

CORE Brief

How does contraception work? Not through inducing abortion

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Executive Summary

- There is consensus in the medical community that pregnancy begins when a fertilized egg is implanted into the uterine wall. Contraception is defined as a method of preventing pregnancy by inhibiting the fertilization of an egg or by preventing the implantation of a fertilized egg. In contrast, abortion is defined as the termination of pregnancy after a fertilized egg has implanted into the uterine lining.
 - No method of contraception can disrupt an existing pregnancy.
 - Misperceptions about how contraceptives work are common, even among physicians.
 - Misperceptions about how contraceptives work may impede reproductive rights, particularly if such misperceptions obstruct legislation that would broaden access to the full range of FDA-approved contraceptive methods.
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How are pregnancy, abortion, and contraception defined?

In the United States, both political and popular discourse have disseminated inaccurate and misleading claims that various methods of contraception work by inducing abortion. The conflation of contraception with abortion has resulted in confusion among both laypersons and medical professionals. In this memo, we first clarify how contraceptives work and challenge these inaccuracies by describing how pregnancy, abortion, and contraception are defined by the American College of Obstetrics and Gynecology (ACOG). We then explore common misperceptions about contraceptives, describe the political context contributing to the confusion, and detail the state of the science regarding the pregnancy prevention mechanisms of common methods of contraception.

According to ACOG, the preeminent professional organization for obstetricians and gynecologists in the U.S., **pregnancy** is defined as “the period of time from implantation to delivery.”¹ In other words, pregnancy begins when a fertilized egg is implanted into the uterine wall. This definition of pregnancy is held by all major U.S. medical organizations and U.S. governmental agencies.¹ Some understanding of reproductive biology can be helpful in understanding why this clinical and legal definition is in place.

Fertilization occurs when a viable sperm and a viable egg fuse together. Fertilization requires that an egg (ovum) be released from an ovary through a process called ovulation. Once this egg is released from an ovary, it remains in the body for approximately 24 hours before it is either fertilized or it disintegrates and dissolves. As sperm can remain alive in the uterus for approximately five days, sexual intercourse must occur within about five days of ovulation for a person to get pregnant. If an egg is fertilized, the fertilized egg may implant into the uterine lining within 5-9 days after becoming fertilized, at which point an embryo begins to develop. **However, absent contraception, about 60% of fertilized eggs *never* implant into**

the uterine lining.¹ Since pregnancy does not occur until the fertilized egg is implanted, only about 40% of fertilized eggs result in pregnancies.¹

Due to many people's lack of clarity about the point at which pregnancy begins, it is unsurprising that confusion also exists about the point at which abortion can occur. **Abortion** is defined by ACOG as a termination of pregnancy.¹ As such, an abortifacient, or drug that causes an abortion, works *after* a fertilized egg has implanted into the uterine lining.¹

In contrast, according to ACOG's definition, a method of **contraception** must prevent pregnancy by *preventing the fertilization* of an egg or by *preventing the implantation* of a fertilized egg.¹ **As such, in order to be considered contraception, a method must prevent pregnancy *before* a pregnancy is established through the process of implantation.** ACOG further states:

*Abortifacient has a precise meaning in the medical and scientific community and it refers to the termination of a pregnancy. Contraceptives that prevent fertilization from occurring, or even prevent implantation, are simply not abortifacients regardless of an individual's personal or religious beliefs or mores.*¹

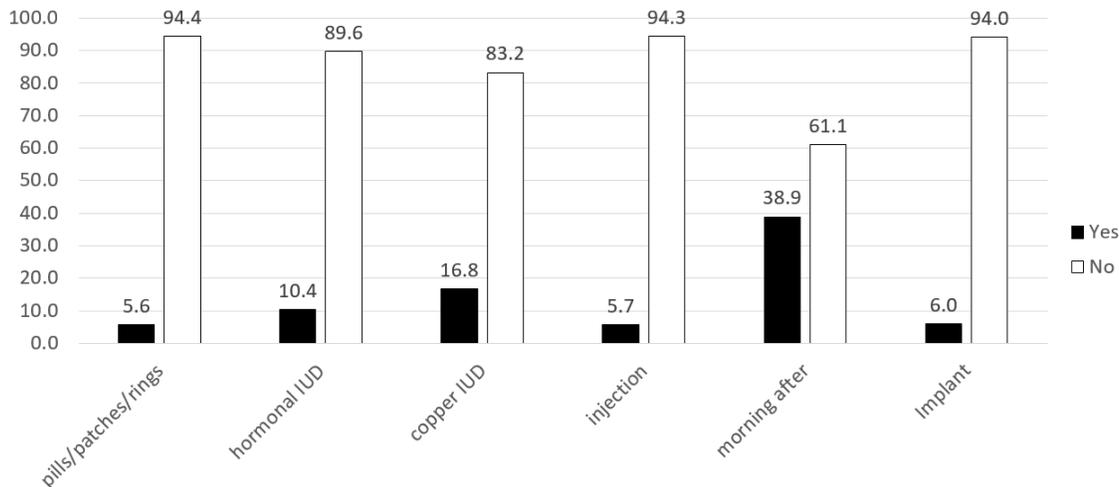
Confusing and inaccurate information about how contraception works

