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Fertility Care Services

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5. FERTILITY CARE SERVICES

The Catholic Church calls married couples to responsible parenthood; this includes both openness to new human life and the avoidance of pregnancy when serious reasons present themselves. Natural methods of family planning respect the dignity of the person and the integrity of the sexual act. They treat fertility as a natural process rather than a disease. Natural family planning (NFP) works with a woman's menstrual cycle; it uses awareness of fertile and infertile times to achieve or avoid pregnancy and allows married couples, through their awareness, to respect and maintain both the unitive and the procreative aspects of the sexual act. In this chapter, Dr. Fehring points out that the benefits of using NFP are "a better understanding of fertility, increased communication, self-mastery of sexual desires, greater generosity toward new human life, and openness to God's will." He also explores the history of fertility awareness methods, their scientific basis, and their efficacy. He discusses some medical side benefits of tracking fertility: it can reveal abnormalities and is an aid in the assessment and treatment of infertility. Daily discussion of fertility enhances communication between spouses. Periods of abstinence, while difficult at times, also provide opportunities for the couple to develop nonsexual expressions of intimacy, thereby enhancing mutual respect and married life. The teaching and use of NFP is an effective way of promoting the culture of life.—Editors.



For legitimate reasons of responsible parenthood, married couples may limit the number of their children by natural means. The Church cannot approve contraceptive interventions that "either in anticipation of the marital act, or in its accomplishment or in the development of its natural consequences, have the purpose, whether as an end or a means, to render procreation impossible." Such interventions violate "the inseparable connection, willed by God . . . between the two meanings of the conjugal act: the unitive and procreative meaning." (pt 4, intro.)

Catholic health institutions may not promote or condone contraceptive practices

but should provide, for married couples and the medical staff who counsel them, instruction both about the Church's teaching on responsible parenthood and in methods of natural family planning. (dir. 54)

USCCB, *Ethical and Religious Directives for Catholic Health Care Services*

Introduction

The *Ethical and Religious Directives for Catholic Health Care Services* of the United States Conference of Catholic Bishops indicate that Catholic hospitals should not offer contraception services for family planning purposes. Furthermore, the directives state that the medical staff should both provide natural family planning services and explain the Church's teaching on these matters¹—two important responsibilities. Therefore, it behooves Catholic physicians and other Catholic health professionals to be knowledgeable about these methods, to be able to offer them when requested, to promote them as the only moral way to plan families, and to be ready to explain (and defend) the Church's teaching on the use of contraception and NFP.

Most Catholic couples do not use NFP as a means of avoiding pregnancy or for facilitating the transmission of new life,² and most Catholic physicians do not provide or know how to provide NFP services.³ There are many reasons for this, but the most common is that health-care providers and potential users have tended to find NFP methods ineffective, hard to use, and difficult to provide or teach.⁴ Furthermore, difficult medical situations often arise in which the physician might be reluctant to prescribe, and the patient would be reluctant to depend on, NFP methods. Some common examples include a medical condition in which pregnancy would be detrimental or even life-threatening, or a case that involves a patient who takes a medication that would jeopardize either her life or that of her unborn baby should she become pregnant.

However, from a health perspective, NFP should be viewed as good health care, rather than as something forced upon Catholic health-care providers. Human fertility is a natural process, not a disease. NFP is a healthy and holy means of family planning that respects the human person and maintains the integrity of the sexual act and its procreative nature. It does not block, suppress with drugs, or destroy with surgery the reproductive system. It is a means by which women's health and the health of the

1. See United States Conference of Catholic Bishops (USCCB), *Ethical and Religious Directives for Catholic Health Care Services*, 5th ed. (Washington, D.C.: USCCB, 2009), dir. 52.

2. See J. Ohlendorf and R. Fehring, "The Influence of Religiosity on Contraceptive Use among US Catholic Women," *Linacre Quarterly* 74 (2007): 135–44.

3. See R. J. Fehring, "Physician and Nurse's Knowledge and Use of Natural Family Planning," *Linacre Quarterly* 63 (1995): 22–28.

4. See J. B. Stanford, P. B. Thurman, and J. C. Lemaire, "Physicians' Knowledge and Practices Regarding Natural Family Planning," *Obstetrics and Gynecology* 94 (1999): 672–78; also R. Fehring, L. Hanson, and J. Stanford, "Nurse-Midwives' Knowledge and Promotion of Lactational Amenorrhea and Other Natural Family Planning Methods for Child Spacing," *Journal of Nurse-Midwifery and Women's Health* 46 (2001): 68–73.

marital relationship can be enhanced. Physicians and other health-care professionals who provide modern NFP services should not be apologetic or feel that they are providing a substandard form of health care.

Natural family planning is simply a method of monitoring and understanding the fertile and infertile times of a woman's menstrual cycle, and using that knowledge to either achieve or avoid pregnancy. If a couple wishes to become pregnant, they have intercourse during the fertile time of the menstrual cycle; if they wish to avoid pregnancy, they avoid intercourse during the fertile time.

NFP is also referred to as "fertility awareness" or "fertility appreciation"; the latter term is sometimes preferred by those who also teach the use of barrier contraception (condoms, spermicides, and/or diaphragms) during the fertile phase of the menstrual cycle. Strictly speaking, however, any use of contraceptive methods such as condoms during the fertile time of the menstrual cycle, or the use of withdrawal, is not natural family planning.

From a philosophical and religious perspective, NFP differs from contraception in that it does nothing against conception or the nature of the marital act. NFP allows intercourse to remain integrated and whole, and to maintain its dual meaning as both a love-producing (unitive) and a potentially life-giving (procreative) act, as the Creator intended it to be. "What God has put together, let no man separate" (Mt 19:6; Mk 10:9).⁵

Philosophy of Natural Family Planning

Sexuality is an integral and good part of human life and marriage. When used in an ordered, or proper, way, sexuality is life-giving and serves to integrate and unify human relationships. When used improperly, or in a disordered way, sexuality retards human growth, destroys relationships, and places individuals at high risk for disease and even death. For an unmarried person, sexuality is ordered when expressed in a modest and chaste (non-genital) way. Sexuality is also ordered when expressed chastely and physically between a man and woman who are married to each other, and when it is an expression of love that is open to the possibility of new human life. An act of intercourse between a husband and wife is a true expression of love when there is a total giving of self, which includes giving and receiving the gift of fertility.⁶ Any act of suppressing, blocking, or destroying the gift of fertility, or destroying new human life once begun, is an act against love and life.

Although couples are called to be generous to new life, there are times during married life when spacing or limiting the number of children is prudent and responsible.⁷ A married couple should discern this responsibility in a prayerful and selfless

5. See also Pope John Paul II, *Familiaris Consortio, The Role of the Christian Family in the Modern World* [Apostolic Exhortation, November 22, 1987] (Boston: Daughters of St. Paul, 1981), no. 32.

6. See John Paul II, *Familiaris Consortio*, no. 32.

7. See Pope Paul VI, *Humanae Vitae, Of Human Life*, Encyclical Letter, July 25, 1968 (Boston: Pauline Books, 1968); also Pope Pius XII, "Address to Italian Catholic Union of Midwives," October 29, 1951, in

way, within the context of the couple's duties to God, themselves, their family, and society. Serious reasons for spacing or limiting children could include issues related to physical or psychological health, economic or financial constraints, or social considerations.⁸

When a married couple has discerned a need to space or limit children, they must still remain true to love, to the integrity of the sexual act, and to the gift of fertility. Natural family planning is a means by which a couple learns how to monitor the woman's monthly cycle and to interpret the natural signs that tell them when the woman is fertile and when she is not. If the couple has serious reasons to avoid pregnancy, they then periodically abstain from intercourse and genital contact during the fertile times of the cycle. During these times, couples are challenged to express their intimacy in non-genital ways. These may include intellectual activities, like sharing a good book, or talking and listening to each other's needs, desires, and fears. The couple may build spiritual closeness through prayer, or share physical closeness by walking together or just holding each other. Although this may be difficult and at times seem impossible, God does not ask the impossible, and he will be with the couple in a special way through their difficult times.

The practice of NFP and periodic abstinence, far from harming married love, actually confers upon married life a higher human value.⁹ Couples who practice chastity within marriage and use NFP reap such benefits as a better understanding of fertility, increased communication, self-mastery of sexual desires, greater generosity toward new human life, and openness to God's will. These effects were all predicted by Pope Paul VI and have been validated in quantitative and qualitative studies (see "Marital Dynamics of Using NFP" below).

Scientific and Physiological Base

A 1995 study published in the *New England Journal of Medicine* confirmed that there is only a six-day window of fertility in the menstrual cycle: the day of ovulation and the five preceding days.¹⁰ Subsequent research established that the most fertile days of this window are the two days before ovulation, and that the fertile phase varies from cycle to cycle. Other studies have indicated that the most common length of the fertile phase is only three days; that the fertile window occurs most frequently between days 8 and 20 of the menstrual cycle; and that the probability of pregnancy with an act of intercourse during the fertile window decreases as a woman ages.¹¹

Natural Family Planning: Nature's Way—God's Way, ed. Anthony Zimmerman (Milwaukee, Wis.: DeRance, 1980), 229–30.

8. See Paul VI, *Humanae Vitae*, no. 21.

9. See *ibid.*

10. See A. J. Wilcox, C. R. Weinberg, and D. D. Baird, "Timing of Sexual Intercourse in Relation to Ovulation: Effects on the Probability of Conception, Survival of the Pregnancy, and Sex of the Baby," *New England Journal of Medicine* 333 (1995): 1517–21.

11. See D. B. Dunson et al., "Day-Specific Probabilities of Clinical Pregnancy Based on Two Studies with Imperfect Measures of Ovulation," *Human Reproduction* 14 (1999): 1835–39; A. J. Wilcox et al., "The Timing

The six-day length of the fertile phase in the menstrual cycle makes sense, since the human egg, once released from the follicle at ovulation, lives only 12 to 24 hours and most likely is fertilizable only in the first 12 hours. We also know that the lifespan of sperm is between three and five days, provided they are in a receptive environment with the proper nutrients and pH level.¹² The vagina is essentially a hostile environment for sperm, as it is too acidic for sperm to survive more than a few minutes.¹³ However, during the three to five days leading up to ovulation, women of reproductive age produce mucus from their cervix that provides the appropriate pH and nourishment for sperm and is essential for sperm transport and capacitation.

A number of physiological factors combine to create the fertile window and allow fertilization to take place. At the beginning of each menstrual cycle, follicle-stimulating hormone (FSH) is released from the anterior portion of the pituitary gland; this hormone stimulates the ovaries to develop a group of immature, or antral, follicles, each containing an undeveloped human egg within.¹⁴ As the follicles develop and enlarge, they release the hormone estrogen. However, only a few follicles will mature and grow to the point of ovulation. Usually, only one follicle-egg complex, termed the dominant follicle, grows to complete maturity at a size of 18 to 24 mm, releasing higher levels of estrogen and proceeding to ovulation. The higher estrogen levels affect the woman's body to facilitate the possible fertilization of the egg, or oocyte.

The opening of the woman's cervix (the os of the uterus) is essentially tight and closed except during the fertile window. Estrogen from the developing follicles softens the cells of the cervix, opening the os wider and elevating the cervix's position within the woman's body. At the time of ovulation and the peak of estrogen production, the os is soft and open. The columnar cells lining the passage of the canal from the os into the body of the uterus (the endocervical canal) are also stimulated by estrogen to produce mucus. The mucus at first is minimal, cloudy, and rather thick, but as estrogen levels increase, the mucus thins and becomes more watery and profuse. At the peak of fertility, the mucus is abundant, liquid, and slippery, made up primarily of water (more than 90 percent) with glycogen bonds that hold the water in a gel-like state. The mucus at this stage of fertility also contains carbohydrates and

of the 'Fertile Window' in the Menstrual Cycle: Day Specific Estimates from a Prospective Study," *British Medical Journal* 321 (2000): 1259–62; D. B. Dunson, B. Columbo, and D. D. Baird, "Changes with Age in the Level and Duration of Fertility in the Menstrual Cycle," *Human Reproduction* 17 (2002): 1399–1403; R. Fehring and M. Schneider, "Variability of the Fertile Phase of the Menstrual Cycle," *Fertility and Sterility* 90 (2008): 1232–35.

