New Options in Contraception

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The ideal contraceptive should be inexpensive, easy to use, readily available and safe. In addition, contraceptives should be efficacious but reversible and be used remote from the act of intercourse. Since the Canadian legalization of the OC pill in 1969, a number of improvements and contraceptive alternatives have been introduced.

Current use

A series of Canadian studies have looked at trends in contraceptive use. The most recent data (from 2002) indicate that, of reproductive age women, the OC pill was the contraceptive of choice at 32%. This was followed by:

- condoms (21%),
- surgical sterilization (vasectomy 15% and tubal ligation 8%),
- withdrawal method (6%) and
- IUD (1%).[1]

Failure rates of the methods currently available range from one to 320 per 1,000 (Table 1).

New options

Plan B

A simplified form of emergency contraception (Plan B) was approved for use in Canada in 2000. It consists of two doses of the progestin levonorgestrel given every 12 hours. It is highly effective with 95% of pregnancies prevented if given within 24 hours of unprotected intercourse. Plan B can be prescribed up to 72 hours post intercourse. Its only absolute contraindication is known pregnancy. Side-effects include nausea and vomiting. Women who take Plan B typically experience menses within 21 days. Since 2005, it is widely available and approved as an OTC medication.

IUD

The levonorgestrel-containing IUD was also approved in Canada in 2000. It is a plastic (polyethylene) T-shaped device with a drug reservoir designed to last for five years. This IUD has the lowest pregnancy rate of any contraceptive method. This distinction is due to:

- a combination of foreign body reactions,
- endometrial atrophy,
- thickened cervical mucous and
- partial ovulation suppression.

Unlike its copper-based counterpart, it is also useful in treating dysmenorrhea and menorrhagia. Contraindications for using a levonorgestrel-containing IUD are listed in Table 2.

Sterilization implant

A procedure for fallopian tubal occlusion that does not require entry into the abdominal cavity

Table 1

Contraceptive failure rates (reported as percentage of women experiencing pregnancy during first year of use)[2]

Method	Perfect Use	Typical Use
None	85.0	85.0
Spermicide	18.0	29.0
Withdrawal	4.0	27.0
Periodic abstinence	9.0	25.0
Cervical cap (nulliparous)	9.0	16.0
Cervical cap (parous)	26.0	32.0
Diaphragm	6.0	16.0
Sponge (nulliparous)	9.0	16.0
Sponge (parous)	20.0	32.0
Condom (male)	20.0	15.0
Condom (female)	5.0	21.0
OC pill	0.3	8.0
Patch	0.3	8.0
Ring	0.3	8.0
DMPA	0.3	3.0
Copper IUD	0.6	0.8
LNG-IUS	0.1	0.1
Sterilization (male)	0.1	0.15
Sterilization (female)	0.5	0.5

DMPA: Depot-medroxyprogesterone acetate LNG-IUS: Levonorgestrel-releasing intrauterine system

was approved for use in Canada in 2002. It is performed via hysteroscope and requires placing an expandable coil into the tubal ostia. After deployment, tissue grows over the device to occlude the tubes within three months. Sterilization implant has a clear advantage over laparoscopic tubal ligation, as no incision is required and it can be performed under sedation with local anesthetic. The disadvantages of this method include permanency and risk of uterine or tubal perforation during placement of the coil.

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Table 2
Contraindications to LNG-IUS[3-5]

- Pregnancy
- Current or recurrent pelvic inflammatory disease
- Puerperal sepsis
- Severely distorted uterine cavity
- Unexplained vaginal bleeding
- Cervical or endometrial cancer
- Malignant trophoblastic disease
- Breast cancer

The birth control patch

The combined estrogen/progestin transdermal patch was approved for use in Canada in 2002. The birth control patch is applied weekly for three weeks followed by one week off for a withdrawal bleed. Contraindications for the birth control patch are the same as for the OC pill (Table 3). The risks and benefits are also the same as for the OC pill. Twenty per cent of women experience a local skin reaction; however, only 2% of women actually discontinue use for this reason. It is thought that the efficacy of the birth control patch is lower in women who are > 90 kg. Dosage comparisons of the birth control patch with the OC pill are difficult since absorption characteristics of the two methods of hormone delivery are different.

