

Contraception: past, present and future

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This factsheet looks at the early development of contraceptive methods, the methods currently available and possible future developments. Unless otherwise stated, dates refer to availability in the United Kingdom (UK).

Withdrawal (Coitus interruptus)

Coitus interruptus is probably the oldest form of birth control still practised today. There is a lack of research on current prevalence, use-effectiveness and safety of withdrawal.

Chemical contraception

For thousands of years women have inserted fruit acids, jellies, pastes and various mixtures into their vagina in an attempt to prevent conception. Environments that are either sharply acidic or alkaline are hostile to sperm and therefore these methods may have had some effect.

Since the 1600s, vaginal douches have been used after intercourse as contraceptives but are not recommended as either safe or effective.

1885 The first commercial vaginal suppository using cocoa butter and quinine sulphate was developed by Walter Rendell, an English pharmacist. This was later replaced by hydroquinine, a more potent spermicide, and sponges soaked in quinine sulphate.

1906 Friedrich Merz developed the first known commercially produced spermicidal jelly, called Patentex.

1930s Numerous chemicals were investigated for potential spermicides. The work led to the setting up of standardised testing of spermicides and their effectiveness. During the 1950s, more effective chemicals such as nonoxinol-9 were developed.

Today, there is only one spermicidal gel available in the UK. Research is ongoing into a range of

microbicides which will prevent infection with HIV and other sexually transmitted infections (STIs), some of which may also be contraceptive.

Male barrier methods: the condom (sheath)

Early Egyptians used various forms of penis protectors for protection against disease and insects, and as badges of rank and decoration.

1564 Gabriello Fallopius recommended a moistened linen sheath for protection against STIs.

18th century onwards Condoms were made from animal intestines.

1843 Vulcanisation of rubber developed by Goodyear and Hancock, and rubber condoms replaced skin condoms.

1930s Crepe rubber was replaced by latex.

1997 First polyurethane condom launched in the UK: stronger, less sensitive to heat and humidity, and not damaged by oil-based lubricants.

2005 A new synthetic non-latex condom was launched in the UK.

Modified designs and types of condoms are now available to provide greater variety and choice.

Female barrier methods: diaphragms, caps and condoms

For centuries, many items such as leaves, lemons and sponges were used as vaginal barriers. Sponges have continued to be used in one form or another up to the present day with the development of spermicide-releasing sponges.

The Today Sponge was available in Britain between 1985 and 1995. It is currently available in some other countries but not the UK.

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1882 Dr C Hasse (pseudonym was Wilhelm Mesinga) credited with inventing the diaphragm.

1883 Aletta Jacobs, a Dutch doctor, described a vulcanised rubber cap. Known as the Dutch cap, it had an integral circular watchspring and covered the upper vagina and cervix.

The introduction of the diaphragm into Victorian England contributed to the emancipation of women, allowing them to control their own fertility for the first time.

Early 1900s Female condoms ('Capote Anglais' or Feminine Sheaths) made of rubber were first available.

1992 Polyurethane female condoms designed to line the vagina were introduced and Femidom became available in the UK. Research is addressing new types of female condoms involving different materials and designs.

2001 The first cap (Oves) made from silicone became available in the UK but is no longer available. It was never on the drug tariff.

2003 FemCap, made from silicone, became available in the UK, and is available on the drug tariff. This is the only cervical cap currently available in the UK.

2004 The first silicone diaphragm (Milex) became available. There are now two types – a coil spring type and an arcing spring type. Both are available on the drug tariff.

Natural family planning

Periodic abstinence has been used as a birth control method ever since it was first discovered that sexual intercourse led to pregnancy. In the mid-19th century, Von Baer identified the female ova, and in the 1930s studies by Ogino in Japan and Knaus in Austria showed when ovulation and thus fertilisation occurred. This knowledge enabled improved calculation of the fertile and infertile times of a woman's menstrual cycle. The Ogino–Knaus theory, which became known as the Calendar Method in 1934, was promoted by the Roman Catholic faith, which continues to denounce all artificial birth control methods.

1930s and 1940s Improved understanding of ovulation and temperature changes led to development and use of the temperature method.

1964 Following research into cyclical changes in cervical mucus, the Billings method (also known as ovulation or cervical mucus method) was introduced.

1990s The sympto-thermal method combines all fertility indicators and is highly effective. Various devices are now available which monitor changes in a woman's menstrual cycle, based on changes in temperature, urinary hormones or saliva.