12. See L. Speroff and M. Fritz, "Regulation of the Menstrual Cycle," ch. 6, and "Sperm and Egg Transport, Fertilization, and Implantation," ch. 7 in *Clinical Gynecologic Endocrinology and Infertility*, 7th ed. (Philadelphia: Lippincott Williams and Wilkins, 2005).

13. See K. S. Moghissi, "Cervical Mucus Changes and Ovulation Prediction and Detection," *Journal of Reproductive Medicine* 31 Supp. (1986): 748–53; E. Odeblad, "Cervical Mucus and Their Functions," *Journal of the Irish Colleges of Physicians and Surgeons* 26 (1997): 27–32; S. Palter and D. Olive, "Reproductive Physiology," in *Novak's Gynecology*, ed. S. J. Berek (Philadelphia: Lippincott Williams and Wilkins, 2002), 149–74.

14. See E. Clubb and J. Knight, *Fertility* (Exeter, U.K.: David and Charles, 1999), 28–30; L. J. Heffner, and D. J. Schust, "The Menstrual Cycle," in *The Reproduction System at a Glance*, 4th ed. (Malden, Mass.: Wiley Blackwell, 2014), 36–37.

salts that neutralize the vagina's acidic environment and nourish sperm.¹⁵ The cervical mucus at this time literally pours from the soft and open os. The estrogen increase also stimulates another reproductive hormone, luteinizing hormone, or LH, which surges to prepare the follicle for release of the mature egg.

After ovulation, LH converts, or luteinizes, the cells of the follicle, at which time the follicle is called the corpus luteum. The corpus luteum produces large amounts of the hormone progesterone, which readies the uterine lining for possible implantation of a new embryonic human life. Progesterone also raises the woman's body temperature by about 0.5 degree Fahrenheit and serves to dry up the cervical mucus and tighten and close the cervical os. The dried mucus produces a mucus plug that prevents sperm or bacteria from entering the uterus. If an egg released at the time of ovulation is not fertilized by the man's sperm, the corpus luteum is eventually reabsorbed and the levels of progesterone and estrogen drop off. As progesterone levels drop, the lining of the uterus is no longer hormonally supported and is sloughed off in menses. The onset of the menstrual period marks a new menstrual cycle, even though the FSH levels are already increasing and follicular development is taking place. Menses occurs about nine to seventeen days after the day of ovulation.

Natural Signs of Human Fertility

NFP is essentially the use of naturally occurring signs of fertility to estimate the beginning, peak, and end of the fertile window, and the tracking of the fertile window's variability from menstrual cycle to menstrual cycle. For NFP to be effective and useful, it must also track fertility during the various stages of the woman's reproductive life and during special reproductive circumstances, such as breastfeeding and perimenopause. The traditional signs of fertility include changes in basal body temperature, in the characteristics of cervical mucus, in the cervix, and in female reproductive hormones secreted in the urine.¹⁶ Users and providers of NFP also use calendar-based methods to estimate the fertile phase of the menstrual cycle, alone or in combination with other markers of fertility.

Basal body temperature (BBT) measures the post-ovulatory increase in the woman's body temperature (between 0.2 and 1 degree Fahrenheit) that is a result of increased progesterone production.¹⁷ This temperature rise, or shift, becomes a natural physiological marker that ovulation has recently taken place. A woman determines

15. See M. Menarguez, L. M. Pastor, and E. Odeblad, "Morphological Characterization of Different Human Cervical Mucus Types Using Light and Scanning Electron Microscopy," *Human Reproduction* 18 (2004): 1782–89; Moghissi, "Cervical Mucus Changes and Ovulation Prediction and Detection"; Odeblad, "Cervical Mucus and Their Functions"; R. Fehring, "Accuracy of the Peak Day of Cervical Mucus as a Biological Marker of Fertility," *Contraception* 66 (2002): 231–35.

16. See Clubb and Knight, *Fertility*, 33.

17. See M. L. Barron and R. J. Fehring, "Basal Body Temperature Assessment: Is It Useful to Couples Seeking Pregnancy?" *MCN: American Journal of Maternal Child Nursing* 30 (2005): 290–96; J. J. McCarthy, and H. E. Rockette, "A Comparison of Methods to Interpret the Basal Body Temperature Graph," *Fertility and Sterility* 39 (1983): 640–46.

her BBT shift by taking her temperature every morning before rising. When she observes a sustained shift in temperature, she can assume that she has ovulated. Various rules determine a temperature shift for use in NFP; the most common is the rule of 3 over 6 (i.e., six low temperatures followed by at least a 0.2 of a degree rise, and then the next three temperatures remain at or above the 0.2 degree rise). Another approach is to average the temperatures from the previous menstrual cycle and use that average as the coverline. When there are three temperatures above that coverline, then the woman is in the infertile phase of her menstrual cycle.

Cervical mucus changes also serve as a marker for estimating the beginning, peak, and end of the fertile phase. These changes are a result of estrogen stimulation of the cells lining the endocervical canal.¹⁸ Rising estrogen levels produce a mucus that is at first cloudy and thick, but becomes watery, slippery, and clear at the ovulatory stage, then changes back to cloudy and thick, and finally to dry. If a woman pays attention to her cervical mucus sensations at the vulva throughout the day and finger tests the mucus to observe the characteristics, she should have a fairly good marker for tracking her fertile window from cycle to cycle.

The cervix also changes during the fertile phase of the menstrual cycle. At first the cervix is hard, like the cartilage of the nose, and situated low in the vagina; but as estrogen stimulates the cervix, it becomes soft, like the lips. At the same time, the os of the cervix opens, mucus pours from the opening, and the position of the cervix rises as felt internally in the vagina.¹⁹ Once ovulation takes place, the cervix again becomes hard and closed, and its position shifts lower in the vagina. A woman can feel internally for the position and characteristics of the cervix and make daily judgments on her fertile or infertile phase. However, there has been scant research on the accuracy of the cervical sign in estimating the fertile phase. There is also the concern that through self-examination the woman can introduce germs into the vagina and inadvertently damage the cervix.

The final markers used to estimate the fertile window are metabolites of reproductive hormones that can be detected in the urine.²⁰ Antibody assay technology has enabled researchers to develop simple test strips that can be dipped into urine, or held under the urine stream while voiding, to detect reproductive hormones. The most common test strip, of course, is the pregnancy test developed to detect levels of human chorionic gonadotropin (hCG), which is produced after an ovum is fertilized. Detectable levels can be found about fourteen days post-ovulation, at the first missed menstrual period. Another popular test is the ovulation detection kit and test strip used to help predict ovulation by detecting the LH surge in the urine, in order to

18. See Moghissi, "Cervical Mucus Changes and Ovulation Prediction and Detection," 748–53.

19. See E. Keefe, "Self-Examination of the Cervix as a Guide in Fertility Control," *International Review of Natural Family Planning* 10 (1986): 322–38.

20. See F. Batzer, "Test Kits for Ovulation and Pregnancy," *Technology 1987: Contemporary OB/GYN* 28 (1986): 7–16; G. Corson, D. Ghaz, and E. Kemmann, "Home Urinary Luteinizing Hormone Immunoassay: Clinical Applications," *Fertility and Sterility* 53 (1990): 591–601; P. G. Crosignani et al., "Optimal Use of Infertility Diagnostic Tests and Treatments," *Human Reproduction* 15 (2000): 723–32.

determine the best time for intercourse to achieve pregnancy.²¹ These test strips can be used as markers for NFP by estimating the day of ovulation.

Recently, more sophisticated, hand-held electronic hormonal fertility monitors (the Persona and Clearblue Easy Fertility monitors) have been developed.²² Both monitors detect metabolites of estrogen and LH on test strips which are inserted into the monitor for an automatic reading, similar to the glucose test strips and electronic readers used by diabetics. The Persona monitor, designed to help women avoid pregnancy, is sold in Europe but not in the United States; the Clearblue monitor was designed to help couples achieve pregnancy, even though it has a higher threshold of estrogen and thus a shorter estimated fertile phase than the Persona. The Clearblue's high fertility reading is triggered when the monitor detects a twofold increase of estrogen from baseline levels; its peak reading is triggered when the LH threshold is detected. This monitor thus provides a marker for the beginning, peak, and end of the fertile window.

Accuracy of Natural Markers of Fertility

All natural markers used to estimate fertility for NFP methods are imprecise, and each has its strengths and benefits. Researchers have investigated the accuracy of these markers in comparison with the "gold standard" in ovulation detection: serial ultrasound of the dominant ovarian follicle, with the follicle's visual collapse indicating the day of ovulation. Prior to the use of serial ultrasound, the urinary or serum surge in LH or a ratio of estrogen and progesterone was used as a marker for ovulation. These studies indicated a strong correlation between the peak in cervical mucus and the estimated day of ovulation; however, 98 percent of the time, the mucus peak varied from the day of ovulation plus or minus three days.²³ Thus, the peak in cervical mucus provides a seven-day estimate of the actual day of ovulation.

Since ultrasound technology came into use, serial ultrasound of the dominant follicle's growth and collapse have been compared in studies with the BBT shift, the peak in cervical mucus, and the LH surge as detected in the urine.²⁴ The studies show that the LH surge is the most precise indirect marker of ovulation, followed by the

21. See M. Seibel, "Luteinizing Hormone and Ovulation Timing," *Journal of Reproductive Medicine* 31 Supp. (1986): 754–59; Consumer Reports, "The Fertility Window," *Consumer Reports* 68 (2003): 48–50; J. B. Stanford, G. L. White, and H. Hataska, "Timing Intercourse to Achieve Pregnancy: Current Evidence," *Obstetrics and Gynecology* 100 (2002):1333–41.

22. See K. May, "Home Monitoring with the ClearPlan Easy Fertility Monitor for Fertility Awareness," *Journal of International Medical Research* 29 S1 (2002): 14A–20A; J. Bonnar et al., "Personal Hormone Monitoring for Contraception," *British Journal of Family Planning* 24 (1999): 128–34.

23. See Fehring, "Accuracy of the Peak Day of Cervical Mucus as a Biological Marker of Fertility," 231–35.

24. See M. Guida et al., "Efficacy of Methods for Determining Ovulation in a Natural Family Planning Program," *Fertility and Sterility* 72 (1999): 900–904; K. Tanabe et al., "Prediction of the Potentially Fertile Period by Urinary Hormone Measurements Using a New Home-Use Monitor: Comparison with Laboratory Hormone Analyses," *Human Reproduction* 16 (2001): 1619–24; R. Ecochard et al., "Chronological Aspects of Ultrasonic, Hormonal, and Other Indirect Indices of Ovulation," *British Journal of Obstetrics and Gynecology* 109 (2001): 822–29.

cervical mucus peak and the BBT shift. Another study showed that ovulation, as detected by ultrasound, occurred 97 percent of the time on the two days of peak readings on the electronic hormonal monitor and never occurred prior to the peak reading.²⁵ Thus far no studies have validated self-detected changes in the cervix with accurate markers of ovulation. NFP developers are still debating how best to detect, observe, and rate self-detected cervical changes.

Methods of NFP

Over the past eighty years, a number of NFP methods have been developed; these can be generally classified as calendar-based methods, single-indicator methods, and combination methods. There are also such low-tech methods as the fixed-day calendar-based system, and high-tech methods that use electronic hormonal monitoring of fertility and monoclonal assays.

The first methods of NFP were developed by two physician scientists, Hermann Knaus from Germany and Kyusako Ogino from Japan, in the mid to late 1920s.²⁶ The calendar-based systems they devised, sometimes called the Ogino-Knaus methods, involve taking the shortest menstrual cycle from the last twelve and subtracting twenty days (or nineteen to be less rigorous) from that length to determine the beginning of the infertile time. Similarly, subtracting ten days from the longest menstrual cycle of the previous twelve indicates the day on which the fertile time ends. For example, if the length of the shortest menstrual cycle over the previous twelve cycles was twenty-six days, and the longest was thirty days, the first day of fertility would be day 6 of the menstrual cycle and the last day of fertility would be day 20; thus, the estimated fertile phase is from days 6 to 20.

