FAMILY PLANNING METHODS:
HOW DO THEY WORK AND WHY DOES IT MATTER?
Christian Connections for International Health (www.ccih.org)
Family Planning/Reproductive Health Working Group*

Christian Connections for International Health (CCIH) is aware that how family planning methods work is a concern among a number of its member organizations (1). The decision about which methods are acceptable varies widely among Christian organizations and individuals, and is influenced for some by whether the method acts to prevent conception or is thought to act as an abortifacient (capable of causing an abortion).

One of the objectives of CCIH is to provide updated, evidence-based information, resources and viewpoints on a variety of pertinent international health topics to serve our member organizations and affiliates. Because family planning is a topic of considerable interest, the purpose of this paper is to primarily address how basic methods work and to clarify what is currently known with respect to specific methods.

There is no universally accepted definition of precisely what constitutes abortion; however, according to most legal, regulatory and medical authorities “abortion” is the termination of an established pregnancy after implantation of a fertilized egg in the uterus (womb). Implantation occurs at 5-7 days after ovulation (release of the egg) and fertilization (which typically occurs within the first 12 hours after ovulation). Actions before implantation that prevent pregnancy are “contraceptive”. This definition is used by the US Food and Drug Administration/National Institutes of Health (2) and the American College of Gynecologists and Obstetricians (3).

Some faith communities and some individuals consider any action that prevents implantation of a fertilized egg to be a very early abortion (4,5,6,7). For some in these communities, if the primary mechanism of action is to prevent fertilization, this is acceptable. For others, any possibility of a post-fertilization effect that would prevent implantation is problematic. CCIH acknowledges and respects the differing views and values that result in different definitions of abortion.

The information here is largely based on peer-reviewed documents and consensus material from mainstream health sources (8,9,10) [Reference 10 is especially useful for description of terms and basic reproductive processes]. Decisions regarding family planning methods are based on

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several factors related to optimal health outcomes as well as the beliefs and values of organizations and individuals. The mechanisms of action of family planning methods are only one consideration in these decisions. Family planning choices often involve deciding where individuals or couples are willing to make a compromise – effectiveness of the method, safety, convenience, alignment with religious perspectives or some combination of these. CCIH respects the different approaches by faith communities to enable couples to voluntarily achieve their desired number and timing of pregnancies, consistent with the communities’ religious teachings and values. We urge secular organizations to do the same.

Q1. What is family planning?

A. “Family planning”, as used by CCIH, means enabling individuals and couples to determine the frequency and timing of pregnancies, including the use of a variety of methods for voluntary prevention of pregnancy.

Q2. What are the ways family planning methods can work?

A. There are 5 primary ways: 1) block sperm from reaching the egg; 2) change the man’s sperm so they cannot fertilize the egg; 3) prevent eggs from being released; 4) thicken mucus in the cervix, preventing sperm from passing; 5) alter the lining of the uterus (womb) so the fertilized egg does not attach or implant. Many methods have multiple actions, and it is currently not possible to precisely determine the contribution of each. Periodic abstinence is often a part of fertility awareness-based methods (natural family planning). These methods can also be used to increase the chances of achieving a pregnancy.

Q3. There are a lot of different family planning methods. What are the specific ways each one works so people can make better informed decisions?