Intrauterine devices

There is little proof about the origins of IUDs, but there is evidence that ancient Greeks used some form of device.

1868 Cervico–uterine stems were developed. These were small button/cap shapes attached to stems, made of a number of different materials, which extended into the cervix.

1909 The first specifically designed IUD (a ring of silk-worm gut) was made by Dr R Richter.

1920s E Graefenberg developed a silver ring.

1934 The Ota ring was introduced, allowing for smaller and more effective IUDs.

1962 The Population Council convened its first conference on IUDs. This helped to establish the IUD as a medically safe and effective contraceptive method.

1960s Plastic IUDs were developed (Lippes Loop, Margulies Spiral, Saf-T-Coil).

1969 Copper IUDs were introduced.

1996 Hormonal-releasing devices (intrauterine systems) introduced.

1997 First copper frameless IUD introduced (Gynefix).

1998 to date Continuing research into IUDs with modified shapes or more copper. Combined copper and hormonal IUDs are also being researched.

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Hormonal contraception

Combined oral contraceptive pills

Oral contraceptives date back more than 2000 years. Early preparations varied from eating willow shoots and bees to consuming the internal scrapings of male deer horns.

1945 Syntex SA was established to produce steroids from diosgenin (a plant steroid in Mexican yams) and search for compounds which could be administered orally.

1950s Work by Gregory Pincus, Carl Djerassi, John Rock and others resulted in the development of oral contraceptives.

1956 Clinical trials of oral contraceptives began.

1957 Norethynodrel, mestranol and norethindrone (with estrogen) were approved by the United States Food and Drug Administration (FDA) for menstrual disorders.

1960 FDA approved norethynodrel-Enovid as a contraceptive. The first large-scale British clinical trials of oral contraceptives were carried out.

1961 Conovid, Conovid E and Anovlar oral contraceptives containing high doses of estrogen and progestogen were approved for use in Great Britain.

Each pill used in the 1960s was roughly equivalent to seven of today's pills.

1980s onwards Pills containing new progestogens were developed: desogestrel in 1982; gestodene in 1987; norgestimate in 1991. These are commonly referred to as 'third generation'.

1981 Triphasic pills providing hormones in three phased sequences were introduced.

1982 Biphasic pills (two phases) introduced.

2002 The first combined pill (Yasmin) to contain the new progestogen, drospirenone became available.

2009 The first combined pill (Qlaira) to contain estradiol valerate (a synthetic estrogen) and dienogest (a new progestogen) became available. Qlaira has a quadruphasic dosage regimen, with 26 active tablets with a sequence of reducing estrogen and increasing progestogen dose, followed by two placebo tablets.

The monthly regimen of 21 active pills containing estrogen and progestogen, followed by a seven-day break of no pills (or seven placebo tablets) was created to promote a monthly withdrawal bleed and so mimic the menstrual cycle. Continuous use of COCs reduces the number of monthly bleeds. Various formulations are being researched which vary the number of days of use. Seasonale was approved for use in the US in 2009 and is taken continuously for three months (84 days). It is not known when or if similar products will be available in the UK.

Progestogen-only pills

1960s Progestogen-only contraception was developed.

1969 The first progestogen-only pill contained chlormadinone acetate, followed by pills containing norethindrone and norgestrel.

2002 The first new progestogen-only pill for 20 years became available (Cerazette contains desogestrel).

Emergency contraception

1960s The first hormonal preparations used high doses of estrogen alone, taken over five days.

1970s Combined estrogen and progestogen (called the Yuzpe regimen) replaced estrogen used alone.

1976 IUDs inserted postcoitally were found to be very effective.

1984 The first specifically licensed EC product was launched in the UK – Schering PC4.

2000 The first specifically licensed progestogen-only EC (POEC) product (Levonelle-2) was launched in the UK.

2001 POEC (Levonelle) became available to buy from pharmacies in the UK.

2005 POEC regimen changed from two pills to one, known as Levonelle 1500 and Levonelle One Step (pharmacy product).

2009 An oral emergency contraceptive containing ulipristal acetate, a selective progesterone

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receptor modulator was launched in the UK. ellaOne is licensed for use up to 120 hours after unprotected sex.

Other hormonal preparations are being researched, for example mifepristone.

Injectable contraception

1950s The first systemic contraceptives using short-acting progestogens were developed. These were administered orally and had to be given frequently.

1953 Dr K Junkman found that by combining a progestogen and an alcohol, an injectable drug with long-lasting contraceptive action was obtained.