In the United States, the calendar-based NFP method was made popular by a young obstetrician-gynecologist from Loyola University School of Medicine, Dr. Leo Latz.²⁷ He traveled to Europe to study under Knaus and returned to the United States to write a book titled *The Rhythm of Sterility and Fertility in Women*, published in 1932. Over the next twenty years, his foundation sold more than six hundred thousand copies of the book, in which he declared that his simple method could be taught by physicians, professional nurses, or social workers in a twelve-minute office session. Latz's book gave us the term "rhythm method" for calendar-based methods, a term still commonly (and erroneously) used for NFP by health professionals and the lay public.

The rhythm method was one of the most popular methods of family planning among U.S. women, and Catholic women in particular, from the 1930s through the

25. See H. M. Behre et al., "Prediction of Ovulation by Urinary Hormone Measurements with the Home Use of the ClearPlan Fertility Monitor: Comparison with Transvaginal Ultrasound Scans and Serum Hormone Measurements," *Human Reproduction* 15 (2000): 2478–82.

26. See H. Knaus, *Periodic Fertility and Sterility in Woman: A Natural Method of Birth Control* (Vienna: Wilhelm Maudrich, Publisher, 1934); K. Ogino, *Conception Period of Women* (Harrisburg, Penn.: Medical Arts Publishing, 1934).

27. See L. Latz, *The Rhythm of Sterility and Fertility in Women* (Chicago: Latz Foundation, 1932).

1950s. Upward of 30 percent of women of reproductive age, and 55 percent of Catholic women, used calendar-based methods well into the 1950s.²⁸ With the advent of the hormonal birth control pill, that statistic dramatically changed.

The ease of use of birth control pills, coupled with anecdotal evidence of couples unintentionally becoming pregnant with the rhythm method, led to a decline in use of calendar-based methods. Interestingly, more women of reproductive age in the United States currently use “rhythm” than the so-called modern methods of NFP, which rely on cervical mucus and basal body temperature.²⁹ Furthermore, efforts have been renewed to investigate calendar-based methods using a careful scientific approach. Researchers at Georgetown University’s Institute for Reproductive Health have developed a fixed-day calendar-based method of NFP. The days of fertility for this method are days 8 to 19 of the menstrual cycle for women who generally have menstrual cycle lengths between twenty-six and thirty-two days.³⁰ A bead system is used to help couples track fertility. The Institute for Reproductive Health researchers have found this method to be comparable in efficacy to barrier methods of contraception.

In the 1930s, a parish priest in Germany who was teaching couples in his parish the Knaus rhythm method found that they were getting pregnant with its use, even though they were attempting to avoid pregnancy.³¹ At the advice of his physician brother, he added daily morning body temperature readings to detect the BBT shift, thus initiating the use of temperature readings for birth control. Since then, many physician scientists have developed and tested BBT methods, notably British physician John Marshall, who conducted the first large prospective-efficacy study of the BBT method of NFP.³² The BBT shift is usually used with calendar-based calculations to determine the beginning of the fertile phase, but it is also used alone as a post-ovulatory-only method of NFP.

Since the mid-1800s, physicians have been aware of a vaginal mucus discharge that has some correlation with fertility. However, it was not until the early 1950s that a number of physician researchers combined calendar-based formulas, BBT, and the tracking of changes in the cervix and cervical mucus as a method of NFP.³³ This method was called the sympto-thermal method and is considered one of the “modern methods” of NFP. Women who use this method can also track secondary signs of fertility, such as ovulatory pain (mittelschmerz) and breast tenderness. A modern

28. See C. F. Westoff and N. R. Ryder, “Conception Control among American Catholics,” in *Catholics/U.S.A.: Perspectives on Social Change*, ed. W. T. Liu and N. J. Pallone (New York: John Wiley and Sons, 1970), 257–68.

29. See W. D. Mosher and J. Jones, “Use of Contraception in the United States: 1982–2008,” *Vital and Health Statistics* 23.29 (2010): 1–77, see especially table 1, for example.

30. See M. Arevalo, V. Jennings, and I. Sinai, “Efficacy of a New Method of Family Planning: The Standard Days Method,” *Contraception* 65 (2002): 333–38.

31. See R. Vollman, “Brief History of Natural Family Planning,” in *Natural Family Planning: Introduction to the Methods*, ed. Clara R. Ross (Washington, D.C.: Human Life Foundation, 1977), 1–5.

32. See J. Marshall, “A Field Trial of the BBT Method of Regulating Births,” *Lancet* 292 (1968): 8–10.

33. See Keefe, “Self-Examination of the Cervix as a Guide in Fertility Control”; J. Roetzer, “Further Evaluation of the Sympto-thermal Method,” *International Review of Natural Family Planning* 1 (1977): 139–50.

form of this combination method, developed by a European NFP group, is called the European double-check method, referring to a double check for the beginning and end of the fertile phase.³⁴ Research has established efficacy rates comparable to the birth control pill among German women who use this method.

In the mid-1960s, several physicians working with various NFP methods deduced that changes in cervical mucus could be used alone as a natural marker for the beginning, peak, and end of the estimated fertile phase. The best-known of these ovulation methods, developed by Drs. John and Evelyn Billings from Australia, is known as the Billings Ovulation Method.³⁵ A large multicountry efficacy study of the generic ovulation methods was carried out by the World Health Organization in the late 1970s (the results will be discussed below).³⁶ A standardized variation of the ovulation methods, called the Creighton Model, was developed by Dr. Thomas Hilgers, along with his wife and two professional nurses.³⁷ The Creighton Model uses a standardized method of grading and charting cervical mucus observations.

Over the years, many devices have been tested and developed to help women observe and track natural indicators of fertility. However, it was not until the 1990s that micro-electronics, modern biochemistry, and immunoassay techniques allowed the consumer to measure hormones as they are excreted in the urine. In 1990, Carl Djerassi, one of the developers of the first hormonal contraceptive pill, predicted what he called “Jet-Age NFP,” in which the woman herself would be able to measure her reproductive hormones with simple hand-held electronic devices.³⁸ Urine-based pregnancy tests and ovulation test kits have been around since the 1980s, but the late 1990s saw the introduction of the Persona and Clearblue monitors we have already discussed. The Clearblue device has been used as an aid for monitoring fertility and for either achieving or avoiding pregnancy in a model of NFP developed at Marquette University.³⁹ It has been used effectively as a second marker, along with cervical mucus monitoring, for determining the beginning and end of the fertile window, or as the primary marker along with a simple fertility algorithm.

34. See P. Frank-Herrmann et al., “Determination of the Fertile Window: Reproductive Competence of Women—European Cycle Databases,” *Gynecology and Endocrinology* 20 (2005): 305–12.

35. See E. L. Billings, *The Billings Ovulation Method* (Melbourne, Australia: Ovulation Method Research and Reference Centre of Australia, 1995); E. L. Billings and J. J. Billings, *Teaching the Billings Ovulation Method* (Melbourne, Australia: Ovulation Method Research and Reference Centre of Australia, 1997); E. L. Billings, J. J. Billings, and M. Caterinich, *Billings Atlas of the Ovulation Method* (Melbourne, Australia: Ovulation Method Research and Reference Centre of Australia, 1989).

36. See World Health Organization, “A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. II. The Effectiveness Phase,” *Fertility and Sterility* 36 (1981): 591–98.

37. See T. W. Hilgers, *The Medical Applications of Natural Family Planning* (Omaha, Neb.: Pope Paul VI Institute Press, 1991); T. W. Hilgers, *The Scientific Foundations of the Ovulation Method* (Omaha, Neb.: Pope Paul VI Institute Press, 1995); T. W. Hilgers, *The Creighton Model NaProEducation System* (Omaha, Neb.: Pope Paul VI Institute Press, 1996).

38. See C. Djerassi, “Fertility Awareness: Jet-Age Rhythm Method?” *Science* 248 (1990): 1061–62.

39. See R. Fehring, “New Low and High Tech Calendar Methods of Family Planning,” *Journal of Nurse-Midwifery and Women’s Health* 50 (2005): 31–37.

Efficacy of NFP Methods

The understanding of efficacy and effectiveness of NFP methods has evolved during the last seventy years as family planning methods have evolved. When Leo Latz first reported on the efficacy of the rhythm method, he reported 15,924 cases of intercourse in the sterile time with no pregnancies.⁴⁰ Modern efficacy studies of family planning methods are the result of controlled prospective studies (usually cohort) of the given method.⁴¹ Effectiveness studies are based on the unintended pregnancy rate of a population that uses a method of family planning; this rate is usually determined retrospectively through chart review or surveys. Most studies of NFP (like those of contraceptive methods) are of a prospective controlled study nature over time (usually 12 to 24 months of use) and are considered “efficacy” studies rather than “effectiveness” studies.

In the early days of determining the effectiveness of NFP methods or contraception, simple Pearl rates were calculated based on the number of unintended conceptions multiplied by 1300 and divided by the number of months of use. This provided a pregnancy rate based on 100 woman-years of use. However, Pearl pregnancy rates become inflated as people drop out of the study or become pregnant. Today, contraceptive efficacy is based on modern survival analysis statistical techniques, which take into account the varying lengths of use of a given method and are less affected by the drop-out of participants.

Generally, two statistics are used to describe the efficacy of a family planning method. These are the perfect, or “correct-use,” pregnancy rate, which includes only those unintended pregnancies which occurred during proper use of the method in question (in other words, during what was determined to be the fertile phase of each cycle in the study, these couples did not have intercourse), and the “typical use” or total pregnancy rate, which includes pregnancies resulting from both correct use and imperfect (that is, inconsistent or incorrect) use. The perfect-use unintended pregnancy rates are based only on the months or, ideally, the menstrual cycles of correct use by couples in the study. The total or typical-use unintended pregnancy rate includes both correct-use and imperfect-use unintended pregnancies and the total months of use or the total number of menstrual cycles of use in the analysis.⁴² Perfect-use efficacy rates can be obtained only in prospective clinical studies; retrospective survey studies of populations can provide only typical-use pregnancy rates.

Unintended pregnancy rates will be affected by the number of actions the couple must perform to use the method effectively. The “use and forget about it” aspect of such methods as sterilization, IUD, or implants results in very low unintended pregnancy rates. Methods that require more behaviors, such as daily use of the hormonal

40. J. Latz, and E. Reiner, “Further Studies on the Sterile and Fertile Periods in Women,” *American Journal of Obstetrics and Gynecology* 43 (1942): 74–79.

41. J. Trussell, “Contraceptive Failure in the United States,” *Contraception* 70 (2004): 89–96.

42. Ibid.; V. Lamprect and J. Trussell, “Natural Family Planning Effectiveness: Evaluating Published Reports,” *Advances in Contraception* 13 (1997): 155–65.

birth control pill, usually result in higher unintended pregnancy rates. This is why the birth control pill has a typical-use rate of approximately 8 unintended pregnancies per 100 women over twelve months of use. Since NFP methods require not only daily monitoring of fertility but also periodic abstinence, more behaviors are involved. Therefore, the unintended pregnancy rates of NFP methods tend to be higher than the birth control pill and other nonbehavioral birth control methods. For example, the imperfect use rate of the ovulation method (mucus only) is about 86 unintended pregnancies per 100 users over twelve months of use. Imperfect-use rates are not the same as total pregnancy rate,⁴³ since they are based on the menstrual cycles in which the method was not used consistently and correctly. Total pregnancy rates are based on all menstrual cycles, whether the method was used correctly or not.

NFP methods, however, have a very low correct or perfect-use unintended pregnancy rate, usually between 1 and 3 pregnancies per 100 women users over thirteen menstrual cycles or twelve months of use. One reason for this low rate is that the methods tend to overestimate the fertile window (on average) by twofold or more. The longer the estimated fertile window, the less likely there will be perfect-use pregnancies. For example, if only the first and last days of the menstrual cycle were considered infertile, the method would be 100 percent perfect but would have a high imperfect use rate, unless the couples use near-total abstinence from intercourse. When the methods are used post-ovulation, there is a very low unintended pregnancy rate, especially with more objective markers of ovulation, like the BBT shift in addition to cervical mucus observations.

