

Emergency Contraception: A Brief Review

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Abstract:

The authors review the history leading up the development of post coital contraception. The authors focus on later forms of post-coital contraception, reviewing mechanism of action, dosage and timing, safety, efficacy, and repeated use. Social issues, including barriers to access, and cultural beliefs regarding abortion and emergency contraception are addressed.

MeSH Words: Contraception, Abortion,

Background

Up until the advent of contraception, a woman's fertility was governed mainly by the capability of her ovaries and the frequency of her sexual encounters. With the advent of modern medicine, women now have both primary (contraception) and secondary (therapeutic abortion) measures to avoid or terminate pregnancy. Unbeknownst to many, primary prevention goes beyond birth control pills, intrauterine devices (IUDs), condoms, diaphragms, and all the other creative methods on the market today. Emergency contraception (EC) was first studied in 1974 by a Canadian professor named Yuzpe, but it has only recently begun to receive the attention it deserves [1]. Simply stated, this is a method to prevent

pregnancy after an unprotected sexual encounter. Whether a contraceptive device fails, is used incorrectly, or is not used at all, EC provides women a way to ward off a potential pregnancy before it occurs.

Mechanism of Action

Currently there are a few different drug preparations including combined estrogen-progestin (Preven), estrogen alone, and progestin alone (Plan B or levonorgestrel). Because of its single dose regimen, levonorgestrel has become the gold standard [2, 3]. Preven is no longer being manufactured, but existing supplies are still being used [4]. Though high dose estrogen has similar efficacy as its alternatives, it is seldom used because of its five day dosing

schedule and prevalent side effects [2, 5, 6]. The alternative to oral medication is post-coital insertion of a copper IUD. The precise mechanism of action of EC depends on the time in a woman's menstrual cycle when intercourse occurred and how soon after the event the EC was taken [7]. If used before ovulation, EC acts to inhibit or delay release of an egg from the ovary. Evidence also suggests that EC may prevent fertilization, interfere with implantation into the uterus, disrupt sperm transport, thicken cervical mucus, and alter the responsiveness of the corpus luteum [2, 5, 7].

Dosage and Timing:

Emergency contraception should be taken as soon as possible after unprotected intercourse. It is most effective when administered within 72 hours but provides some efficacy up to 120 hours after the event [2]. Traditionally EC has been given as two doses: the first within 72 hours after sexual intercourse and the second 12 hours later. However, a recent randomized trial published in 2002 has shown that taking the two doses of Plan B (levonorgestrel) together is as effective as taking them 12 hours apart without increased side effects. Currently a single dose of 1.5 mg of levonorgestrel is recommended and can be given up to 5 days after the sexual encounter. This also eradicates concerns of forgetting or delaying the second dose [2, 3, 8, 9]. The copper IUD can be placed within 120 hours of unprotected intercourse [2].

Safety, Side Effects, and Contraindications:

The most troublesome side effects of EC are nausea and menstrual irregularities. Fortunately, these side effects are short-lived [2, 5, 10, 11]. The only contraindications to using EC are undiagnosed vaginal bleeding and known pregnancy [5, 10]. Yet it is crucial to note that if EC is mistakenly taken during pregnancy, no harm is done to the developing fetus. EC has no effect once implantation has occurred and thus cannot interrupt an established pregnancy [5, 10, 12, 13].

Efficacy:

Though it is difficult to quantify the efficacy of EC, studies have shown that combined estrogen-progestin pills decrease the risk of pregnancy by 75% and progestin only pills reduce risk by as

much as 89% [10, 12]. To better explain these percentages, imagine that 100 women have unprotected intercourse during the second or third week of their menstrual cycle. Of these 100 women, chances are that 8 will become pregnant, but with proper EC use this number drops to 2 [2]. Efficacy is affected by the time delay from intercourse to EC use. The pregnancy rate is 0.4% if EC is taken within 24 hours and 2.7% if treatment is initiated 48 to 72 hours after intercourse [14].

Repeated Use:

Concerns regarding repeated use and over reliance on EC have been expressed by many health care providers, politicians, and the public. Studies have found that EC is safe even when used more than once in a cycle [11]. In fact, only after 3 uses of combined EC in one month is a woman exposed to equivalent amounts of estrogen as a long-term user of low-dose combined oral contraception [11]. Investigations have also concluded that it is uncommon for women to use EC more than a few times in a one-year period [11].

