Contraceptive Failure

How Clinicians Can Promote Effective Contraceptive Practice

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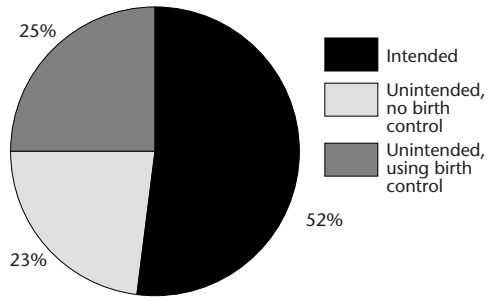
Background

Unintended pregnancy continues to be a major public health problem in both Colorado and the nation. In 1997, thirty-eight percent (38%) of pregnancies resulting in live births in Colorado were unintended[1] as opposed to 31% nationally. Additionally, 50% of all pregnancies in the United States (including those resulting in miscarriage, abortion or live birth) were unintended[2]. Interestingly, among women experiencing unintended pregnancies, half had been using contraception during the month in which they conceived[2]. Other women experiencing unintended pregnancies had discontinued their methods due to some difficulty or problem with use[3]. In response to these data, several researchers have attempted to identify risk factors and common reasons for contraceptive failure.

Percentage of Intended vs. Unintended Pregnancies Annually in U.S., by Birth Control Use (Henshaw, 1998)



Risk Factors for Contraceptive Failure

Contraceptive failure can result from an intrinsic failure of the birth control method itself, from discontinuation of the method by the user, or from sporadic use of a particular method. "Contraceptive failure due to an inherent failure of the method alone is almost always confounded by a person's typical use of the method[4]." When contraceptives were ranked for effectiveness over the first year of use, utilizing data from the 1995 National Survey of Family Growth (NSFG) and the 1994–95 Abortion Patient Survey (corrected for abortion underreporting), long-acting methods such as Norplant and DMPA exhibited the lowest failure rates (2–3%). Failure rates increased with combined oral contraceptives (8%), the diaphragm and cervical cap (12%), male condoms (14%), periodic abstinence (21%), withdrawal (24%) and spermicides (26%)[4]. Thus, method choice greatly impacts a couple's ability to avoid an unintended pregnancy.

The use of longer acting methods, such as Norplant, Depo-Provera, and IUDs, which minimize the chance for user error, result in the lowest rate of contraceptive failure.

Trussell and Vaughn also used data from the 1995 NSFG to compute the probability of contraceptive failure for reversible methods of contraception and to calculate method-related discontinuation and subsequent resumption of use[3]. Within one year of initiating a reversible method, contraceptive failure occurred in 9% of women. During a lifetime of using reversible methods, a typical woman will experience 1.8 method failures and will discontinue using a method almost 10 times. When studying method-related discontinuation, Trussell noted that 31% of women discontinued contraception for a method-related reason within the first 6 months of use; 44% within the first year. Sixty-eight percent resumed using contraception within 1 month of stopping and 76% resumed use within 3 months. Of note is the fact that low-income women were less likely to resume contraceptive use after discontinuation[3].

Contraceptive failure rates also differed substantially among certain groups of women. According to Fu, adolescents and women under age 25 tended to have higher failure rates than did women aged 25–29, whose rates in turn were higher than those of women aged 30 and older. Sixteen percent (16%) of adolescents (aged 19 or under) experienced method failure during the first year of use, compared to 13% of women aged 20–24 and 12% of women aged 25–29. Across all age groups, the highest failure rates were among unmarried women, particularly those who were cohabiting. Seventeen percent (17%) of unmarried, cohabiting women experienced contraceptive failure during the first year of contraceptive use as opposed to 13% of their unmarried, non-cohabiting counterparts. Failure rates were also higher for low-income women, with some variation along racial and ethnic lines. African American women exhibited the same rate of contraceptive failure (19%) regardless of income. Contraceptive failure rates were lower among Hispanic and White women at rates of 15% and 10% respectively; however, their rates varied significantly by income. Hispanic and White women with incomes below 200% of the federal poverty level were almost two times more likely to experience contraceptive failure than their higher income counterparts[4].

During a lifetime of using reversible methods, a typical woman will experience almost two contraceptive method failures and will stop using a method ten times.

