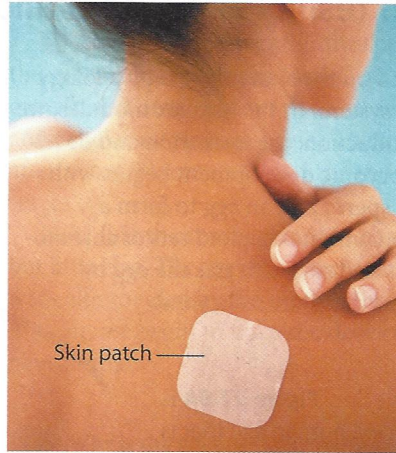


## 27.8 Contraception can prevent unwanted pregnancy

**Contraception** is the deliberate prevention of pregnancy. Complete abstinence (avoiding intercourse) is the only totally effective method of birth control, but other methods are effective to varying degrees. Sterilization, surgery that prevents sperm from reaching an egg, is very reliable. A woman may have a **tubal ligation** (“having her tubes tied”), in which a doctor removes a short section from each oviduct, often tying (ligating) the remaining ends. A man may undergo a **vasectomy**, in which a doctor cuts a section out of each vas deferens to prevent sperm from reaching the urethra. Both forms of sterilization are relatively safe and free from side effects. Sterilization procedures are generally considered permanent, but can sometimes be surgically reversed. Surgical reversals of tubal ligations or vasectomies are becoming increasingly successful, but these major surgeries carry some risk.

The effectiveness of other methods of contraception depends on how they are used. Temporary abstinence, also called the **rhythm method** or **natural family planning**, depends on refraining from intercourse during the days around ovulation, when fertilization is most likely. In theory, the time of ovulation can be determined by monitoring changes in body temperature and the composition of cervical mucus, but careful monitoring and record keeping are required. Additionally, the length of the reproductive cycle can vary from month to month, and sperm can survive for 3–5 days within the female reproductive tract, making natural family planning quite unreliable in actual practice. Withdrawal of the penis from the vagina before ejaculation is also ineffective because sperm may be released before climax.

If used correctly, barrier methods can be quite effective at physically preventing the union of sperm and egg. Condoms are sheaths, usually made of latex, that fit over the penis. A diaphragm is a dome-shaped rubber cap that covers the cervix; it requires a doctor’s visit for proper fitting. Barrier devices (including condoms) are more effective when used in combination with **spermicides**, sperm-killing cream, foam, or jelly; spermicides used alone are unreliable.



◀ **Figure 27.8** A contraceptive skin patch

Some of the most effective methods of contraception work by preventing the release of egg cells. **Oral contraceptives**, or **birth control pills**, come in several different forms that contain synthetic estrogen and/or progesterone (or a synthetic progesterone-like hormone called progestin). In addition to pills, various combinations of these hormones are also available as an injection (Depo-Provera), a ring inserted into the vagina, or a skin patch (**Figure 27.8**). Steady intake of these hormones simulates their constant levels during pregnancy. In response, the hypothalamus fails to send the signals that start development of an ovarian follicle. Ovulation ceases, preventing pregnancy.

Certain drugs can prevent fertilization or implantation even after intercourse has occurred. Combination birth control pills can be prescribed in high doses for emergency contraception, also called **morning after pills (MAPs)**. If taken within 3 days after unprotected intercourse, MAPs are about 75% effective at preventing pregnancy. Such treatments should only be used in emergencies because they have significant side effects.

If pregnancy has already occurred, the drug mifepristone, or RU486, can induce an abortion, the termination of a pregnancy in progress. If taken within the first 7 weeks, RU486 blocks progesterone receptors in the uterus, thus preventing progesterone from maintaining pregnancy. Mifepristone requires a doctor’s prescription and several visits to a medical facility and may cause significant side effects.

**Table 27.8** lists common methods of contraception, along with their failure rates when used correctly and when used typically. Note that these two rates are often quite different, emphasizing the importance of learning to use contraception correctly. It is also important to note that condoms are the only means of “safe sex” that can prevent (but not eliminate the risk of) both unwanted pregnancy and sexually transmitted diseases (STDs); other contraceptive methods do not prevent STDs.

**?** What is the fundamental difference between barrier methods (such as condoms) and oral contraceptives in terms of their means of preventing pregnancies?

Barrier methods prevent sperm from reaching an egg, while birth control pills prevent the release of eggs altogether.

**TABLE 27.8** | CONTRACEPTIVE METHODS

Method	Pregnancies per 100 Women per Year*	
	Used Correctly	Typically
Birth control pill (combination)	0.1	5
Vasectomy	0.1	0.15
Tubal ligation	0.2	0.5
Rhythm method	1–9	20
Withdrawal	4	19
Condom (male)	3	14
Diaphragm and spermicide	6	20
Spermicide alone	6	26

\*Without contraception, about 85 pregnancies would occur.