Table 5-1 provides the general perfect- and typical-use unintended pregnancy rates for contraceptive and select NFP methods. These figures are adapted from an article by James Trussell from the Population Institute at Princeton University;⁴⁴ the estimated pregnancy rates Trussell presents are frequently cited in journal articles and in medical and nursing textbooks and are believed to be authoritative and accurate. In Trussell's ranking, NFP methods are considered second-rung methods in efficacy and effectiveness, since their use involves a fair number of behaviors. They are rated about the same as male condoms, lower than the pill, IUD, and sterilization, but with lower pregnancy rates than spermicides and withdrawal.

A recent evidence-based review of NFP efficacy studies concluded that NFP methods were not very effective for use in avoiding pregnancy and intimated that they are not recommended for use in modern medicine.⁴⁵ The conclusion was based on only two randomized control trials, which were conducted in the late 1970s and were methodologically flawed.⁴⁶ Randomized control trials of NFP methods are dif-

43. J. Trussell and L. Grummer-Strawn, "Contraceptive Failure of the Ovulation Method of Periodic Abstinence," *Family Planning Perspectives* 22 (1990): 65-75, doi:10.2307/2135511.

44. Trussell, "Contraceptive Failure in the United States."

45. D. A. Grimes et al., "Fertility Awareness-Based Methods for Contraception: Systematic Review of Randomized Controlled Trials," *Contraception* 72 (2005): 85-90.

46. J. E. Medina et al., "Comparative Evaluation of Two Methods of Natural Family Planning in Columbia," *American Journal of Obstetrics and Gynecology* 138 (1980): 1142-47; M. E. Wade et al., "Randomized Prospective Study of the Use-Effectiveness of Two Methods of Natural Family Planning: An Interim Report,"

Table 5-1. **Unintended Pregnancy Rates per 100 Women over 12 Months of Use, by Family Planning Method**

	<i>Perfect Use</i>	<i>Typical Use</i>
Chance	85	85
Spermicides	18	29
Withdrawal	4	27
Condoms	2	15
Standard Days Method	5	12
Ovulation Method	3	22
Symptothermal	2	7
Pill	0.3	8
IUD	0.1	0.6

Note: Contraceptive pregnancy rates are based on the article J. Trussell, "Contraceptive Failure in the United States," *Contraception* 70 (2004): 89–96; NFP pregnancy rates are based on the following articles: M. Arevalo, V. Jennings, and I. Sinai, "Efficacy of a New Method of Family Planning: the Standard Days Method," *Contraception* 65 (2002): 333–38; World Health Organization, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. II. The Effectiveness Phase," *Fertility and Sterility* 36 (1981): 591–98; P. Frank-Herrmann et al., "The Effectiveness of a Fertility Awareness Based Method to Avoid Pregnancy in Relation to a Couple's Sexual Behavior During the Fertile Time: A Prospective Longitudinal Study," *Human Reproduction* 22 (2007): 1310–19.

difficult to undertake: it would be morally wrong to randomize participants into a contraceptive group, such as a comparison group using condoms; and it is often difficult to randomize participants into NFP methods that they are not interested in using. There are, however, many good cohort studies of NFP methods. Table 5-2 lists studies that have been published in peer-reviewed journals over the past ten years, along with the large, classic, five-country study of the ovulation method conducted by the World Health Organization.⁴⁷

As can be seen in table 5-2, the unintended pregnancy rates of natural family planning methods are variable. It is hard to compare them, because of the different interpretations of unintended pregnancies, along with such methodological variations as whether they were calculated based on months of use or cycles of use, or whether they only included perfect-use cycles in the correct-use rates. Efficacy studies conducted by developers or promoters of various NFP methods have built-in bias and tend to underreport unintended pregnancies or to explain them away. Furthermore,

American Journal of Obstetrics and Gynecology 134 (1979): 628–31; M. E. Wade et al., "A Randomized Prospective Study of the Use-Effectiveness of Two Methods of Natural Family Planning," *American Journal of Obstetrics and Gynecology* 141 (1981): 368–76.

47. World Health Organization, "The Effectiveness Phase."

Table 5-2. **Classic and Recent NFP Efficacy Studies: Correct Use and Total Survival Rates per 100 Women over 12 Months of Use**

Study	Indicators	Length**	Correct	Typical
World Health Organization ^a	Mucus	(25–32)	97	78
Howard et al. ^b	Mucus	(25–32)	100	86
Arevalo et al. ^c	Fixed Calendar	(26–32)	95	88
Arevalo et al. ^d	Mucus	(13–42)	96	86
Frank-Herrmann et al. ^e	Mucus & Temp	(25–35)	99	92
Fehring et al. ^f	Mucus/E ₃ G/LH	(21–42)	98	87
Fehring et al. ^g	Mucus/Temp/LH	(21–42)	99	89

Note: Survival rate = number of women per 100 who did not have an unintended pregnancy.

** Range of length of menstrual cycles in study.

a. World Health Organization, "A Prospective Multicentre Trial of the Ovulation Method of Natural Family Planning. II. The Effectiveness Phase," *Fertility and Sterility* 36 (1981): 591–98.

b. M. P. Howard and J. B. Stanford, "Pregnancy Probabilities During Use of the Creighton Model Fertility Care System," *Archives of Family Medicine* 8 (1999): 391–402.

c. M. Arevalo, V. Jennings, and I. Sinai, "Efficacy of a New Method of Family Planning: The Standard Days Method," *Contraception* 65 (2002): 333–38.

d. M. Arevalo et al., "Efficacy of the New TwoDay Method of Family Planning," *Fertility and Sterility* 82 (2004): 885–92.

e. P. Frank-Herrmann et al., "Determination of the Fertile Window: Reproductive Competence of Women—European Cycle Databases," *Gynecology and Endocrinology* 20 (2005): 305–12.

f. R. J. Fehring et al., "Efficacy of Cervical Mucus Observations Plus Electronic Hormonal Fertility Monitoring as a Method of Natural Family Planning," *Journal of Obstetric Gynecologic and Neonatal Nursing* 36 (2007): 152–60.

g. R. J. Fehring, M. Schneider, and M. L. Barron, "Efficacy of the Marquette Method of Natural Family Planning," *American Journal of Maternal Child Nursing* 54 (2008): 165–70.

the menstrual cycles included in these studies tend to be of regular length, that is, between twenty-six and thirty-five days long. Given these caveats, there still are some very good efficacy studies of NFP methods.

Table 5-2 summarizes the results of several such studies. These studies included only women with regular menstrual cycle lengths. The second study by M. Arevalo et al. and the two studies by Richard Fehring et al. have the most liberal menstrual cycle length of thirteen to forty-two days. The total unintended pregnancy rate of the World Health Organization study is the highest, at 22 percent. The P. Frank-Herrmann et al., European double-check method has the lowest total rate, similar to that found with oral hormonal contraceptives.

The unintended pregnancy rates increase considerably when irregular-length menstrual cycles (including post-birth control pill, postpartum, and perimenopause) are included in the efficacy calculations. For example, in the Howard and Stanford study, the total unintended pregnancy rate of a cervical-mucus-only method jumps to 17 percent,⁴⁸ and a database of the same method from Marquette University indicates

48. M. P. Howard and J. B. Stanford, "Pregnancy Probabilities during Use of the Creighton Model Fertility Care System," *Archives of Family Medicine* 8 (1999): 391–402.

a cervical-mucus-only method rate of approximately 22 percent (similar to the World Health Organization study rate) when all unintended pregnancies from all reproductive categories are included.⁴⁹

In summary, NFP methods are fairly effective when used by women with menstrual cycles of fairly regular length who follow the method's rules consistently. Efficacy suffers when the methods are not used consistently and correctly, or when they are used by women with irregular menstrual cycle lengths, especially during postpartum and breastfeeding. It remains to be seen whether Clearblue Easy Fertility Monitor (CEFM)-enhanced methods of NFP are more effective than other traditional methods. The five-country World Health Organization ovulation method efficacy study has an unintended imperfect use pregnancy rate around 25 per 100 women over twelve months of use;⁵⁰ Most of these pregnancies were couples who had intercourse even though they knew they were in the fertile period. Trussell observed that, while the ovulation method can be very effective when used correctly, the method is "unforgiving"; if the couple has intercourse during the fertile phase of the menstrual cycle, they most likely will become pregnant.⁵¹

Two simplified NFP methods developed by the researchers at Georgetown's Institute for Reproductive Health were devised to integrate simple but effective NFP methods into family planning programs in developing countries.⁵² The standard days method is a simple fixed-day calendar-based method (i.e., days 8 to 19 are always fertile) for women who have menstrual cycles between twenty-six and thirty-two days in length.⁵³ The TwoDay Method is based on asking whether the woman has observed mucus secretions that day and the day before; if she answers no to both questions, she can consider herself infertile on that day.⁵⁴ Both methods have respectable correct and imperfect use records among a variety of people in various developing countries: the standard days method has a perfect use pregnancy rate of 5 per 100 women and a typical use of 12 per 100 over 12 months of use; the TwoDay Method has a correct use pregnancy rate of 4 and a typical use of 14 per 100 women over 12 months of use.

Studies have also examined the European double-check method and the Marquette University method, which combines the use of the electronic hormonal fertility monitor with cervical mucus monitoring. Both these methods provide a double check for the beginning and end of the estimated fertile phase. The European method was found in a recent study to produce both perfect-use and typical-use efficacy pregnancy rates that rival the birth control pill. A prospective, retrospective, and cohort comparison study of the Marquette method's efficacy showed that a combination of

49. R. J. Fehring et al., "Cohort Comparison of Two Fertility Awareness Methods of Family Planning," *Journal of Reproductive Medicine* 54 (2007): 165-70.

50. See World Health Organization, "The Effectiveness Phase," 597.

51. See Trussell and Grummer-Strawn, "Contraceptive Failure of the Ovulation Method of Periodic Abstinence."

52. See Arevalo, Jennings, and Sinai, "Efficacy of a New Method of Family Planning"; M. Arevalo et al., "Efficacy of the New TwoDay Method of Family Planning," *Fertility and Sterility* 82 (2004): 885-92.

53. See Arevalo, Jennings, and Sinai, "Efficacy of a New Method of Family Planning."

54. See Arevalo et al., "Efficacy of the New TwoDay Method of Family Planning."

mucus with the fertility monitor as a double check yielded significantly fewer unintended pregnancies compared to the mucus-only method.⁵⁵ These results are similar to the earlier randomized study, which demonstrated that the addition of BBT to mucus observations enhanced efficacy.⁵⁶ Randomized control trials are needed for a more precise comparison of the efficacy of NFP methods. Of note is that the first randomized control trial comparing two methods of NFP (since 1980) has recently been published comparing use of CEFM with cervical mucus monitoring.⁵⁷

Use of NFP with Special Circumstances

While most efficacy studies of NFP methods have been conducted with women who have fairly regular cycle lengths (some studies may even require regular cycle lengths for participation), providers of NFP services often work with women who do not fit the pattern. These women include those who are breastfeeding, who are discontinuing hormonal contraception, or who are in the perimenopausal transition.

The postpartum breastfeeding transition, in which the woman goes from a state of amenorrhea to one of irregular patterns of ovulation, cycle length, and cervical mucus, is particularly difficult for NFP users to navigate without an unintended pregnancy.⁵⁸ Earlier studies of breastfeeding women and the use of the sympto-thermal method indicated that using NFP might actually enhance the unintended pregnancy rate.⁵⁹ A more recent study of a mucus-only method provided a total pregnancy rate of 33 percent among the breastfeeding participants.⁶⁰ Studies also show a dissociation between the traditional signs of fertility (mucus and temperature), the actual days of fertility, and days with estrogen rises.⁶¹ In fact, a recent study showed that during the breastfeeding transition, follicles continue to mature but not necessarily proceed to an ovulatory event.⁶² This seems to indicate some type of disconnect in the

55. See Fehring et al., "Cohort Comparison of Two Fertility Awareness Methods of Family Planning."

56. See Wade et al., "A Randomized Prospective Study of the Use-effectiveness of Two Methods of Natural Family Planning."