The pattern of contraceptive usage over time also impacts contraceptive failure rates[5]. While the majority of adolescents aged 15–19 reported long-term uninterrupted contraception use, they were more likely to report sporadic use of a method when compared to older women. Women aged 20–24 also demonstrated higher rates of sporadic contraception use when compared with their older counterparts (age 25–34). Women in volatile relationships; those having infrequent intercourse; those having recently experienced coercive sex; as well as teens aged 17 and younger with a partner more than three years older, were all more likely to be sporadic users[5].

In summary, contraceptive failure varies by method (due to the inherent failure of the method itself usually compounded by user error), as well as by the demographic and behavioral characteristics of the user. The use of longer acting contraceptive methods, especially those minimizing the chance for user error, results in the lowest rate of contraceptive failure. In terms of demographic and behavioral variables, contraceptive failure rates are highest among unmarried women, particularly those who are cohabiting; among those with incomes below 200% of the federal poverty level; and among adolescents and women under age 25[4]. African American women exhibit a higher rate of contraceptive failure regardless of income. Failure rates among Hispanic women, while higher than those of White women, are influenced more by income.

Method discontinuation along with inconsistent use also impact contraceptive failure rates. As noted above, sporadic use is more common among adolescents; among women who are younger with older partners; among women who have infrequent intercourse or who recently experienced coercive sex; or have volatile relationships with their partner[5].

Reasons For Method Discontinuation and Inconsistent Use

Having identified risk factors for contraceptive failure, researchers next attempted to discover the reasons why women discontinue contraceptive methods. A 1995 telephone survey of sexually active, low-income women aged 18–34 found

that 83% reported current contraception use. These women were more likely to contracept if:

- they had a positive attitude about contraception;
- they were able to discuss sexual issues with friends and their partners, and;
- they were satisfied with the reproductive health care received at their last visit.

Women were more likely to be satisfied with services if:

- the staff was courteous, respectful and helpful and made an effort to assess their needs;
- the clinician's gender matched their own preference and;
- the clinic was clean and services were efficient and organized[6].

Side Effects

Data suggest that inadequate knowledge about method use and side effects leads to contraceptive failure (due to user error, method discontinuation, or sporadic use) and subsequent unintended pregnancy. Side effects vary by method. According to the 1995 NSFG, side effects (particularly breakthrough bleeding, nausea, weight gain, headaches, breast tenderness, and mood changes) significantly increased the discontinuation rate for combined oral contraceptive (COC) pills. In addition, cigarette smoking adversely affected cycle control among COC users, making discontinuation more likely due to spotting and bleeding[7]. A study of 1,657 combined oral contraceptive users found that after six months, only 68% of new pill users and 84% of those switched to a different formulation were still taking the pill. Thirty-seven percent (37%) cited the side effects listed above as the most common reason for discontinuation. Among those who stopped taking the pill, 69% chose a less effective method and 19% did not contracept at all[8].

Low-income women are less likely to resume contraception use after discontinuing a method.

Similarly, Depo-Provera (DMPA) is widely used for short periods of time, sometimes for only a single injection, with its long-term use limited by side effects[9]. In a sample of 402 low-income, urban minority women interviewed when they initiated DMPA and 12 months later, the discontinuation rate for DMPA was 58%, with half of those who discontinued stopping after only one injection. Menstrual changes and other side effects such as weight gain were most frequently cited as the reason for discontinuing use. Half did not begin use of another method or used birth control inconsistently after discontinuing DMPA[10]. Another study reported an even lower 1-year continuation rate (29%) in a Planned Parenthood population with most discontinuations due to side effects[11]. In addition, 70% of adolescent DMPA users in one study discontinued after a single injection[12]. Women who stop using DMPA are at high risk for unintended pregnancy since they often quickly discontinue use and do not make the transition to another method[10,12]. Anticipatory guidance and counseling about side effects is important.

Similarly, in a study of Norplant done with a group of inner city Latina women, side effects (menstrual irregularities, mood swings, headaches, hair loss) or fear of side effects, led to removal in more than half of implant users by the end of the second year[13]. Dunson noted that women with certain characteristics (more than a high school education, who had been menstruating for a long time and who had not used contraceptives in the month before Norplant insertion) were more likely to stop using Norplant due to *perceived* menstrual problems[14]. Thus, as noted earlier, even the perception of side effects can lead to method discontinuation[18].

Lack Of Knowledge

Hormonal contraceptives might be better utilized if misconceptions about safety were addressed; if non-contraceptive health benefits were highlighted; and if clients were aware of the higher failure rates associated with barrier methods[15, 16]. Greater than 50% of all COC pill users perceived that there were substantial serious health risks to the pill[17]. Women who were made aware of four or more benefits of COC use (such as menstrual cycle regularity, acne improvement, protection against endometrial and ovarian cancers) were more than twice as likely to be satisfied with their method[18].