Despite clear agreement within the medical establishment, many individuals have misperceptions related to when abortion occurs. In one study of European women, only 64% knew that abortion occurs after implantation, 22% thought that abortion occurs before or after fertilization, and 21% said they did not know the point at which an abortion can occur.² Further, in a sample of U.S. women, 6% incorrectly thought that abortion can occur before fertilization, 15% thought after fertilization but before implantation, and 8% were unsure.³

Further, many people also hold misperceptions about the mechanism of action of many forms of contraception. For example, the belief that emergency contraception (EC) pills (also known as “morning after” pills) work by causing abortion is common among Black adolescent girls in the U.S.⁴ Further, in the sample of U.S. women previously referenced, between 19-57% of women were uncertain of the mechanism of action of oral contraceptives, intrauterine devices (IUDs), hormonal injections, and natural family planning.³ Moreover, 18% believed that EC pills work after the fertilized egg is implanted in the uterus, even though evidence shows that EC works *prior* to fertilization and implantation.³

Laypersons are not the only ones with reproductive health misperceptions; the mechanisms of action of various forms of contraception are also misunderstood among those with clinical and medical training. In a study of pharmacists, 81% correctly stated that EC pills cannot disrupt an existing pregnancy, but only 37% knew that the primary mechanism of action of EC pills is delaying or preventing ovulation.⁵ Figure 1 documents the results of a survey of all healthcare providers at the University of Wisconsin – Madison.⁶ Healthcare providers across specialties were asked to report whether they believed six common methods of contraception work by causing an abortion. Even physicians at this world-class medical center reported misperceptions about how six types of contraception (pills/patches/rings, hormonal IUDs, copper IUDs, injections, morning after pills, and implants) work to prevent pregnancy. **Although none of these methods work by ending an existing pregnancy,** many providers inaccurately believed that these methods of contraception work by causing an abortion (most notably, 39% for the morning after pill, 17% for copper IUDs, and 10% for hormonal IUDs).⁶

Figure 1. Percent of clinical faculty at the University of Wisconsin – Madison reporting that contraceptive methods work by causing abortion, $N=913$, 2019⁶



Since misperceptions related to how contraceptives work are common, including among individuals with clinical and medical training, it is important to understand the political context that has contributed to this misinformation.

Political context

In the 2014 *Burwell v. Hobby Lobby* case heard by the U.S. Supreme Court, the owners of Hobby Lobby Stores, Inc. argued that there should be a religious exemption to the Affordable Care Act’s contraceptive mandate. That is, the company maintained that for-profit institutions do not have to cover the cost of contraception for their employees.⁷ Part of their argument hinged on Hobby Lobby’s owner’s belief that contraception is immoral.⁷ As part of their case, the respondent (Hobby Lobby) attempted to redefine pregnancy as starting at fertilization, arguing in particular that EC pills and IUDs act as abortifacients.⁸ However, as described above, pregnancy occurs at the time of implantation of a fertilized egg into the uterus, and no method of contraception can disrupt an existing pregnancy after implantation.¹

Also in 2014, the U.S. Conference of Catholic Bishops sent a letter to the U.S. Department of Health and Human Services stating that federal and state abortion restrictions should apply to EC pills.⁸ Such a restriction would require that any person seeking EC pills after unprotected sex would need to comply with all state laws governing abortion, including mandatory ultrasounds and waiting periods in most states, and that providers would be required to prescribe EC pills in an ambulatory surgical center and have admitting privileges in many states.⁸ These barriers would stand in the way of many women gaining access to a method of contraception that *prevents* the need for an abortion, as EC pills are only effective prior to the start of a pregnancy.

A few years later, in his 2018 Supreme Court confirmation hearing, Justice Brett Kavanaugh referred to some forms of contraception as “abortion-inducing drugs.”⁹ In the same vein, the antiabortion group, Pro-Life Wisconsin, lobbied against a Wisconsin bill that would allow pharmacists to prescribe some methods of contraception, thus removing the need for clinical visits for birth control pills and the birth control patch for most women.¹⁰ In their statement, Pro-Life Wisconsin recorded their opposition to the bill due to their belief in the “abortifacient effect of hormonal contraceptives.”¹¹ This belief hinges again on the definition of pregnancy as starting at fertilization, not implantation, as defined by the medical profession and the U.S. government.¹ This politicized rhetoric proliferates misinformation and creates widespread

misconceptions about contraception and abortion. These misperceptions threaten the reproductive rights of Wisconsinites and beyond, as legislation informed by misinformation obstructs access to the full range of FDA-approved contraceptive methods.

