Emergency Contraception

The World Health Organization (WHO) defines 'Emergency contraception' (EC) as 'those back up methods for contraceptive emergencies which women can use within the first few days after unprotected sexual intercourse, or in the event of potential contraceptive failure to prevent an unwanted pregnancy. Other terms, such as 'post-coital contraception' or 'morning after pill' can cause confusion and, therefore, should not be utilized any longer. Certain of the currently available methods can be applied up to a maximum of 7 days after unprotected intercourse. Thus, the term 'morning after pill' is both inappropriate and misleading: on the one hand, it implies the need to initiate the treatment within 12 hours, while on the other hand, it describes the method as exclusively involving the use of a pill, although not all methods utilize the administration of steroids or other substances via the oral route.

By definition, contraception comprises all methods capable of preventing pregnancy as defined by the WHO. Accepting this definition, EC includes all methods acting after intercourse, but before implantation. In contradistinction to this, any method active after the establishment of a pregnancy (that is after implantation) must be defined as an abortifacient.

This simple definition has been challenged by some who argue that human life starts at syngamy (fertilization).

EC represents a safe means of preventing pregnancy for all women who had unprotected intercourse, or in the event of contraceptive failure. The WHO estimated that some 38% of all pregnancies are not planned and 60% of these end in voluntary abortion. If women were educated about the use of EC, approximately 75% of unwanted pregnancies could be avoided.

Two methods of EC are currently utilized world- wide: hormonal methods (combined oestrogen-pro- gestogen pills, progestogen-only pills) and intrauterine methods (post-coital insertion of a copper-bearing intrauterine device [C-IUD]).

A combined oestrogen-progestogen regimen to prevent pregnancy after unprotected intercourse was first described by Yuzpe and his group in 1974. One reason for the popularity of the Yuzpe method is that the hormones it uses are the active ingredients found in several brands of ordinary combined oral contraceptives (you just have to take multiple doses). However, the relatively high dose of oestrogen delivered in the Yuzpe regimen produces fastidious side effects, particularly of gastrointestinal nature, such as nausea and vomiting.

Scientists have since come up with numerous combinations of hormones in order to reduce risk of pregnancy.

Mechanism of action of Hormonal Methods

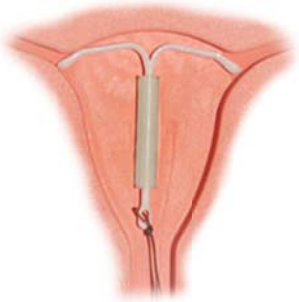
Presently, it is well established that hormonal emergency contraception (HEC) acts through several distinct mechanisms, the main one being inhibition or delay of the ovulation process caused by an interference with the luteinizing hormone (LH) mid-cycle peak release.

> *[the pituitary releases LH before ovulation.The detection of a surge in release of luteinizing hormone indicates impending ovulation. LH can be detected by urinary ovulation predictor kits (OPK, also LH-kit) that are performed, typically daily, around the time ovulation may be expected.[15] A conversion from a negative to a positive reading would suggest that ovulation is about to occur within 24–48 hours, giving women two days to engage in sexual intercourse or artificial insemination with the intention of conceiving]*

Additional mechanisms involve impairment of sperm and ovum migration in the genital tract. Kesseru et al. reported that, following administration of LNG, there is a reduction in the number of sperm recovered from the uterine cavity.

Functional alterations of the endometrium have been reported in some studies.

IUD's



An intrauterine device (IUD or coil) is a small contraceptive device, often 'T'-shaped, often containing either copper or levonorgestrel, which is inserted into the uterus. They are one form of long-acting reversible contraception which are the most effective types of reversible birth control. Failure rates with the copper IUD is about 0.8% while hormonal IUDs such as the levonorgestrel IUD has a failure rate of 0.2% in the first year of use. Among types of birth control they, along with birth control implants, result in the greatest satisfaction among users. As of 2007, IUDs are the most widely used form of reversible contraception, with more than 180 million users worldwide.

Copper IUD's

For the last 30 years, copper-releasing intrauterine devices (C-IUDs) have been utilized for EC. They have proved to be highly effective for this indication. They can be inserted up to 5 days after unprotected intercourse, at any time during the menstrual cycle, and the probability of a pregnancy is reduced by more than 99% if a 4300 mm^2 copper IUD is used. The mechanism of IUD's in general has been presumed for years to be the creation of a sterile inflammatory reaction in the endometrium capable of preventing or disrupting implantation. Data gathered in recent years have proven this untrue , at least for Copper IUDs: They act primarily by immobilizing sperm or preventing their migration to the Fallopian tubes, and thru prevent fertilization. Copper acts as a spermicide within the uterus, increasing levels of copper ions, prostaglandins, and white blood cells within the uterine and tubal fluids. The increased copper ions in the cervical mucus inhibit the sperm's motility and viability, preventing sperm from traveling through the cervical mucus, or destroying it as it passes through.

However post-coital insertion of an IUD could not inhibit sperm migration, and, therefore, it may also act by preventing implantation. It is not yet clear whether Copper IUDs act because copper is a toxic agent to the early embryo or because the sterile inflammation of the endometrium creates an environment unsuitable for implantation, or whether both mechanisms are involved.

Advantages of the copper IUD include its ability to provide emergency contraception up to five days after unprotected sex. It is the most effective form of emergency contraception available. It works by preventing fertilization or implantation; however does not affect already implanted embryos. It contains no hormones, so it can be used while breastfeeding, and fertility returns quickly after removal.

Hormonal IUDs.

Hormonal IUDs (brand names Mirena and Skyla in the US; referred to as intrauterine systems in the UK) work by releasing a small amount of levonorgestrel, a progestin. The primary mechanism of action is thickening of cervical mucus, making it impenetrable to sperm. They also inhibit ovulation in some users, decrease the ability of sperm to penetrate the ovum, and thin the endometrial lining. Because they thin the endometrial lining, they reduce or even prevent menstrual bleeding, and can be used to treat menorrhagia (heavy menses).