57. See R. Fehring et al., "Randomized Comparison of Two Internet-Supported Fertility Awareness Based Methods of Family Planning," *Contraception* 88, no. 1 (2013): 24–30.

58. See M. Arevalo, V. Jennings, and I. Sinai, "Application of Simple Fertility Awareness-Based Methods of Family Planning to Breastfeeding Women," *Fertility and Sterility* 80 (2003): 1241–48.

59. See M. H. Labbok et al., "Ovulation Method Use during Breastfeeding: Is There Increased Risk of Unplanned Pregnancy?" *American Journal of Obstetrics and Gynecology* 165 Supp (1991): 2031–36.

60. See Howard and Stanford, "Pregnancy Probabilities during Use of the Creighton Model Fertility Care System."

61. See L. Hatherley, "Lactation and Postpartum Infertility: The Use-Effectiveness of Natural Family Planning (NFP) after Term Pregnancy," *Clinical Reproduction and Fertility* 3 (1985): 319–34; G. A. Tomaselli et al., "Using Complete Breast-Feeding and Lactational Amenorrhoea as Birth Spacing Methods," *Contraception* 61 (2000): 253–57; M. Zinaman, and W. Stevenson, "Efficacy of the Symptothermal Method of Natural Family Planning in Lactating Women after the Return of Menses," *American Journal of Obstetrics and Gynecology* 165 Supp (1991): 2037–39; K. I. Kennedy et al., "Breastfeeding and the Symptothermal Method," *Studies in Family Planning* 26 (1995): 107–15; W. Li and Y. Qiu, "Relation of Supplementary Feeding to Resumption of Menstruation and Ovulation in Lactating Postpartum Women," *Chinese Medical Journal* 120 (2007): 868–70.

62. See E. V. Velasquez et al., "Pituitary-Ovarian Axis during Lactational Amenorrhoea. I. Longitudinal Assessment of Follicular Growth, Gonadotrophins, Sex Steroid and Inhibin Levels before and after Recovery of Menstrual Cyclicity," *Human Reproduction* 4 (2006): 909–15.

pituitary-hypothalamic-ovarian axis. However, researchers have been working on evidenced-based protocols to bolster the confidence of couples using NFP methods during the breastfeeding transition. One protocol involves using a hormonal fertility monitor to measure estrone-3-glucuronide (E₃G) and LH patterns during the transition, and creating “artificial” twenty-one-day cycles until ovulatory menstrual cycles resume.⁶³

The transition from use of hormonal contraception to NFP use can be difficult for some women. Studies show that there is often a delay in ovulation, longer menstrual cycle lengths, heavier menses, and variation and increase in the amount of cervical-vaginal secretions.⁶⁴ These changes can persist as long as nine menstrual cycles after discontinuation of oral hormonal contraception.⁶⁵ The type and length of changes with longer-acting hormonal contraception, such as injectables, is not known, but most likely is much longer. However, NFP use after hormonal contraception can be effective. This works best when the couple is patient, and when they use NFP conservatively (marking the beginning and end of the fertile phase with two markers of fertility, or reserving intercourse only for post-ovulation). Couples who discontinue hormonal contraception often have difficulty adjusting to the periodic abstinence required with NFP.

The perimenopausal time period is a much longer transition than breastfeeding or post-contraception. To complicate matters, women over age forty-two who have completed their families, resumed their careers, and are concerned about having a baby with defects can be fearful about another pregnancy and want to have secure methods of family planning. There is little current research on the use of NFP during perimenopause. Research indicates that the menstrual cycle length shortens somewhat as women progress through perimenopause, though it can remain very regular in length.⁶⁶ However, once the difference in menstrual cycle length varies by more than seven days, the woman is considered in an early perimenopause stage. It is generally thought that women at the age of forty-five have a very low chance of pregnancy, similar to a twenty-one-year-old woman on oral hormonal contraception. This fact, however, is not always comforting to the NFP user. Couples who use the post-ovulatory period as identified by cervical mucus peak, the BBT, or the urinary LH surge, or, preferably, some combination of these methods, are generally able to use NFP effectively.

The biological markers for the perimenopausal transition are modeled in the “Stages of Reproductive Aging Workshop” or STRAW.⁶⁷ According to this mod-

63. See R. Fehring, M. Schneider, and M. L. Barron, “Protocol for Determining Fertility while Breastfeeding,” *Fertility and Sterility* 84 (2005): 805–7.

64. See C. Nassaralla et al., “Characteristics of the Menstrual Cycle after Discontinuation of Oral Contraceptives,” *Journal of Women’s Health* 20 (2011): 169–77.

65. See C. Gnorth et al., “Cycle Characteristics after Discontinuation of Oral Contraceptives,” *Gynecology and Endocrinology* 16 (2002): 307–17.

66. See A. E. Treloar et al., “Variation of the Human Menstrual Cycle through Reproductive Life,” *International Journal of Fertility* 12 (1967): 124.

67. See M. R. Soules et al., “Executive Summary: Stages of Reproductive Aging Workshop (STRAW),” *Fertility and Sterility* 76 (2001): 874–78.

el, when the differences in menstrual cycle length exceed seven days, and when on those days the follicle stimulating hormone (FSH) is high, fertility is unlikely and the woman can be considered in perimenopause. In addition, when there is a difference in the running lengths of the menstrual cycle of more than forty-two days, menopause most likely will take place within two years.⁶⁸ More research is needed to integrate this knowledge into the practice of NFP.

Use of NFP to Achieve Pregnancy

Although NFP can be used to achieve pregnancy, there have been very few prospective studies of pregnancy rates with couples using fertility-focused intercourse aided by NFP. Hilgers reported a study in which 49 of 50 couples of normal fertility achieved a pregnancy within five months by focusing intercourse on days of good-quality cervical mucus.⁶⁹ German researchers reported the largest prospective study to estimate the cumulative probability of conception among a cohort of 346 couples using the sympto-thermal method (cervical mucus and basal body temperature monitoring) from their first cycle onward.⁷⁰ This study found a total of 310 pregnancies among the 346 couples during a maximum of twenty-nine cycles of observation. The researchers labeled the couples who achieved a pregnancy “truly fertile.” The cumulative pregnancy rates for cycles 1, 3, 6, and 12 for all couples (N = 340) were 0.38, 0.68, 0.81, and 0.92 respectively. For the truly fertile couples (N = 304) the pregnancy rates for the same cycles were 0.42, 0.75, 0.88, and 0.98. Therefore, close to 90 percent of the truly fertile couples and close to 80 percent of all couples in the study achieved a pregnancy within the first six cycles of fertility-focused intercourse. Based on these results, the researchers recommended that couples who do not achieve a pregnancy within a six-month period of fertility-focused intercourse seek a primary infertility workup. However, they also recommended that these couples continue fertility-focused intercourse for another twelve months. There was no comparison group in this study with couples who used random acts of intercourse, so we do not know if the truly fertile couples would have the same pregnancy rate with random intercourse.

Researchers from Unipath Diagnostics completed a study that randomized one thousand women volunteers into two groups of five hundred. The female volunteers were between the ages of twenty-one and forty years, and their partners were between twenty-one and fifty years of age. One group received the Clearblue Easy Fertility Monitor (CEFM), and the control group was asked to do what they wished to achieve a pregnancy, including the use of such devices as ovulation test kits and basal

68. See J. Taffe and L. Dennerstein, “Time to the Final Menstrual Period,” *Fertility and Sterility* 78 (2002): 397–403.

69. See T. W. Hilgers et al., “Cumulative Pregnancy Rates in Patients with Apparently Normal Fertility and Fertility-Focused Intercourse,” *Journal of Reproductive Medicine* 37 (1992): 864–66.

70. See C. Gnoth et al., “Time to Pregnancy: Results of the German Prospective Study and Impact on the Management of Infertility,” *Human Reproduction* 18 (2003): 1959–66.

body temperature.⁷¹ The pregnancy rate during the first cycle was 15.2 percent (or 46 of 302) for the CEFM group and 7.8 percent (27 of 347) for the control group. The two-cycle cumulative pregnancy rate was statistically higher for the CEFM at 22.7 percent, compared to the control group at 14.4 percent ($p = 0.006$). The researchers found that having a previous pregnancy and a young partner were significant factors in achieving a pregnancy. In addition, the researchers provided the users of the CEFM with a satisfaction tool, which determined that 90 percent of users found the device easy or very easy to use, and 80 percent found it convenient or very convenient. They concluded that the CEFM helped increase the likelihood of pregnancy during the first two cycles of use, compared to nonuse, among women who had been trying to conceive for up to two years. This study was limited, as its duration was only two months and it did not compare the CEFM with cheaper alternatives to tracking fertility, such as cervical mucus monitoring. A more recent study found that among 124 couples seeking pregnancy when they focused intercourse on the estimated fertile phase (by mucus or CEFM) the pregnancy rate was 87 per 100 women over 12 months of use compared to only 5 when they did not focus intercourse.⁷²

There is growing evidence that focused intercourse during the fertile time (as estimated by self-monitoring of natural fertility markers) can increase the pregnancy rate and decrease the time to pregnancy. However, only one randomized trial exists that compares self-indicators of fertility to estimate the fertile phase and timed intercourse. In fact, claims have been made in the scientific literature that focused intercourse based on the estimation of fertility is no more effective than having intercourse two to three times a week.⁷³ The National Institute for Clinical Excellence (NICE) guidelines make this statement specifically, adding that focused intercourse is too stressful.⁷⁴ The policy committee of the American Society of Reproductive Medicine notes that electronic or other devices designed to aid in determining the optimal time of fertility may be useful for couples who have infrequent intercourse.⁷⁵ The usefulness of these devices needs to be determined through further research.

Integration of NFP into Women's Health Care

One of the benefits of NFP use is its great potential for enhancing women's health care. Subcommittees of both the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists have recommended that adolescents

71. See J. E. Robinson, M. Waklin, and J. E. Ellis, "Increased Pregnancy Rate with Use of the Clearblue Easy Fertility Monitor," *Fertility and Sterility* 87 (2007): 329–34.

72. See Q. Mu and R. Fehring, "Efficacy of Achieving Pregnancy with Fertility Focused Intercourse," *MCN: The American Journal of Maternal Child Nursing* 39 (2014): 35–40.

73. See H. K. A. Snick, "Should Spontaneous or Timed Intercourse Guide Couples Trying to Conceive?" *Human Reproduction* 10 (2005): 2976–77.

74. See National Institute for Clinical Excellence (U.K.), *Fertility: Assessment and Treatment for People with Fertility Problems*, Clinical Guidelines 11 (London: NICE, 2004).

75. See American Society for Reproductive Medicine, Practice Committee, "Optimizing Natural Fertility," *Fertility and Sterility* 9, Supplement 3 (2008): S1–S6.

monitor their menstrual cycles, to provide information that can be used as another vital sign for adolescent health.⁷⁶ Cycle monitoring can reveal the presence of excessive bleeding, irregular menstrual cycles, and other pathological conditions.

NFP-only physicians have indicated many health benefits of menstrual cycle charting,⁷⁷ including early hints of such cycle pathologies as anovulation, dysmucorrhea, irregular bleeding patterns, and corpus luteum insufficiency. Charting the menstrual cycle certainly can be helpful for couples in preventing unintended pregnancies. Research has shown that couples with subfertility have a higher probability of conception with charting and focused intercourse during the fertile window. Women who chart are more knowledgeable about their fertility and can be alerted to potential problems when they occur. NFP charting can also be invaluable for the diagnosis, testing, treatment, and assessment of infertility. Time spent by the physician reviewing menstrual cycle charts with the woman patient can also be used to great advantage in providing health advice.