State of the science

In order to understand the current state of the science related to contraception, it is helpful to understand the mechanisms of action through which various methods of contraception work (table below). **Of critical importance, all methods of contraception work prior to implantation. As such, no method of contraception can disrupt an existing pregnancy.**

Contraceptive Method	Mechanism of Action
Female Sterilization (Fallopian Tube Surgery)	<ul style="list-style-type: none"> Prevents fertilization as the cutting, blocking, or removal of the Fallopian tubes prevents sperm and ova from making contact.¹²
Male Sterilization (Vasectomy)	<ul style="list-style-type: none"> Blocks fertilization by cutting or blocking the vas deferens so that sperm cannot leave the body during ejaculation.¹²
Contraceptive Implant	<ul style="list-style-type: none"> Designed to completely suppress ovulation for up to 24 months and not to impact implantation.^{13,14} Studies show that the ovulatory suppression remains at 100% until 30 months.¹⁴ Prevents pregnancy through the thickening of cervical mucus, which prevents the transport of sperm into the uterus.¹⁴
Copper Intrauterine Devices	<ul style="list-style-type: none"> Prevents sperm from fertilizing ova through an immune response to the plastic and copper in the IUD.¹⁵⁻¹⁷ The immune response causes the uterus and Fallopian tubes to be toxic to ova and sperm, specifically impairing sperms' functioning. Evidence suggests that copper IUDs work by preventing fertilization instead of implantation.¹⁸⁻²⁴ However, when copper IUDs are placed after unprotected sex as emergency contraceptives, it is likely that copper IUDs prevent pregnancy after fertilization by disrupting implantation.^{25,26}
Hormonal Intrauterine Devices	<ul style="list-style-type: none"> Prevents fertilization through an immune reaction caused by the plastic in the IUD and the levonorgestrel hormone.¹⁵⁻¹⁷ The immune response causes changes in the uterus that are toxic to both sperm and ova.²⁷⁻²⁹ Thickens cervical mucus, suppresses sperm motility, and may prevent ovulation.³⁰⁻³² Evidence suggests that hormonal IUDs work by preventing fertilization instead of implantation.¹⁸⁻²⁴
Injectable Contraceptives	<ul style="list-style-type: none"> A progestin hormone called depot medroxyprogesterone acetate (DMPA) prevents pregnancy by inhibiting ovulation through suppressing release of follicle stimulating hormone and luteinizing hormone from the ovaries.³³ Thickens and decreases cervical mucus.^{34,35} Although injectable contraceptives cause endometrial atrophy, which may affect implantation, the mechanism of action is primarily through inhibiting ovulation and thickening cervical mucus.^{35,36}
Vaginal Contraceptive Ring	<ul style="list-style-type: none"> Suppresses ovulation. May also affect the viscosity of cervical mucus and endometrial thickness.^{37,38}

Contraceptive Patch	<ul style="list-style-type: none"> ▪ Suppresses the release of follicle stimulating hormone and luteinizing hormone from the ovaries. Since these hormones are needed to stimulate the production of ova, the contraceptive patch prevents ovulation.³⁹ ▪ Also has likely mechanisms of action including thickening the cervical mucus and changing the endometrium.³⁷
Combined Oral Contraceptives (COCs)	<ul style="list-style-type: none"> ▪ Composed of two hormones – progestin and estrogen – which prevent fertilization. The progestin component blocks ovulation by suppressing the release of luteinizing hormone, and the estrogen component suppresses ovulation by stopping the release of follicle stimulating hormone.⁴⁰ ▪ Block fertilization by disrupting the movement of ova through the Fallopian tubes and thickening cervical mucus.^{41,42} ▪ Although COCs could in theory cause endometrial atrophy, these effects are not well substantiated and there is no evidence that COCs work by preventing implantation.⁴³
Progestin Only Pills	<ul style="list-style-type: none"> ▪ Inhibit ovulation. ▪ Thicken and decrease cervical mucus. ▪ Alter the endometrium.⁴⁴
Emergency Contraception	<ul style="list-style-type: none"> ▪ Delay or inhibit ovulation.⁴⁵⁻⁵⁰ ▪ Although there is no evidence that EC pills have post-fertilization effects, EC pills could act to prevent pregnancy by affecting implantation.^{25,51}
Vaginal Barriers and Spermicide	<ul style="list-style-type: none"> ▪ Prevent fertilization by providing a physical barrier blocking the transport of sperm into the uterus.⁵² Some barriers, including the cervical cap and diaphragm, combine a physical barrier to the uterus with spermicide, an agent that kills sperm.
Male Condoms	<ul style="list-style-type: none"> ▪ Prevent fertilization by blocking the transport of sperm into the uterus.⁵³
Coitus Interruptus (Withdrawal or Pulling Out)	<ul style="list-style-type: none"> ▪ If withdrawal occurs prior to ejaculation, coitus interruptus may prevent fertilization by preventing the sperm and ova from making contact.⁵⁴

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