1957 Schering AG began trials with Norigest (now Noristerat) and Upjohn with Depo-Provera (depot-medroxyprogesterone acetate/DMPA) in 1958.

1963 The first trials of Depo-Provera as a human contraceptive began.

1974 Depo-Provera was licensed in the UK for short-term contraceptive use.

1984 Depo-Provera was granted a licence for long-term use in cases where other methods were not suitable. This restriction was lifted in 1994. Noristerat is licensed only for short-term use.

Combined estrogen and progestogen monthly injections are available in the US and others are being researched.

A sub-cutaneous preparation of DMPA for self administration has been licensed, but is not yet available.

Implants

1967 The development of contraceptive hormone-filled silastic capsules which could be implanted under the skin started in America.

1993 Norplant, consisting of six progestogen (levonorgestrel)-releasing rods, was introduced in the UK.

1999 Norplant discontinued. Introduction of single rod implant (Implanon) containing etonorgestrel.

2010 Nexplanon phased in to replace Implanon. This is the same as Implanon, except that

Nexplanon is radio-opaque and the insertion procedure is different.

Hormone-releasing vaginal rings

Contraceptive vaginal rings containing contraceptive hormones have been studied since the early 1970s.

2009 NuvaRing, a combined estrogen and progestogen ring became available. It is used for three weeks, followed by seven hormone-free days.

Progestogen-only vaginal rings are also being researched.

Contraceptive skin patches and gels

2003 Contraceptive patch (Ortho Evra) containing ethinylestradiol and Norelgestromin became available – one patch per week for three weeks, followed by seven hormone-free days.

Research is ongoing into the use of gels applied to the skin as hormone delivery systems.

Anti-progesterones

Research is addressing the use of anti-progesterone compounds (known as progesterone receptor modulators – PRMs) for contraception in a variety of forms.

Male hormone methods

Research over 40 years has been directed at producing a male hormonal method of contraception or a 'male pill'. Attempts have been made using androgens alone or combined with progestogens to suppress the production of sperm.

Combined progestogen and testosterone approaches are being researched in the form of injectables, pills or implants. Further development requires funding from pharmaceutical companies.

Contraceptive vaccines

Vaccines are being researched to prevent the production of the pregnancy hormone, human chorionic gonadotrophin (hCG).

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Sterilisation

Vasectomy

1775 First reference to vasectomy.

1830 Sir Astley Cooper began to experiment with various vasectomy techniques.

In the 20th century, with the advancement of surgical techniques, the use of sterilisation as a procedure for fertility control became possible and widely available.

1907 Compulsory sterilisation for eugenic purposes was legalised in the USA.

1929 Eugenic concerns increased after the publication of the Wood Report in the UK, which addressed the need to limit fertility in 'mentally unfit' people.

1934 The Brock Departmental Committee recommended that voluntary sterilisation for eugenic reasons should be legalised.

1966 Promotion by the Simon Population Trust increased acceptance of vasectomy for social reasons in the UK.

1972 The National Health Service (Family Planning) Amendment Act allowed local health authorities to provide vasectomy services on the same basis as other contraceptive services.

1974 No-scalpel vasectomy was developed in China. This involves reaching the vasa through a tiny puncture hole rather than an incision.

Ongoing research includes reversible inhibition of sperm, and the intra-vas device which can be implanted in the vas using no-scalpel techniques.

Female sterilisation

First mentioned by Hippocrates.

1834 First full description of the procedure by Von Blundell. In the late 19th and 20th centuries, it was a major operation involving all the hazards of abdominal surgery and weeks of hospitalisation.

Dr A Decker was the first to use, name and describe culdoscopy (where the procedure is performed through the vagina rather than by an incision). The first female sterilisation performed

by applying clips to the fallopian tubes is attributed to Dr T Evans using Tantalum clips.

1961 Laparoscopic sterilisation was first described for postpartum sterilisation by Uchida and his colleagues. Various rings and clips are now used to occlude the fallopian tubes.

Methods being researched include using plugs, small devices or chemicals which block the fallopian tubes.

2002 Hysteroscopic sterilisation, using ESSURE, was first made available in the US. Tiny intra-tubal devices are inserted through the vagina (hysteroscopic placement) and placed at the entrance to the fallopian tubes. This is totally irreversible. Now licensed in the UK but not widely available.

Further reading

For further information on methods of contraception currently available in the UK, see the range of FPA booklets at www.fpa.org.uk.

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