Barriers to Access:

Multiple barriers to the use of EC exist. One unfortunate problem is the vast number of hospitals and clinics that will not provide EC because of their mistaken belief that it is an abortifacient [5, 10]. Mifepristone, more commonly known as RU-486, or the "abortion pill," differs from EC in that it can work after implantation of an embryo. Mifepristone blocks progesterone, which is essential in sustaining pregnancy. EC has no function once implantation has occurred [5, 10, 12, 13].

Another barrier is the low prescription rate among physicians. One study reported that only 10% of the physicians polled prescribe EC more than 10 times a year. Seventy-five percent of respondents, including internists, family physicians, and Ob-Gyns, admitted to prescribing EC no more than 5 times a year [15]. This may be due to physicians' relative ignorance of EC and failure to discuss the topic with their patients during annual visits [5, 16]. Another article suggests that some providers' negative attitudes regarding sexual activity in adolescents may play a role in their reluctance to prescribe EC to this high-risk population [16].

Perhaps the biggest impediment to utilization of EC lies in the patients themselves. Many women are unaware of EC [5]. One article proposes that up to 73% of women are not sufficiently educated on the topic [10]. Of those who are informed, many lack knowledge of the practicalities such as access and proper use [5]. Another key component is the issue of obtaining EC in a timely manner. Many women fail to recognize that there is a limited time frame in which EC is effective [5]. Some are aware of these time constraints but cannot get a prescription early enough. Cost is yet another issue that allows for an unfortunate paradox. Young, impoverished women, who are perhaps most in need of EC, often cannot afford to pay the price for the medication (EC ranges from 30-75 US dollars) [8, 10]. An interview study in London found that young women often fail to consider EC because they misjudge their risk of pregnancy [17]. A less likely barrier is the side effects. However, some women cannot tolerate the nausea and are unable to take a second dose [6].

Abortion and EC:

In countries where abortion is associated with stigma, there is heightened incentive to prevent unwanted pregnancy before it occurs. Abstinence is an ideal that is seldom realized. Condoms break. Diaphragms fail. Birth control pills are never 100% effective. Emergency contraception is the perfect back-up for any of these methods. It is not an abortifacient. Once an embryo has implanted into the uterus, EC has no effect. It will not interrupt an established pregnancy and will not cause any harm to a developing fetus [5, 10, 12, 13].

In 1977 the State of Israel updated abortion legislation, making it legal for a woman to obtain an abortion under certain circumstances. A designated committee composed of a social worker and two medical practitioners can permit abortions in the following cases:

1. The woman is under the legal age for marriage or above 40.
2. The pregnancy is the result of incest, rape, or extra-marital relations.
3. The unborn child will suffer from a physical or mental deformity.
4. The continuation of pregnancy will endanger the life of the mother, or may

cause her physical or mental damage [18].

As of 1992, the abortion rates in Israel were 16 abortions per 1,000 women aged 15-49. That number dropped to 12 in 1996 [19]. In large part this reduction was due to improved sex education and better access to modern contraceptives [19]. With increased use of EC in Israel, abortions rates may continue to decline.

Our Role as Health Care Providers:

If women are not educated about emergency contraception they will be unlikely to request it. EC is a medication that warrants attention by all health care providers, especially family doctors, internists, emergency physicians, and Ob-Gyns. It is prudent that we educate ourselves about emergency contraception in order to provide our patients with the best and most thorough care possible. Offer patients advance prescriptions for EC. It has been shown that women with advance provisions of EC have lower rates of unintended pregnancy [20]. Consider prescribing an anti-emetic, especially if the patient has had severe nausea with prior use [2]. Establish clear service delivery protocols and update existing ones. Medical screening is often unnecessary though counseling a woman on safe sexual practices may be desired, especially if she is a repeat user of EC [3,11].

Emergency contraception now has an established role in women's health. It has been estimated that in the year 2000 over 50,000 abortions in the United States were averted thanks to the use of EC [21]. EC also accounted for an estimated 43% decline in abortions between 1994 and 2000 in the U.S. [21]. With demonstrated benefits for both the individual and society at large, the writers implores you to educate your colleagues and your patients, and to prescribe emergency contraception on a regular basis.

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