A. The following table summarizes the main mechanisms of action and the relative strength of each for preventing pregnancy (e.g., very strong, strong, moderate, weak). We comment on the potential to have a post-fertilization effect that could prevent implantation. We make no definitive statements on post-fertilization effects because failure of a fertilized egg to implant cannot be directly assessed; however, when a method effectively prevents ovulation and/or blocks/changes the man’s sperm so fertilization does not occur, there is no fertilized egg that could be prevented from implanting. [In this table, we assume methods are used consistently and correctly. For complete information on the contraceptive effectiveness of methods as commonly used, as well as when used correctly and consistently, see reference 9.]
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<tr>
<th>Family Planning Method</th>
<th>Mechanisms of Action (Assuming correct and consistent use)</th>
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| Pills (Combined estrogen and progestin) (8,9) | Prevents ovulation (release of the egg)—strong  
Thickens cervical mucus to block the man’s sperm—strong  
Post-fertilization effect—in theory, could occur, but rarely (no actual evidence that it does), due to high effectiveness in preventing ovulation and fertilization. Missed pills increase chance of ovulation and pregnancy. |
| Patch, Ring, injections (progestin plus estrogen) (8,9) | Similar to combined pills |
| Progestin-only pills (POPs, “minipills”) (8,9) | Thickens cervical mucus to block the man’s sperm—strong  
Prevents ovulation—weak to moderate (ovulation may occur with 40% of menstrual cycles)  
Post-fertilization effect—may be rare or occasional, depending on whether taken during breastfeeding. Probably rare when used during breastfeeding when there is a dual effect from the pills and breastfeeding to prevent ovulation. May be occasional when not breastfeeding and ovulation is more common. Missed pills increase chance of ovulation. POPs change lining of the uterus. Ectopic (tubal) pregnancy can also occur; e.g. pregnancy develops in the woman’s tube rather than the uterus (though the risk of ectopic pregnancy is lower than if no method were used) |
| Injectables—progestin-only (Depo-Provera and Noristerat) (8,9) | Prevents ovulation—very strong  
Thickens cervical mucus to block the man’s sperm—strong  
Post-fertilization effect—in theory could occur, but very rarely (no actual evidence) due to very effective prevention of ovulation and fertilization |
| Emergency contraceptive pills (ECPs) (progestin-only [levonorgestrel] pills). ECPs are used after unprotected sex to prevent an unintended pregnancy (8,9) | Prevents ovulation—strong if taken before ovulation—does not work if taken on day of ovulation  
Thickens cervical mucus to block the man’s sperm—weak  
Post-fertilization effect—unlikely, based on recent studies showing ECPs work by preventing or delaying ovulation if taken before the expected day of ovulation. If taken on day of ovulation or later, implantation and pregnancy appear to occur at normal rates (11,12). Note: A number of organizations are opposed to ECPs based on an |
understanding that the uterine lining is altered if ovulation occurs, thereby preventing implantation of a fertilized egg. Complete absence of a post-fertilization effect cannot be proven, but the available evidence clearly shows prevention or delay of ovulation as the main (and possibly the only) mechanism of action. ECPs have no effect on a pregnancy if taken after implantation has already occurred.

| Implants--progestin-only (Jadelle, Implanon, Sino-implant II) (8,9) | Prevents ovulation—very strong  
Effect on cervical mucus to block the man’s sperm—strong  
Post-fertilization effect—in theory could occur but very rarely (no actual evidence) due to very effective prevention of ovulation and fertilization |
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| Intra-uterine device (IUD) (Copper T 380A) (9) | Changes and inhibits sperm—very strong. The changes in the uterine cavity (womb) due to the copper and presence of the IUD incapacitate sperm, preventing migration and ability to fertilize the egg (8,13,14,15).  
Prevents ovulation—none  
Thickens cervical mucus to block the man’s sperm—none  
Post-fertilization effect—in theory could occur, but only rarely, due to very effective prevention of fertilization. Ectopic (tubal) pregnancy very rare. **Note**: Earlier generations of IUDs without copper (e.g. the Lippes Loop) more often allowed fertilization, and were more likely to prevent implantation if there was a fertilized egg. Ectopic pregnancy was much more common than with currently available IUDs, though still considerably less than would occur with no contraception.  
As emergency contraception, the Copper T may be used for up to 5 days after unprotected sex—it is very effective, even when inserted after ovulation and fertilization. But in this case, it most likely has a post-fertilization effect that prevents implantation as one mechanism of action when used for emergency contraception (12). |
| Intra-uterine device with the progestin levonorgestrel (Mirena) (8,9,10) | Thickens cervical mucus to block the man’s sperm—strong  
Inhibits ability of sperm to migrate and capacity to fertilize the egg—strong  
Prevents ovulation—weak to moderate  
Post-fertilization effect—in theory could occur, but rarely, (no actual evidence) due to very effective blocking and impairing sperm, such that fertilization is rare. Ectopic pregnancy is also very rare. |
| Barrier methods—condoms (male and female), diaphragms, caps | Blocks sperm from reaching egg—strong (when used correctly)  
Post-fertilization effect—none |
| **Fertility awareness-based methods (Standard Days Method [CycleBeads], Symptothermal Method, Billings Ovulation/Cervical Mucus Method, TwoDay Method)** (8,9) | Identifies fertile days during menstrual cycle so couple can avoid unprotected sex—by abstaining (if practicing natural family planning) or using a barrier method.  
Post-fertilization effect—no effect on lining of the uterus. Some theoretical concerns (but no actual evidence) about whether fertilization of a delayed ovulation could, on occasion, result in a fertilized egg being impaired or unable to implant (4,16). Most research suggests this is unlikely to be a common problem, though direct measurement cannot be made (8). |
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| **Breastfeeding and lactational amenorrhea method-(LAM)** (9) | Prevents ovulation up to 6 months—strong for LAM—variable if not following the 3 LAM criteria, which are: 1) less than 6 mo. postpartum; 2) fully or nearly fully breastfeeding; 3) no return of menses  
Post-fertilization effect—might occur, especially if breastfeeding beyond 6 months. The first ovulation can precede the first menstruation, especially with prolonged breastfeeding. These early ovulations are typically followed by sub-normal amounts of the hormones needed to prepare the lining of the uterus for implantation if the egg is fertilized (8,17,18,19,20). |
| **Postpartum infertility with no breastfeeding** (8) | Prevention of ovulation—variable  
Post-fertilization effect—might occur. Most non-breastfeeding women in the postpartum period have their first ovulation at about 6 weeks. First ovulations are most often followed by sub-normal amounts of hormones, as are about 25% of second and third ovulations. Therefore, a fertilized egg might not implant if fertilized during the first several menstrual cycles after birth (8,21) |
| **Voluntary sterilization (tubal ligation, “tying the tubes” for women; vasectomy for men)** (8,9,10) | Blocks sperm from meeting the egg—very strong  
Ectopic pregnancy—very rare (e.g., implantation in the woman’s tube) can occur if female sterilization fails. No effect if vasectomy fails. |
| **Vaginal spermicides (8,9)** | Impairs the man’s sperm ability to migrate and fertilize the egg—moderate  
Post-fertilization effects—none |

