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Canadian Contraception Consensus (Part 1 of 4)

This clinical practice guideline has been prepared by the Contraception Consensus Working Group, reviewed by the Family Physicians Advisory, Aboriginal Health Initiative, Clinical Practice – Gynaecology, and Canadian Paediatric and Adolescent Gynaecology and Obstetrics (CANPAGO) Committees, and approved by the Executive and Board of the Society of Obstetricians and Gynaecologists of Canada.

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Abstract

Objective: To provide guidelines for health care providers on the use of contraceptive methods to prevent pregnancy and on the promotion of healthy sexuality.

Outcomes: Guidance for Canadian practitioners on overall effectiveness, mechanism of action, indications, contraindications, non-contraceptive benefits, side effects and risks, and initiation of cited contraceptive methods; family planning in the context of sexual health and general well-being; contraceptive counselling methods; and access to and availability of cited contraceptive methods in Canada.

Evidence: Published literature was retrieved through searches of Medline and The Cochrane Database from January 1994 to January 2015 using appropriate controlled vocabulary (e.g., contraception, sexuality, sexual health) and key words (e.g., contraception, family planning, hormonal contraception, emergency contraception). Results were restricted to systematic reviews, randomized control trials/controlled clinical trials, and observational studies published in English from January 1994 to January 2015. Searches were updated on a regular basis in incorporated in the guideline to June 2015. Grey (unpublished) literature was identified through searching the websites of health technology assessment and health technology-related agencies, clinical practice guideline collections, clinical trial registries, and national and international medical specialty societies.

Values: The quality of the evidence in this document was rated using the criteria described in the Report of the Canadian Task Force on Preventive Health Care (Table 1).

Key Words: contraception, family planning, hormonal contraception, emergency contraception, barrier contraceptive methods, contraceptive sponge, spermicide, natural family planning methods, tubal ligation, vasectomy, permanent contraception, intrauterine contraception, counselling, statistics, health policy, Canada, sexuality, sexual health, sexually transmitted infection (STI)

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Table 1. Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care

Quality of evidence assessment*	Classification of recommendations†
I: Evidence obtained from at least one properly randomized controlled trial	A. There is good evidence to recommend the clinical preventive action
II-1: Evidence from well-designed controlled trials without randomization	B. There is fair evidence to recommend the clinical preventive action
II-2: Evidence from well-designed cohort (prospective or retrospective) or case–control studies, preferably from more than one centre or research group	C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D. There is fair evidence to recommend against the clinical preventive action
	E. There is good evidence to recommend against the clinical preventive action
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

*The quality of evidence reported in these guidelines has been adapted from The Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.

†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the Canadian Task Force on Preventive Health Care.

Woolf SH, Battista RN, Angerson GM, Logan AG, Eel W. Canadian Task Force on Preventive Health Care. New grades for recommendations from the Canadian Task Force on Preventive Health Care. CMAJ 2003;169:207–8.

Chapter 1: Contraception in Canada

Summary Statements

1. Canadian women spend a significant portion of their lives at risk of an unintended pregnancy. (II-2)
2. Effective contraceptive methods are underutilized in Canada, particularly among vulnerable populations. (II-2)
3. Long-acting reversible contraceptive methods, including contraceptive implants and intrauterine contraception (copper-releasing and levonorgestrel-releasing devices/systems), are the most effective reversible contraceptive methods and have the highest continuation rates. (II-1)
4. Canada currently does not collect reliable data to determine the use of contraceptive methods, abortion rates, and the prevalence of unintended pregnancy among reproductive-age women. (II-2)
5. A universal subsidy for contraceptive methods as provided by many of Canada's peer nations and a few Canadian provinces may produce health system cost-savings. (II-2)
6. Health Canada approval processes for contraceptives have been less efficient than those of other drug approval agencies and Health Canada processes for other classes of pharmaceuticals. (II-2)
7. It is feasible and safe for contraceptives and family planning services to be provided by appropriately trained allied health professionals such as midwives, registered nurses, nurse practitioners, and pharmacists. (II-2)