In a related study, misconceptions and concerns about safety and side effects prevented many adolescents from initiating Norplant use[19]. Fear of side effects, especially weight gain, was common in 86% of teen pill users seen in a suburban practice[20]. Thus, even the perception of side effects can discourage initiation of a method.

Lack of knowledge about a particular method of birth control can also affect use. In 1998, Little evaluated the efficacy of several educational interventions relative to COC use. Six hundred thirty-six women, receiving pill refills, were randomized to receive standard pill refill practice, one of two educational pamphlets (a credit-card size summary card containing pill rules or a Family Planning Association pamphlet), interactive questions posed by the clinician about possible side effects and how to address them, or a pamphlet and interactive questions. Three months later, 82% of women completed a questionnaire assessing their knowledge of pill information. While knowledge was improved with all interventions other than the standard refill practice, the combination of questions and credit-card size summary was superior[21]. Similarly, personal counseling, extensive education and supportive follow-up provided to both adolescents and adult Norplant users in a clinic population were credited with a resulting cumulative continuation rate for adults of 91% and 94% for adolescents over a 50-month period[22].

Women and their partners may also be overly confident about the efficacy of barrier methods. Condom use has been increasing among younger men and women, particularly at first intercourse[23]. Condom use was reported as the usual method of contraception in 7% of sexually active college women in 1975, increasing to 46% in 1995[24]. Many couples use condoms as their primary means of pregnancy prevention. However, condoms alone are not a highly effective method of contraception. Researchers in Scandinavia interviewed 200 women receiving a first trimester elective pregnancy termination about contraceptive methods used and possible reasons for contraceptive failure. All of the women interviewed felt they had adequate knowledge of contraception. At the time of conception, 11.5% of the women utilized a highly effective birth control method. Sixty-three percent used less effective methods and 26% did not use any method of birth control. Concern about side effects was the most common reason for not using a highly effective method of birth control (25%). Seventy-seven percent (77%) of condom users reported condom breakage, improper use or non-use that led to conception. The researchers concluded that knowledge about how to use contraceptives in practice was lacking[25]. In addition to improving counseling, dual method use should also be encouraged, as, according to data from the 1995

Reasons for Method Discontinuation

- *Side Effects*
- *Lack of Knowledge about Method Safety, Benefits or Use*
- *Incorrect or Inconsistent Use*
- *Lack of Male Involvement*

NSFG, only 3% of condom users were also employing another method[26].

Use-Related Behavior

Use related behavior also plays a role in contraceptive failure. The presence or absence of a daily routine may affect contraceptive consistency[27], as women without an established routine are more than three times as likely to miss two or more pills per cycle[18]. New COC users and those who had only been using the pill for 3–6 months also demonstrated inconsistent use[28].

Missing the re-injection appointment was the reason for discontinuing DMPA in twenty-three percent (23%) of adolescents using the method. Restart rates, however, were highest among teens who discontinued due to missed appointments (87%) versus side effects (34%)[12]. As noted earlier, contraceptive continuation rates, in general, are low among adolescents. Continuation rates for Norplant were highest, followed by DMPA with just 12% of adolescents continuing with COCs after one year[29].

In summary, while the causes of contraceptive failure are complex, several common themes emerge. Lack of knowledge about the non-contraceptive benefits, safety, efficacy, and side effects of birth control often prevents women from initiating or maintaining a given method. Fears and misconceptions abound, especially in terms of contraceptive side effects. Inconsistent or incorrect use can lead to side effects, decreased method effectiveness, and eventual discontinuation. As noted earlier, unintended pregnancy rates following method discontinuation are very high as many groups of women are slow to transition to another method.

Who is most likely to experience contraceptive failure?

- *Unmarried women, especially if cohabiting*
- *Adolescents*
- *Women under age 25*
- *Women with incomes below 200% of poverty*

Lack of Male Involvement

Failure to involve men in family planning decisions may also lead to contraceptive discontinuation. Men play an important, and in some societies, a dominant role in reproductive decision-making. Seventy-eight percent of men in a recent study felt that contraceptive decisions should be a shared responsibility[30]. A woman's initiation and continuation of a contraceptive method is greatly influenced by her partner's attitude[31]. Educating men about contraception and facilitating male access to reproductive health services can increase contraceptive continuation[32]. This education may be "particularly crucial in male-dominant cultures, where women may have little control" over contraceptive decisions[33].