**Q4.** Why don’t we know accurately how often some family planning methods might prevent implantation?  

**A.** There are two important reasons: 1) No practical test is available to detect fertilization of the egg, that takes place in the tube before implantation. Most pregnancy tests turn positive after
implantation, around the time the woman misses her menstrual period (about 12-14 days after fertilization). 2) Many fertilized eggs among all couples, whether using a family planning method or not, are abnormal (from 30-70%), and therefore do not divide and develop normally. About 50% of fertilized eggs never progress to become a recognized pregnancy. Most are incapable of implanting. Of those that do implant, many result in spontaneous abortions (miscarriages) -- about 15% of all established pregnancies. A few result in live births with congenital abnormalities (birth defects) -- about 3% of all births (22,23,24).

While science has learned much about our basic human reproduction and the mechanisms of action for family planning methods, the wonder of how our reproduction works remains an unfolding story, as it is in other areas of human biology.

Q5. It seems natural loss of fertilized eggs is very common and not really within our control. Are there other factors within our control that cause failure of fertilized eggs to implant and miscarriages?

A. Several life style factors affect the chances of a fertilized egg being healthy and capable of implanting and developing normally. Age of the woman affects the frequency of genetic abnormalities and early miscarriage. Men who smoke have genetic damage to their sperm, resulting in increased failure to implant, early miscarriages, birth defects and childhood cancers. Obesity in women is associated with higher rates of miscarriage and intra-uterine death. Sub-normal hormone levels are more common after ovulation for women experiencing psychological stress, athletic training or abrupt weight loss; therefore, the lining of the uterus would not be optimally prepared for implantation. Damage to a woman’s tubes due to sexually transmitted infections, endometriosis, and fibroids in the uterus reduce chances of implantation and normal development (25). Several of these factors are largely within our control and the effects are better documented than the potential that some family planning methods may prevent implantation. As we learn more about how we are created and live, it seems much that affects our health and human wholeness is linked to our reproduction. As people of faith, there are many factors that need to be addressed to minimize loss of fertilized eggs, reduce miscarriages, and optimize the health of women and children. The choice of family planning method is one of many considerations.

Conclusion
The need for family planning methods is greatest in the poorest countries where current lack of family planning results in many women seeking unsafe abortions (26). Family planning is a powerful way to prevent abortion. Reducing unintended pregnancies and the need for abortion produces health benefits that are strongly embraced by both Christian and secular health organizations. A maternal death from any cause is a tragedy—but when a woman dies from a pregnancy she did not want, it is a double tragedy. As Christians we have an obligation to weigh all the health consequences for those we serve when deciding to provide or omit any family planning method, since all reduce unintended pregnancies and abortion. We trust that CCIH will be a forum where issues of reproduction can be faithfully and respectfully discussed in light of our common desire to advance health and wholeness from a Christian perspective.
References


http://jme.bmj.com/cgi/content/full/32/6/355.


