is expected to represent the healthiest ovum of the small cohort of ova that may have been retrieved with in vitro fertilization.) Therefore, optimizing the timing of intercourse may have a nearly equal (albeit low) chance of success as an in vitro fertilization attempt in this situation.

### **Implications of Timed Intercourse for Infertility at Any Age**

A major advantage of optimizing the timing of intercourse may be the ability to condense the time required before making the diagnosis of infertility, such that appropriate further evaluation can be pursued in a timely manner when necessary. In a study of 100 couples who conceived without fertility awareness, half had done so by 3 months, 75% by 6 months, and over 90% by 12 months.<sup>44</sup> As mentioned earlier, a similar study with the Creighton Model Fertility*Care* System found that 76% conceived in the first month, and all by the seventh month.<sup>35</sup> It has been suggested that with timed intercourse, a diagnosis of infertility can be established in 6 months.<sup>45</sup>

Even many women with diagnosed infertility conceive spontaneously with random intercourse. In a classic cohort study, 35% of untreated infertile couples (average length of infertility at entry 3.1 years) conceived in follow-up up to 7 years (with about 75% of the pregnan-

cies occurring in the first year).<sup>46</sup> It is possible that these couples could conceive sooner with timed intercourse. Further studies are needed regarding the application of timed intercourse for infertility.

### Who Should Pursue Further Fertility Evaluation and Intervention?

How long should a couple use timed intercourse unsuccessfully before pursuing additional medical evaluation and intervention? This will vary according to associated factors. A very important factor is the age of the woman. Currently, the accepted approach is to allow younger couples (women less than 35 years old) with no historical risks for infertility up to a year before recommending an initial evaluation for infertility that may include a hysterosalpingogram, documentation of regular ovulation, and a semen analysis.<sup>47</sup> We believe that future research may establish that this interval could be shortened with documentation of appropriate timed intercourse, perhaps to 6 months, as has been suggested by others.<sup>45</sup> Older couples, or those with medical histories suspicious for causes of infertility (other than mistimed intercourse), should be offered evaluation sooner, proportional to the degree of suspicion that the provider has for other infertility factors. Couples diagnosed appropriately with infertility will have significant factors other than the poor timing of intercourse.

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