Strategies for Decreasing Contraceptive Failure

When looking at contraceptive failure related to user error, method discontinuation or sporadic use, it becomes clear that several types of interventions may be helpful.

1. Intervening with Women at Risk for Contraceptive Failure

Contraceptive failure varies by method as well as by the demographic and behavioral characteristics of the user. The use of longer acting contraceptive methods, such as Norplant, DMPA, and IUDs, which minimize the chance for user error, results in the lowest rate of contraceptive failure. Given the characteristics of women at risk, family planners should target these groups for more intensive counseling and follow-up in an attempt to mediate the influences that lead to contraceptive failure.

2. Client Centered Counseling about Methods

A thorough approach to counseling improves method satisfaction and, indirectly, compliance. Asking clients what they know or have heard about a particular method may bring forth concerns and misconceptions[18]. Clients should also be queried about previous experiences with contraceptive methods so that previous successes can be re-created and bad experiences avoided. Fleming postulates that continuation rates for long-acting methods may be related more to factors associated with the providers than with the users[34]. Thus, client centered counseling techniques are helpful in assisting the client to fully explore her contraceptive options and make a choice that will promote contraceptive continuity.

3. Intensive Client Education

Clients must receive information about a particular method's non-contraceptive benefits, safety and efficacy along with advice about managing side effects and reassurance about the temporary nature of such effects[18]. As stated earlier, even the perception of side effects can lead to noncompliance[18]. It is also helpful to acknowledge how likely a particular client will be to experience certain side effects[35].

In a related study of Norplant, 98% of women who planned to continue using the implant received reading material as a part of their preplacement counseling and 95% felt they had received adequate information prior to receiving the implant[36]. Thus, comprehensive education and counseling can affect method continuation.

When prescribing COC pills, the importance of consistent and continued pill use should be reinforced[37]. Clients need to understand how to take the pill properly and what to do if pills are missed; pill taking should be associated with some other regular daily activity. Women should also be shown how to use their specific package of pills. High risk clients who have difficulty incorporating daily pill taking into chaotic lives or who are less competent at solving pill-taking problems need more individualized and perhaps more intensive counseling[38]. Both written and verbal instructions are helpful, especially for adolescents, and *a new copy of these instructions should be offered at each follow-up visit*.

4. Promoting the Use of Highly Effective Methods

The use of highly effective methods, such as Norplant, DMPA, and IUDs, decreases the incidence of contraceptive failure. Clients should understand that barrier methods, including condoms, have higher failure rates. The use of dual methods, such as foam or film and condoms, to increase contraceptive efficacy, as well as STD protection, should be encouraged.

5. Decreasing Systems Barriers to Contraceptive Continuity

The service delivery system may not be designed to address many of the characteristics of inconsistent users. However, modifications can be made to facilitate continued access to contraception. Practices such as dispensing only one pack of pills at a time must be eliminated, so that clients are not discontinuing a method shortly after initiation[28]. Appointment follow-up and assistance with quickly re-starting methods such as DMPA can also improve continuation rates[12].

Incentives may also help improve contraceptive compliance. A taxi voucher incentive was successful in California for increasing compliance with the initial prenatal visit among a group of low-income women despite the fact that only one voucher was actually used[39].

6. Encouraging Use and Prophylactic Distribution of Emergency Contraception

Emergency contraception (EC) should be given on a prophylactic basis at each annual exam. A 1998 randomized, controlled trial in the United

Kingdom supports this approach. In this study, a group of over 500 women who self-administered EC had lower rates of unintended pregnancy than the control group who could only EC through a provider. Women with prophylactic access to EC were not more likely to use EC repeatedly and their use of ongoing contraception did not differ from the control group[40]. In addition, mechanisms should be available within the clinic system to allow quick and easy access to EC. While clients should always be encouraged to initiate and maintain a method, EC should be available to clients as often as needed.