One simple example of the value of menstrual cycle charting is the treatment and management of polycystic ovarian disease (PCOS). The unmanaged PCOS menstrual cycle is fairly easy to pick up in menstrual cycle charts, with long cycle lengths, cervical mucus patches, multiple peak-type mucus, LH spikes, and undefined temperature patterns. As the woman with PCOS is treated, whether with medications (glucophage, Clomid, or both) or with lifestyle changes (weight loss, diet, and exercise), the efficacy of treatment will play out with a normalized menstrual cycle, a defined fertile window, a clear day of ovulation, normal cycle length, and normal luteal phase length.

Women who seek health care for various health problems, including painful menses, acne, unusual menstrual bleeding, PCOS, endometriosis, and other reproductive disorders, are often treated with hormonal birth control pills. Sometimes, “the Pill” might be the best treatment for a health problem. According to the papal encyclical *Humane Vitae*, the use of contraceptives as a form of treatment is morally valid if they are a standard treatment for that disorder.⁷⁸ The *Ethical and Religious Directives* of the USCCB state: “Procedures that induce sterility are permitted when their direct effect is the cure or alleviation of a present and serious pathology and a simpler treatment is not available.”⁷⁹ Some argue, however, that since the pill can be abortifacient, its use as a therapeutic might be morally problematic. In any case, the pill is certainly overused in medical practice, and its use can mask the underlying problem.

One very notable means of integrating NFP into women’s health care is the practice of NaProTech, or natural procreative technology.⁸⁰ NaProTech is the merging of the Creighton Model of NFP with medical protocols, to treat a comprehensive vari-

76. See American Academy of Pediatrics, “Menstruation in Girls and Adolescents: Using the Menstrual Cycle as a Vital Sign,” *Pediatrics* 118 (2006): 2245–50.

77. See Frank-Herrmann et al., “Determination of the Fertile Window.”

78. See Paul VI, *Humanae Vitae*, no. 15.

79. USCCB, *Ethical and Religious Directives*, dir. 34.

80. See Thomas W. Hilgers, *The Medical and Surgical Practice of NaProTechnology* (Omaha, Neb.: Pope Paul VI Institute Press, 2004).

ety of women's health problems in a way that respects Catholic moral principles and seeks to find and treat the underlying medical cause. While one example of the use of NaProTech in managing infertility and related problems was recently published,⁸¹ some of the NaProTech protocols have not been vetted in research or through medical associations, and some NFP-only physicians have not integrated NaProTech into their practice in family medicine or in obstetrics and gynecology. Many morally sound standardized and evidence-based treatments exist for women's health problems. These include medical and surgical treatment of endometriosis, medical and lifestyle treatment of PCOS, medical and surgical treatment of infertility that does not involve in vitro fertilization, and surgical and medical treatments for dysfunctional uterine bleeding, among others. Dr. Raviele's chapter in this book illustrates how a physician is able to manage common women's health problems effectively without recourse to contraception and other possibly immoral treatments.

Spiritual and Psychological Dynamics

There is little research on the psychological and spiritual dynamics of the use of NFP in married life. In response to the introduction of the birth control pill and concerns about worldwide population growth, Pope Paul VI called for a commission to study these questions.⁸² After several years of meetings, this commission recommended a change in the Church's teaching on contraception: that it could be justified for right reasons so long as couples were generally open to having children. However, the commission was influenced by a study conducted by the Catholic Family Life Movement, which was led by Patti and Patrick Crowley.⁸³ The Crowleys' study examined the rhythm method's effects on married life, concluding that its use was detrimental to marriage. However, this study was methodologically flawed, agenda-driven, and biased; and the results, by today's scientific standards, are essentially useless.

In response to the Crowley study, J. Marshall from England (who had been a member of the papal commission) and a physician and wife couple from France produced studies that exhibited the opposite results.⁸⁴ Qualitative and survey studies in the late 1970s and early 1980s indicated that couples who used NFP felt that it improved communication, gave them greater knowledge of human reproduction, enhanced intimacy, and helped to develop self-mastery.⁸⁵ Two cohort comparison

81. See J. B. Stanford, T. A. Parnell, and P. C. Boyle, "Outcomes from Treatment of Infertility with Natural Procreative Technology in an Irish General Practice," *Journal of the American Board of Family Medicine* 21 (2008): 375–84.

82. See R. McClory, *The Turning Point* (New York: Crossroad Publishing Company, 1995).

83. See P. Crowley and P. Crowley, "Report to the Papal Birth Control Commission," Patrick and Patricia Crowley Papers, 1965–1966, University of Notre Dame Archives.

84. See J. Marshall and B. Rowe, "Psychological Aspects of the Basal Body Temperature Methods of Regulating Births," *Fertility and Sterility* 21 (1970): 14–19.

85. See M. P. McCusker, "Natural Family Planning and the Marital Relationship: The Catholic University of America Study," *International Review of Natural Family Planning* 1 (1977): 331–40; J. Tortorici, "Conception Regulation, Self-Esteem, and Marital Satisfaction among Catholic Couples," *International Review of Natural Family Planning* 3 (1979): 191–205; T. Borkman and M. Shivanandan, "The Impact of Natural Family

studies, comparing couples who used NFP with those who used various method of contraception, demonstrated greater intimacy and spiritual well-being among the NFP couples.⁸⁶ A more recent qualitative study confirmed that the great majority of NFP users felt that it enhanced their marriage, improved knowledge of human fertility, enriched their spirituality, and was helpful with their desires to either avoid or achieve pregnancy.⁸⁷ Some couples did express problems with managing abstinence and the daily work of monitoring fertility. The dearth of physicians who promoted or provided NFP services was identified by some of these couples as a drawback of NFP.

Of particular interest was a study of satisfaction levels among a population sample of German women who used various methods of family planning.⁸⁸ The German researchers found that satisfaction with NFP use by both current and previous users was only 43 percent (N = 428) compared with 92 percent among those who were sterilized (N = 139) and 68 percent (1,303) among those who used hormonal oral contraception. However, when the authors looked at specific psychological characteristics related to the individual method of family planning, the findings were more subtle. For example, 71 percent of hormonal pill users and 37 percent of those who were sterilized felt that they had health risks, compared to 0 percent of NFP users. Thirteen percent of pill users and 7 percent of those sterilized felt more irritable with their method of family planning, compared to only 5 percent of those using NFP. Ten percent of pill users and 5 percent of those sterilized felt depressed, compared to only 3.8 percent of those using NFP. Finally, 8.4 percent of those using the pill felt they had a better sex drive, as did 19 percent of those who were sterilized, but 21.5 percent of NFP users felt an increased sex drive. So, in a sense, women on the hormonal pill have a greater sense of health risks, are more irritable and depressed, and have lower sex drives. Women using NFP, on the other hand, might be more anxious about an unintended pregnancy, but they have no health risk, are less irritable and less depressed, and have a higher sex drive.

Marital Dynamics of Using NFP

NFP is based on an integrated, holistic view of human sexuality, which recognizes its spiritual, physical, intellectual, communicative/creative, and emotional elements, not just intercourse or genital contact. Couples who use NFP are encouraged to express

Planning on Selected Aspects of the Couple Relationship," *International Review of Natural Family Planning* 8 (1984): 58–66; G. A. Boys, *Natural Family Planning Nationwide Survey. Final Report to the National Conference of Catholic Bishops* (Washington, D.C.: Diocesan Development Program for NFP, 1989).

86. See R. J. Fehring, D. M. Lawrence, and C. M. Sauvage, "Self-Esteem, Spiritual Well-Being, and Intimacy: A Comparison among Couples Using NFP and Oral Contraceptives," *International Review of Natural Family Planning* 13 (1989): 227–36; R. Fehring and D. Lawrence, "Spiritual Well-Being, Self-Esteem, and Intimacy among Couples Using Natural Family Planning," *Linacre Quarterly* 61 (1994): 18–29.

87. See L. VandeVusse, R. Fehring, and L. Hanson, "Marital Dynamics of Practicing Natural Family Planning," *Journal of Nursing Scholarship* 35 (2003): 171–76.

88. See B. J. Oddens, "Women's Satisfaction with Birth Control: A Population Survey of Physical and Psychological Effects of Oral Contraceptives, Intrauterine Devices, Condoms, Natural Family Planning, and Sterilization among 1466 Women," *Contraception* 59 (1999): 227–86.

their sexuality in a non-genital way during times of periodic abstinence. This provides the couple with an opportunity to develop a holistic expression of sexuality and a greater control over their sexual drives. As self-control is developed, the genital expression of sexuality becomes more an act of giving and less an act of merely satisfying physical drives. This makes it less likely that one or the other of the marital partners will become solely an object of sexual gratification. Abstinence also helps keep the physical expression of sexuality new and fresh, a result often referred to by couples as the “honeymoon effect.” By being more creative in expressing a broader sexuality, the couple becomes more sexually mature and can experience a deeper closeness, understanding, and peace.

The fertility monitoring and periodic abstinence required by NFP can lead to frustrations for some couples, who may dislike daily monitoring, experience stress over the possibility of becoming pregnant, or perceive a lack of spontaneity. This is most likely to occur with couples or individual spouses who have not yet learned to integrate an awareness of their fertility into their daily lives. However, for most couples, the practice of NFP results in a greater understanding of fertility and in better communication, since couples need to discuss daily their intention of using their fertility to achieve or avoid pregnancy. This communication then leads to sharing information, to making mutual decisions and to mutual trust. NFP promotes greater understanding between husband and wife and enables a shared responsibility.

Learning to live with the rhythms of life is important for a married couple; this includes the times of fertility and infertility in a woman’s menstrual cycle. Married couples who use NFP to monitor their cycles will be aware of those times of fertility and infertility. By sharing these times with each other, they can give of themselves and make shared decisions of their intentions. When the NFP couple experiences the fertile time, they realize the awesomeness of their potential to collaborate with God in creating new human life. This power is best exercised in the context of love between husband and wife in a co-creative relationship with God.

Future Perspectives on NFP

One perceived problem with many of the current methods of NFP is that they can be complex and time-consuming, both for couples to learn and use and for health professionals to provide.⁸⁹ Some of the user manuals for current methods of NFP are longer than two hundred pages, which might account for the drop in NFP use over the past ten years. Furthermore, many parts of the country lack NFP service providers, some of whom must cover large areas of counties or states.

NFP service providers and researchers over the past ten years have been trying to develop simple-to-use, easily taught methods of NFP. Good examples of this are the two simplified methods developed by the Georgetown Institute for Reproduc-

89. See M. Arevalo, “Expanding the Availability and Improving Delivery of Natural Family Planning Services and Fertility Awareness Education: Providers’ Perspectives,” *Advances in Contraception* 13 (1997): 275–81.

tive Health, the standard days method and the TwoDay Method; and the European double-check methods discussed earlier in this chapter.

The Internet has also proven to be a valuable tool in providing NFP instructions and guidance. A number of NFP systems have online instructions or some type of web-based support system. One such example is the Northwest Family Service, which features online instruction and an online course leading to teacher certification in the sympto-thermal method system of NFP.⁹⁰ Online charting systems, such as the Taking Charge of Your Fertility (TCYF) charting system developed by T. Weschler, include access to user support.⁹¹

Marquette University's Institute for Natural Family Planning has developed an online NFP education, charting, and support system, with information on NFP, special circumstances protocols, and instructions on how to observe and chart fertility indicators. It also features a downloadable user manual and charting system, a user forum, and consultation services with a bioethicist, professional nurses, and physicians. The charting system has an automatic algorithm to calculate and display the estimated fertile window, based on charted fertility indicators. The system's Quickstart instructions tab provides the user with a one-page guide to using NFP; this is simple enough to get the reader started in observing and charting fertility. In a two-year period more than three hundred topics, ranging from special reproductive circumstances to unusual menstrual bleeding, have been broached by its more than twelve hundred online users, yielding more than twenty-four hundred responses from the site's health professionals. The site's accessibility allows engaged couples to learn NFP, chart at least one menstrual cycle, take a simple fertility quiz, and receive a certificate of completion for marriage preparation, which is automatically sent electronically to the engaged couple upon completion of the requirements.⁹² Future NFP websites likely will be more user friendly and interactive, and will feature tailored education programs and links to handheld devices and fertility monitoring apps.