Recommendations

1. Contraceptive counselling should include a discussion of typical use failure rates and the importance of using the contraceptive method consistently and correctly in order to avoid pregnancy. (II-2A)
2. Women seeking contraception should be counselled on the wide range of effective methods of contraception available, including long-acting reversible contraceptive methods (LARCs). LARCs are the most effective methods of reversible contraception, have high continuation rates, and should be considered when presenting contraceptive options to any woman of reproductive age. (II-2A)
3. Family planning counselling should include counselling on the decline of fertility associated with increasing female age. (III-A)
4. Health policy supporting a universal contraception subsidy and strategies to promote the uptake of highly effective methods as cost-saving measures that improve health and health equity should be considered by Canadian health decision makers. (III-B)
5. Canadian health jurisdictions should consider expanding the scope of practice of other trained professionals such as nurses, nurse practitioners, midwives, and pharmacists and promoting task-sharing in family planning. (II-2B)
6. The Canadian Community Health Survey should include adequate reproductive health indicators in order for health care providers and policy makers to make appropriate decisions regarding reproductive health policies and services in Canada. (III-B)
7. Health Canada processes and policies should be reviewed to ensure a wide range of modern contraceptive methods are available to Canadian women. (III-B)

Chapter 2: Contraceptive Care and Access

Summary Statements

8. Although there are many contraceptive options in Canada, only a narrow range of contraceptive methods are commonly used by those of reproductive age. (II-3)

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9. Condom use decreases with longer relationship tenure and the perception of one sexual partner as primary, likely due to a lower perceived risk of sexually transmitted infection in that relationship. Condom use may also decrease markedly as an unintended consequence when an effective non-barrier method, such as hormonal contraception or intrauterine contraception, is initiated. (II-3)
10. Family planning counselling provides a natural segue into screening for concerns about sexual function or intimate partner violence. (III)
11. Well-informed and well-motivated individuals who have developed skills to practise safer sex behaviours are more likely to use contraceptive and safer sex methods effectively and consistently. (II-2)

Recommendations

8. Comprehensive family planning services, including abortion services, should be accessible to all Canadians regardless of geographic location. These services should be confidential, non-judgemental, and respectful of individuals' privacy and cultural contexts. (III-A)
9. A contraceptive visit should include history taking, screening for contraindications, dispensing or prescribing a method of contraception, and exploring contraceptive choice and adherence in the broader context of the individual's sexual behaviour, reproductive health risk, social circumstances, and relevant belief systems. (III-B)
10. Health care providers should provide practical information on the wide range of contraceptive options and their potential non-contraceptive benefits and assist women and their partners in determining the best user-method fit. (III-B)
11. Health care providers should assist women and men in developing the skills necessary to negotiate the use of contraception and the correct and consistent use of a chosen method. (III-B)
12. Contraceptive care should include discussion and management of the risk of sexually transmitted infection, including appropriate recommendations for condom use and dual protection, STI screening, post-exposure prophylaxis, and Hepatitis B and human papillomavirus vaccination. (III-B)

ABBREVIATIONS

BMI	body mass index
CCHS	Canadian Community Health Survey
EC	emergency contraception
IUD	intrauterine device
LARC	long-acting reversible contraceptive
LH	luteinizing hormone
LNG	levonorgestral
NIHB	non-insured health benefits
RCT	randomized control trial
STI	sexually transmitted infection
UPA	ulipristal acetate
UPI	unprotected intercourse
WHO	World Health Organization

13. Health care providers should emphasize the use of condoms not only for protection against sexually transmitted infection, but also as a back-up method when adherence to a hormonal contraceptive may be suboptimal. (I-A)
14. Health care providers should be aware of current media controversies in reproductive health and acquire relevant evidence-based information that can be briefly and directly communicated to their patients. (III-B)
15. Referral resources for intimate partner violence, sexually transmitted infections, sexual dysfunction, induced abortion services, and child protection services should be available to help clinicians provide contraceptive care in the broader context of women's health. (III-B)