Contraceptive ring

The combined estrogen/progestin vaginal ring was approved for use in Canada in 2005. It is applied monthly with a one week removal for a withdrawal bleed. Again, the contraindications, risks and benefits are the same as for the OC pill and the birth control patch. There is a 5% risk of leucorrhea with the contraceptive ring, but there appears to be less breakthrough bleeding than with the OC pill, especially in the first cycle. The dose is approximately equivalent to a 15 mcg OC pill.

New OC pill

A new OC pill with the novel progesterone drospirenone was approved for use in Canada in 2005. This progesterone is derived from spironolactone and, as such, has antiandrogenic and antimineralocorticoid activities. This makes this new OC pill useful in the treatment of polycystic ovarian syndrome (PCOS), acne, water retention and premenstrual syndrome/premenstrual dysphoric disorder. The contraindications of the new OC pill are the same as for other OC pill formulations, but this one requires caution in women with renal or adrenal insufficiencies. In Canada, the formulation is a 30 mcg pill (also available as 20 mcg in the US).

Extended-release OC pill

The most recent contraceptive approval (2007) is the extended cycle OC pill. It is the equivalent of levonorgestrel-ethinyl estradiol and is packaged as 84 days of active medication with seven days of placebo. Interestingly, this mode of OC pill delivery was first studied in 1970, but it is only now being offered as a packaged contraceptive solution. Its benefits include:

- reduced cyclical symptoms (pain, headache, bloating) and
- better treatment for endometriosis, PCOS and severe anemia.

Without long-term studies, the risks of extended exposure to increased amounts of hormone are unknown.

Table 3

Contraindications to OC pill/patch/ring[2]

Absolute

- < 6 weeks postpartum and breastfeeding
- Age > 35 years and smokes > 15 cigarettes q.d.
- Known thrombogenic mutation
- History of cerebrovascular accident
- Diabetes with end organ damage
- Poorly-controlled hypertension (≥ 160/100 mmHg)
- Migraine headache with focal neurological symptoms
- Complicated valvular heart disease (pulmonary hypertension, atrial fibrillation, subacute bacterial endocarditis)
- Ischemic heart disease
- Current or past venous thromboembolism
- Major surgery with prolonged immobilization
- Current breast cancer
- Severe cirrhosis
- Hepatic adenoma or hepatoma
- Active viral hepatitis

Relative

- Age > 35 and smokes < 15 cigarettes q.d.
- Well controlled hypertension (< 160/100 mmHg)
- Current symptomatic gallbladder disease
- History of cholestasis related to OC pill use
- Age > 35 years with migraine headaches
- History of breast cancer
- Mild cirrhosis
- Use of rifampin of certain anticonvulsants

Options on the horizon

One new development concerns the OC pill and involves shortening the pill-free interval from seven days to four. Advantages to this mode of OC pill delivery include decreased breakthrough bleeding and increased efficacy. Disadvantages include increased hormone exposure. Also, two progestin-based implantable devices are currently seeking approval for use in Canada. The levonorgestrel contraceptive implant is a two rod system that lasts for three years. A single-rod contraceptive subdermal implant also lasts for three years. Unfortunately, few male contraceptive options are expected in the near future, as most studies have found male contraceptive to effect libido and cause erectile dysfunction.

Summary

With the many new contraceptive options available in Canada, physicians can now offer a true variety of birth control solutions to women. With such a choice, it is imperative that physicians consider each patient's specific needs when recommending contraceptives. For more information, physicians and patients can browse www.sexualityandu.ca. Dx

References

1. Fisher WA, Boroditsky R, Morris B: The 2002 Canadian Contraception Study. Part 1. J Obstet Gynaecol Can 2004; 26(6):580-90.
2. World Health Organization: *Improving Access to Quality Care in Family Planning: Medical Eligibility Criteria for Contraceptive Use.* Second Edition. WHO, Geneva, Switzerland, 2001.
3. Black A, Francoeur D, Rowe T, et al: Canadian Contraception Consensus. J Obstet Gynaecol Can 2004; 26(2):143-56.
4. Black A, Francoeur D, Rowe T, et al: SOGC Clinical Practice Guidelines: Canadian Contraception Consensus. J Obstet Gynaecol Can 2004; 26(3):219-96.
5. Black A, Francoeur D, Rowe T, et al: Canadian Contraception Consensus. J Obstet Gynaecol Can 2004; 26(2):347-87.