Future advances in technology to estimate the fertile phase of the menstrual cycle will most likely make tests kits and devices easier to use and even more accurate. One such device already in the development and testing phase measures a metabolite of progesterone through a simple urine test kit, which could help the woman confirm that ovulation has taken place and that she is in the post-ovulatory infertile phase. The test would pick up the rise in progesterone that occurs after ovulation and the development of the corpus luteum. Another possible future development is the use of a hand-held ultrasound device to allow home monitoring of the developing and dominant follicle and its eventual collapse after ovulation. Small hand-held devices already exist and are being used by health professionals, so it seems logical that this

90. See R. J. Huneger and R. Fuller, *A Couple's Guide to Fertility* (Portland, Ore.: Northwest Family Services, 1997). See also Northwest Family Services, <http://www.nwfs.org/natural-family-planning>.

91. See T. Weschler, *Taking Charge of Your Fertility* (New York: Harpers Collins, 2002). See also her website, <http://www.tcoyf.com/>.

92. See Marquette University College of Nursing Institute for NFP, <http://nfp.marquette.edu>. The author of this chapter is the institute director.

technology might eventually be put into the hands of couples. There currently are more than two hundred fertility monitoring apps that women can download on their smart phones, tablets, or computers.

NFP teacher training programs for health professionals offer another field for future expansion. A variety of NFP teacher training programs exist today, with a wide range of content and actual classroom time. Most of these programs are in-person and involve three to four full days of content; other programs take place over a seven- to ten-day period and involve an extensive practicum.⁹³ Marquette has an online NFP teacher training program for health professionals, offered in two six-module courses, one in theory and one in a case-study-focused practicum, offered for continuing education. Future training programs will likely be shorter in duration, offered online, and targeted to help the health professional discern which NFP method or fertility indicators are best for the couple user. An example of a short online course in providing an NFP method is the one developed by the Georgetown Institute for Reproductive Health to help health professionals provide the standard days method.⁹⁴

Other Bioethical Issues with the Practice of NFP

There are some common bioethical issues with the practice and teaching of NFP that are of concern to Catholic health professionals and bioethicists, namely, can a couple enter into marriage with the intent to practice NFP before having their first child, can a couple practice NFP with a contraceptive mentality, and are there limits to non-genital contact in avoiding pregnancy (e.g., should the couple avoid masturbation or mutual masturbation)? These issues are briefly addressed for this chapter; however, the answers provided here are not intended to be an in-depth bioethical and philosophical analysis (which is beyond the scope of this chapter).

The answer to whether a couple can practice NFP before having their first child is “yes.” Catholic Church teaching is clear that it is up to the couple to discern when and how many children they are called to have. They are guided to be generous to life, to prayerfully discern serious reasons to avoid having a child, and to take into account their relation with God, their spouse, their children already born, and the good of society.⁹⁵ Although a couple is required to be open to life before marriage it is reasonable to imagine serious reasons for putting off having a first child. For example, a man or woman in a relationship could be on chemotherapy or radiation therapy for cancer. A pregnancy in this situation could result in severe birth defects and would be a serious reason for avoiding pregnancy. The key point is that it is up to the couple to discern whether they have serious reasons for avoiding pregnancy for a short time or an indeterminate time period. Furthermore, Pope John Paul II stated that all married

93. See R. Fehring, “The Future of Professional Education in Natural Family Planning,” *Journal of Obstetric, Gynecological and Neonatal Nursing* 33 (2004): 34–43.

94. See Georgetown University Institute for Reproductive Health, <http://www.irh.org>.

95. See Paul VI, *Humanae Vitae*, no. 10.

couples should learn NFP.⁹⁶ NFP is not just for avoiding pregnancy but also for helping couples to become pregnant; that is one reason why NFP is not like contraception. A more in-depth analysis and discussion of this issue can be found in the chapter “Co-Creating with the Creator: A Virtue-Based Approach” by Melanie Barrett in the book *Science, Faith, and Human Fertility*.⁹⁷ The couple should keep in mind that, from a medical and health perspective, it is better for them to become pregnant and have children while they are young and at the peak of their fertility.

The answer to whether a couple can practice NFP with a contraceptive mentality is no. Pope John Paul II was specific that a contraceptive mentality refers to the use of contraception and being closed to having children, treating fertility like an enemy, and rejecting pregnancy when contraception fails.⁹⁸ Paul VI said that the practice of NFP (periodic abstinence) strengthens married relationships and confers on it a higher human value, helps couples develop self-mastery, allows them to fully develop their personalities, and be open to life.⁹⁹ A couple could use NFP for selfish reasons (i.e., for not having children), but this is not likely, considering the challenges that NFP presents: periodic abstinence, living with fertility, and daily discerning of their fertility status. Using NFP and integrating fertility within a marital conjugal relationship is a good that matures and strengthens the relationship. A more in-depth analysis of this question was developed by this author and professor Kevin Miller from Franciscan University of Steubenville.¹⁰⁰

The final bioethical concern is what moral sexual practices married couples can use during the fertile phase of the menstrual cycle when they are using NFP to avoid pregnancy. First of all, most NFP providers and NFP methods are not very prescriptive as to what sexual practices married couples can use in their marital relations, other than to say that they should not use condoms, withdrawal, or genital to genital contact during the fertile phase if they want to avoid pregnancy. The practice of masturbation (alone, or even in tandem) is considered an immoral sexual practice by the Catholic Church. The other dictum is that sexual foreplay should lead to a completion of intercourse, that is, the act of intercourse should not be frustrated. *Catholic Sexual Ethics* by William E. May, Ronald Lawler, and Joseph Boyle is recommended for a more in-depth analysis and discussion of this topic.¹⁰¹

96. See Pope John Paul II, *Evangelium Vitae, The Gospel of Life* [Encyclical Letter, March 25, 1995] (St. Paul, Minn.: The Leaflet Missal Company, 1995), no. 97.

97. See Melanie Barrett, “Co-Creating with the Creator: A Virtue-Based Approach,” in *Science, Faith and Human Fertility*, ed. R. Fehring and T. Notare (Milwaukee, Wis.: Marquette University Press, 2012), 267–302.

98. See John Paul II, *Evangelium Vitae*, no. 13.

99. See Paul VI, *Humanae Vitae*, no. 21.

100. See R. Fehring and K. Miller, “Is It Possible for NFP to Be Used (Immorally) with Contraceptive Intent?” *Linacre Quarterly* 78 (2011): 86–90.

101. See W. E. May, R. Lawler, and J. Boyle, *Catholic Sexual Ethics: A Summary, Explanation, and Defense*, 3rd ed. (Huntington, Ind.: Our Sunday Visitor, 2011).

Case Studies

Here are two case studies taken from the Marquette practice course in NFP for health professionals.

Case Study One

Susan is a thirty-five-year-old married Catholic woman with two children, ages five and three. She was diagnosed and treated for breast cancer, and underwent surgery to remove her right breast with follow-up chemotherapy. Her oncologist placed her on Tamoxifen for five years and told her that she should not get pregnant because of the deleterious effect the drug might have on a developing baby. He asked her to discuss birth control with her obstetrician-gynecologist, who recommended that either she or, preferably, her husband should seek sterilization. She refused for two reasons: she and her husband follow Church teaching on family planning, and she still wished to have another child.

The patient and her husband previously used the sympto-thermal method of NFP (i.e., basal body temperature plus cervical mucus observations). However, she was not comfortable continuing with that method since her small children routinely interrupted her sleep patterns and interfered with her temperature readings, making it difficult for her to establish a waking temperature baseline necessary for that method of NFP. She heard of a new method of NFP that used electronic hormonal monitoring and sought out that method at the Marquette University Institute for Natural Family Planning.

1. Must the patient rely only on NFP to avoid pregnancy while on Tamoxifen, or, based on the potential danger to her or to a developing fetus, could she or her husband be sterilized or encouraged to use condoms?

The answer to sterilization or condoms is no, the couple cannot be offered either sterilization or the use of condoms. The *Ethical and Religious Directives* are very specific on this matter. Directive 53 states:

Direct sterilization of either men or women, whether permanent or temporary, is not permitted in a Catholic health-care institution. Procedures that induce sterility are permitted when their direct effect is the cure or alleviation of a present and serious pathology and a simpler treatment is not available.¹⁰²

Furthermore, no contraceptive can be used or recommended. According to the *Directives*,

The Church cannot approve contraceptive interventions that “either in anticipation of the marital act, or in its accomplishment or in the development of its natural consequences, have the purpose, whether as an end or a means, to render procreation impossible.” Such interven

¹⁰². USCCB, *Ethical and Religious Directives*, dir. 54.

tions violate “the inseparable connection, willed by God . . . between the two meanings of the conjugal act: the unitive and procreative meanings.”¹⁰³

To put it simply, one cannot use an immoral act to achieve a good. This is not the same as the principle of double effect, whereby hormonal contraception or sterilization would be used for the intention and purpose of treating a disease process, such as a cancerous uterus. In this situation, the treatment of the cancer is the direct and intended effect, and the sterilization is indirect and unintended. Providing sterilization or condoms in the case of the woman on Tamoxifen would be a direct act for the purpose of contraception, not an indirect act of treating a valid medical problem, and therefore would be prohibited.

2. What type of family planning method could a Catholic physician recommend for such a case? Doesn't the use of Tamoxifen, an estrogen antagonist, rule out the use of NFP, since it interferes with ovulation, the development of the follicle, estrogen production, and the natural signs of fertility?

Yes, Tamoxifen does interfere with some of the natural markers of fertility, specifically the production of cervical mucus. Some speculate that the use of Tamoxifen prevents ovulation, but this has not been documented. However, other markers of fertility still can be used to track fertility with confidence. Basal body temperature and the LH surge are not affected by Tamoxifen. The couple could use the “heroic” approach and practice abstinence from intercourse for five years, but this would be both unnecessary and detrimental to marital intimacy.

3. If the woman and her husband must use a method of NFP, which method would be the most effective to prevent an unintended pregnancy?

The patient described in this case came to the Marquette Institute for NFP for help because of its use of the electronic hormonal fertility monitor with the NFP method they provide. It was decided, in discussion with the couple, that she should use three indicators for estimating her fertility: temperature, cervical mucus, and readings from the monitor. She had a follow-up at the institute after every menstrual cycle to assess both her progress and the effects of the drug on her natural fertility indicators.

As expected, during the first three menstrual cycles the mucus ratings and patterns were not discernable. Mucus levels and ratings were high, indicating high fertility for most of the menstrual cycle. However, clear temperature shifts were detected, and the monitor displayed a clear fertile window by detecting the baseline rise of estrogen and the LH surge in the urine. After the third menstrual cycle, the woman reported having trouble in consistently obtaining a temperature reading prior to rising in the morning because of her small children's needs. She said that she was comfortable using just the monitor with the Marquette algorithm.

Data downloaded from her monitor to the institute's computer showed the patient's first six menstrual cycles of hormonal fertility monitor use. The data charts

103. Ibid., pt. 4, intro., quoting Paul VI, *Humanae Vitae*, nos. 14 and 12 resp.

showed the length of each menstrual cycle, the day of the E₃G rise from baseline, and the estimated day of ovulation. The data indicated that the menstrual cycles varied in range from twenty-seven to forty-two days, and that the estimated day of ovulation (the second peak day shown on the monitor) varied from day 13 to day 27. The monitor was able to identify both the fertile phase and its variability from cycle to cycle, enabling this couple to successfully avoid pregnancy for the five years of therapy. However, when there is a severe reason for avoiding pregnancy, the institute recommends the use of two indicators for the beginning and two for the end of the fertile phase, along with a conservative approach that allows intercourse only in the post-ovulatory phase.

Case Study Two

This case involves a Catholic married couple in their early thirties; both are college graduates and serious about their faith, and they participate frequently in the sacraments. However, they now have five small children, the last two conceived unintentionally during the breastfeeding transition. They presented themselves to the NFP teacher with the problem of trying to be faithful to Church teaching but frustrated that NFP was not working for them. They were using a mucus-based method of NFP, but there was no mucus pattern that would help them to discern a fertile phase during the breastfeeding transition. They tried the traditional methods of distinguishing what is called a basic infertile pattern of cervical mucus but could not differentiate an infertile pattern from a fertile pattern. The wife visited her obstetrician, who checked her cervix and determined it to be normal, with no inversion of cervical tissue to cause a continuous mucus pattern. They pleaded for help.