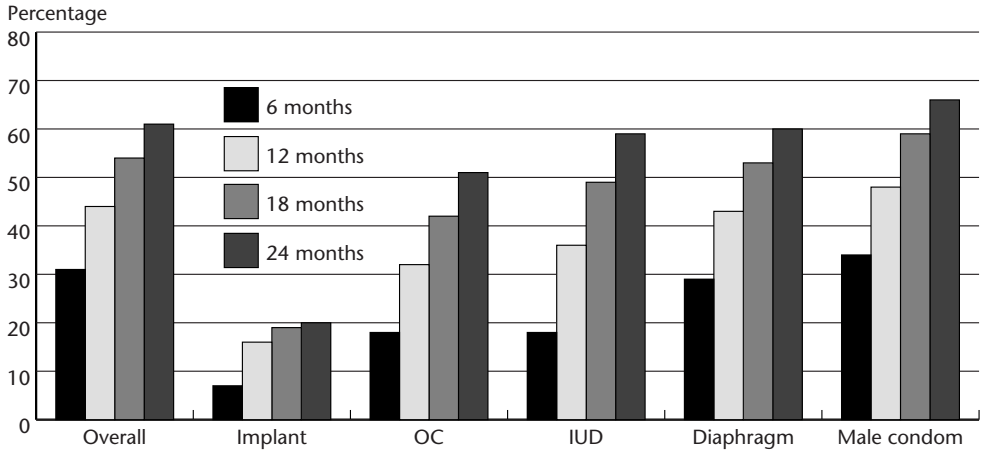
7. Encouraging and Facilitating Male Involvement in Family Planning

As noted earlier, the majority of men feel that decisions about reproductive behavior, including birth control, should be a shared responsibility. However, men are often not well informed about contraception and reproductive health. Because men do not routinely access preventive health care, most of their information about contraception comes from sources outside of the health care system; from partners, friends or the media[31]. Men need to be better educated about contraception and reproductive health issues by health care providers and involved, with their partner, in decision-making about birth control in the clinic setting. Reproductive health services and exams should be marketed and readily accessible, within a setting that is non-judgmental and committed to serving men. Incorporating male staff, developing "male-friendly" environments[41] and utilizing innovative approaches such as "Come as a Couple" appointments can increase the number of men receiving exams and contraceptive counseling. These strategies, then, can ultimately facilitate male involvement in contraceptive choice, method initiation and continuation, engender support for the use of contraception by the female partner, and promote a man's individual responsibility for family planning.

Summary

Assuring access to low-cost, high quality contraceptive services and instituting practices to decrease contraceptive failure are critical components in the campaign to prevent unintended pregnancy. In light of the data presented, a renewed commitment to implementing and refining these approaches in contraceptive practice is clearly warranted.

Percentage of Women Discontinuing Contraceptive Use for Method-Related Reasons, by Method and Duration of Use



Source: Trussell J, et al 1999

Decreasing Contraceptive Failure…
How are you doing?

Take this simple test. Read each of the strategies below and evaluate how often you employ the strategy with each family planning client. Give yourself a score for each item.

Always = 5 Almost always = 4 Sometimes = 3 Almost Never = 2 Never = 1.

SCORE

___ Women at risk for contraceptive failure receive additional education and counseling about birth control methods, safety, use, benefits, and side effects. More frequent phone or clinic follow-up is employed as needed. (This means, of course, that you know who is most at risk.)

___ Clients are asked what they know or what they may have heard about a particular method of birth control to elicit questions, concerns, or misconceptions.

___ Clients are asked about their previous experiences with contraceptive methods to build on successes and avoid bad experiences.

___ Clients are informed about a method's non-contraceptive benefits.

___ Highly effective methods are promoted; clients are told that barrier methods, including condoms, have higher failure rates. The use of multiple methods to increase contraceptive efficacy is encouraged.

___ Clients are educated about method side effects and the likelihood that they might experience side effects, and are given strategies (that are specific and work for them) for management of side effects.

___ Clients who receive combined oral contraceptives are counseled about the importance of consistent and continued pill use. They are taught to take the pill at the same time each day and what to do if pills are missed. Clients are shown how to use their specific brand of pill.

___ Clients receive both written and verbal instructions about their contraceptive method.

___ Clients can access contraceptive services quickly without system's barriers to appointments, method pick-ups, etc.

___ All clients receive information about emergency contraception.

___ Emergency contraception is given prophylactically (i.e., advance prescription) to clients at the initial or annual exam visit.

___ Emergency contraception is available to clients as often as needed.

___ TOTAL SCORE

Scoring:

50–60	Hurray! Share your successful approach with others.
40–49	Congratulations! You are doing your part.
20–39	Keep up the effort—reducing contraceptive failure is tough.
Below 20	Take the test again tomorrow—and keep trying!

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