We have already discussed how the breastfeeding transition, from amenorrhea to the first three menstrual cycles postpartum, can be one of the most difficult transitions for NFP users; it is in this transition that NFP often fails to help couples to avoid pregnancy. Unintended pregnancy and confusing natural signs of fertility encountered during this transition are reasons couples tend to give for discontinuing the use of NFP.

1. Since NFP was not working for this breastfeeding woman and there was no discernable fertile phase with typical signs of fertility, could she use contraception until she returned to fertility and was able at least to use basal body temperature as a marker?

The answer to this question is no, based both on Catholic morality and on good medical practice. It does not make sense to put her on hormonal contraception (the progestin-only pill), because a physician or health professional should not use evil to produce a good. While hormonal contraception might bring the couple psychological peace in avoiding pregnancy, for faithful Catholics it would not produce spiritual peace. Although the woman in question was currently amenorrheic, the intent for contraception would be not treating a disease but avoiding conception, and in so

doing, separating intercourse from fertility. In addition, hormonal contraception would interfere with discerning when her menstrual cycles resume.

When the hormonal contraceptive pill was first introduced, it was proposed by Catholic physicians as an aid to establishing regular menstrual cycles in women, so they could use the calendar-rhythm method.¹⁰⁴ Use of the pill might be morally justified if it did somehow help regularize the menstrual cycle, especially if given post-ovulation, but not if it is prescribed to suppress ovulation. Morally approved protocols are available to help women normalize the menstrual cycle, especially for those women with polycystic ovarian disease or with short luteal phases. Use of the pill to suppress ovulation and normal menses only avoids helping the woman determine the probable underlying cause of her menstrual irregularity, such as low thyroid levels. Furthermore, if the hormonal pill (especially with the progestin-only pill) is used to suppress ovulation, it has the even more serious potential of acting as an abortifacient.

2. If the couple cannot use any contraceptive during the breastfeeding period, what NFP method could they use?

This is a more difficult question. The woman should be encouraged to continue to breastfeed at least for one year, as recommended by the American Pediatric Association. Breastfeeding has many health benefits for both mother and infant and is encouraged by the Catholic Church. The woman can be assured that during the first six months after childbirth, if she is breastfeeding exclusively and has not experienced menses, she has less than a 2 percent chance of conceiving a child. This is known as the lactational amenorrhea method or LAM, which has been extensively researched for its efficacy among a variety of populations.¹⁰⁵

However, once the woman no longer meets the LAM criteria, what can she do to avoid pregnancy? This patient's cervical mucus sign was not useful, as she could not discern any infertile pattern. Studies have indicated that the mucus sign is very inaccurate in discerning fertility during the breastfeeding transition.¹⁰⁶ Other signs, such as the BBT shift in temperature, are also not very helpful and in fact might increase the possibility of an unintended pregnancy.

Researchers at Marquette's institute have developed a breastfeeding protocol using the electronic hormonal fertility monitor.¹⁰⁷ This protocol entails creating "arti-

104. See J. J. Lynch, "The Oral Contraceptives: A Review of Moral Appraisalment," *Linacre Quarterly* 29 (1962): 168–75.

105. See M. H. Labbok et al., "Multicenter Study of the Lactational Amenorrhea Method (LAM): I. Efficacy, Duration, and Implications for Clinical Applications," *Contraception* 55 (1999): 327–36; V. Valdes et al., "The Efficacy of the Lactational Amenorrhea Method (LAM) among Working Women," *Contraception* 62 (2000): 217–19; World Health Organization Task Force, "The World Health Organization Multinational Study of Breast-Feeding and Lactational Amenorrhea. III. Pregnancy during Breast-Feeding," *Fertility and Sterility* 72 (1999): 431–39.

106. See Tommaselli et al., "Using Complete Breast-feeding and Lactational Amenorrhoea as Birth Spacing Methods."

107. See Richard J. Fehring, "Breastfeeding Protocol for the Clearblue Fertility Monitor," Marquette University, Natural Family Planning, March 2004, http://nfp.marquette.edu/sc_breastfeed_monitor.php.

ificial” twenty-day menstrual cycles and using the monitor to track fertility by testing for the E₃G rise and the first LH surge before ovulation. This is done by re-triggering the monitor every twenty days. The monitor will test for twenty days in a row if it does not sense an LH surge. The efficacy of this protocol is now being tested through the Marquette website for NFP services and support. An efficacy study with 198 postpartum women who have used the protocol was recently published; with correct use there were 2 pregnancies per 100 women users, and the imperfect-use pregnancy rate was 8 per 100 women over twelve months of use.¹⁰⁸

The woman in this case study was one of the first to use the protocol. Her fertility monitoring charts showed five artificial cycles by using the monitor settings; in the fifth cycle, the monitor detected the urinary LH surge with presumed subsequent ovulation and a short luteal phase, both typical for a breastfeeding woman. The first three “cycles” were twenty-eight days long, since she did not retrigger the monitor after the twenty days of testing. That left four days in which she was not apprised of her fertility status. For this reason, the current protocol was modified to twenty-one-day cycles. Canadian physicians have proposed some further modifications to this protocol.¹⁰⁹

The Marquette researchers are also working to modify the protocol, especially for the first six menstrual cycles after ovulation resumes postpartum. The current protocol has a default onset of fertility on day 6 of the menstrual cycle. However, the first few menstrual cycles typically have a pattern of delayed ovulation. Because of this, one tentative protocol will mark the onset of fertility on day 10 (or earlier if indicated by a high reading on the monitor or a high cervical mucus level). If the menstrual cycle is very long and the twenty days of testing run out, users are asked to re-trigger the monitor for another twenty days of testing. Research showed the first menstrual cycle postpartum of a woman who followed the re-trigger instructions and successfully identified the delayed ovulation in her menstrual cycle. Further research is needed to help women more confidently progress through the breastfeeding transition.

3. Should the couple just abstain from intercourse until the woman has progressed through the breastfeeding transition?

Morally, this course of action presents no problem; sadly, some couples feel this is their only recourse to remain faithful to Catholic teaching. More research in this area of reproductive transition is needed, as well as in the transition through the perimenopause. Catholic physicians and scientists should view this as a significant challenge, and, at the invitation of Pope Paul VI, bend their backs to solve such problems and to help Catholic couples live according to their faith.¹¹⁰

108. See T. Bouchard, M. Schneider, and R. Fehring, “Efficacy of a New Postpartum Transition Protocol for Avoiding Pregnancy,” *Journal of the American Board of Family Medicine* 26 (2013): 35–44.

109. See S. J. Genius and T. P. Bouchard, “High-tech Family Planning: Reproductive Regulation through Computerized Fertility Monitoring,” *European Journal of Obstetrics and Gynecology* 153 (2010): 124–30.

110. See Pope Paul VI, Address to Participants in the Twenty-Fifth General Assembly of Pharmacology, September 7, 1974, in Zimmerman, *Natural Family Planning*, 257.

Summary

Although the Catholic Church teaches that NFP is the only form of birth control that can be used by married Catholic couples to regulate the size of their family, in actual practice few Catholic couples do so.¹¹¹ In fact, in the United States there is little difference in contraceptive use between Catholic couples and other couples of reproductive age; in both groups, sterilization and hormonal oral contraception are the most frequently used methods. In fact, sterilization seems to be used more by Catholics than by the general U.S. population, and is the number one method used by Hispanic couples. Only about 0.2 percent of Catholic couples of reproductive age currently use NFP methods, and only about 2 to 3 percent of Catholic couples ever have used NFP.

One reason for these statistics is the reluctance of Catholic health-care providers, and of physicians in particular, to prescribe and promote the use of NFP. As the primary gatekeepers of health, physicians can do much to promote healthy behaviors, but in this matter they seldom take the initiative. Furthermore, Catholic educational institutions, especially Catholic medical and nursing schools, offer little to no education on NFP. Thus it is not surprising that NFP is not widely used in the United States by either Catholics or other women of reproductive age. Physicians, advanced practice nurses, and physician assistants are the gatekeepers of family planning methods. Without Catholic physicians and Catholic professional nurses learning about and promoting NFP, it is doubtful that NFP will spread. It often takes tremendous courage for physicians and other professionals to use, promote, and provide NFP services. NFP is largely ridiculed or ignored in medical schools, scientific journals, and medical societies as being ineffective, too complicated, and old fashioned.

However, the Catholic Church and in particular the popes from Pius XI through Benedict XVI and Francis have called on and pleaded with Catholic health-care providers and Catholic institutions of higher education to provide NFP services, education, and research in this area of family planning.¹¹² Pius XII, in a 1951 address to Catholic obstetric nurses, said that it is rightly expected that they be well informed about natural methods of family planning and that it is “your office, not that of the priest, to instruct married people” and that “your apostolate demands of you as women that you know and defend this theory.”¹¹³ Paul VI, in *Humanae Vitae*, implored physicians that “their proper professional duty is the task of acquiring all the knowledge necessary in this delicate sector, so as to be able to give to the married persons who consult them the wise counsels and sound directives.”¹¹⁴ John Paul II, in a 1981

111. See R. Fehring and A. Schlidt, “Trends in Contraceptive Use among Catholics in the United States: 1988–1995,” *Linacre Quarterly* 68 (2001): 170–85; Ohlendorf and Fehring, “The Influence of Religiosity on Contraceptive Use among US Catholic Women.”

112. See R. Fehring, “The Catholic Physician and Natural Family Planning: Helping to Build the Culture of Life,” *National Catholic Bioethics Quarterly* 9 (2009): 305–23.

113. Pius XII, Address to Italian Catholic Union of Midwives, October 29, 1951, in Zimmerman, *Natural Family Planning*, 229–30.

114. Paul VI, *Humanae Vitae*, no. 27.

address to nurse midwives (echoing Pius XII), mentioned the important contribution of advice and practical guidance they can offer to individual couples, who wish to carry out responsible procreation, while respecting the order established by God.¹¹⁵ He also encouraged all married Catholic couples to learn NFP, and declared that establishing centers for the study of natural birth regulation is one of the primary means of building a culture of life.¹¹⁶ Furthermore he said that a unique responsibility belongs to health-care personnel, to be guardians and servants of human life, and that educating in the service of life involves the training of married couples in responsible procreation. It is hoped that this overview will help stimulate Catholic physicians and other Catholic health professionals to learn more about NFP and to integrate it into their practices.

In aid of this process, two simple NFP protocols are available on the website for the Marquette University Institute for Natural Family Planning;¹¹⁷ these quick instructions can be handed to women or couples who wish to use NFP to avoid or achieve pregnancy. The first protocol uses the electronic hormonal monitor and the second uses cervical mucus; both protocols also involve a simple algorithm. If couples wish to use both mucus and monitor to avoid pregnancy, they need to wait to have intercourse until both the monitor and mucus indicate infertility. Fertility monitoring charts can be downloaded at the same website,¹¹⁸ and a short Powerpoint slide program to support the protocols may be obtained by e-mail.¹¹⁹ The introductory slide program lasts about twelve minutes and is accompanied by commentary for each slide. The protocols and the slide program are intended to make a simple NFP method available to couples on a computer, tablet, or cell phone during an office visit.

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115. See John Paul II, Address to Midwives (January 26, 1980), in Zimmerman, *Natural Family Planning*, 259–60.

116. See John Paul II, *Evangelium Vitae*, no. 97.

117. See http://nfp.marquette.edu/nfp_quick_inst_intro.php

118. The fertility monitor chart can be found at <http://nfp.marquette.edu/pdf/MonitorChart.pdf>; the mucus recording chart, <http://nfp.marquette.edu/pdf/MucusChart.pdf>; and a chart to track both, <http://nfp.marquette.edu/pdf/MonitorPlusMucus.pdf>

119. E-mail address for the Marquette University Institute for Natural Family Planning is muinstnfp@marquette.edu.

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