Chapter 3: Emergency Contraception

Summary Statements

12. The copper intrauterine device is the most effective method of emergency contraception. (II-2)
13. A copper intrauterine device can be used for emergency contraception up to 7 days after unprotected intercourse provided that pregnancy has been ruled out and there are no other contraindications to its insertion. (II-2)
14. Levonorgestrel emergency contraception is effective up to 5 days (120 hours) after intercourse; its effectiveness decreases as the time between unprotected intercourse and ingestion increases. (II-2)
15. Ulipristal acetate for emergency contraception is more effective than levonorgestrel emergency contraception up to 5 days after unprotected intercourse. This difference in effectiveness is more pronounced as the time from unprotected intercourse increases, especially after 72 hours. (I)
16. Hormonal emergency contraception (levonorgestrel emergency contraception and ulipristal acetate for emergency contraception) is not effective if taken on the day of ovulation or after ovulation. (II-2)
17. Levonorgestrel emergency contraception may be less effective in women with a body mass index > 25 kg/m^2 and ulipristal acetate for emergency contraception may be less effective in women with a body mass index ≥ 35 kg/m^2. However, hormonal emergency contraception may still retain some effectiveness regardless of a woman's body weight or body mass index. (II-2)
18. Hormonal emergency contraception is associated with higher failure rates when women continue to have subsequent unprotected intercourse. (II-2)
19. Hormonal contraception can be initiated the day of or the day following the use of levonorgestrel emergency contraception, with back-up contraception used for the first 7 days. (III)
20. Hormonal contraception can be initiated 5 days following the use of ulipristal acetate for emergency contraception, with back-up contraception used for the first 14 days. (III)

Recommendations

16. All emergency contraception should be initiated as soon as possible after unprotected intercourse. (II-2A)
17. Women should be informed that the copper intrauterine device (IUD) is the most effective method of emergency contraception and can be used by any woman with no contraindications to IUD use. (II-3A)

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18. Health care providers should not discourage the use of hormonal emergency contraception (EC) on the basis of a woman's body mass index (BMI). The copper intrauterine device for EC should be recommended for women with a BMI > 30 kg/m^2 who seek EC. If access and cost allow, ulipristal acetate for EC should be the first choice offered to women with a BMI ≥ 25 kg/m^2 who prefer hormonal EC. (II-2B)
19. Health care providers should discuss a plan for ongoing contraception with women who use pills for emergency contraception (EC) and should provide appropriate methods if desired. Hormonal contraception should be started within 24 hours of taking levonorgestrel for EC, and back-up contraception or abstinence should be used for the first 7 days after starting hormonal contraception. (III-B) Women who use UPA-EC should start hormonal contraception 5 days after using UPA-EC. UPA-EC users must use back-up contraception or abstinence for the first 5 days after taking UPA-EC and then for the first 14 days after starting hormonal contraception. (III-B)
20. Ulipristal acetate and levonorgestrel should not be used together for emergency contraception. (III-B)
21. A pregnancy test should be conducted if the woman has no menstrual period within 21 days of using pills or inserting a copper intrauterine device for emergency contraception. (III-A)
22. Health services should be developed to allow Canadian women to have timely access to all effective methods of emergency contraception. (III-B)

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Contraception in Canada

INTRODUCTION

Contraception is important in the lives of women, their male partners, and society as a whole.[1] We live in an era of changing preferences for fertility control, family size, timing of establishing a family, and choice of occupation. Canadians and their health care providers are thus involved in fertility-related decisions that will fundamentally influence individual lives and society as a whole well into the future. Family planning decisions affect and are influenced by emotional health, sexual attitudes and behaviours, gender equity, the quality of relationships, and respect between men and women. Family planning choices made today will affect not only the structure of the future population, but also the health, family size, responsibilities, social opportunities, and ultimately the quality of life of Canadians. The ability of all women in society to plan and space their pregnancies provides a wide range of health, education, workplace, and economic benefits at the individual, community, and society levels.[2–7] Indeed, WHO recognizes reproductive and sexual health care as a fundamental human right.[8]

TRENDS IN REPRODUCTIVE HEALTH AND CONTRACEPTIVE USE IN CANADA

Canadian women will typically spend 3 years or fewer pregnant, attempting to conceive, or immediately post-partum.[9] The national overall average maternal age at first birth is currently over 30 years.[10] The trend of later age at the birth of a first child means that Canadians are spending at least half of their reproductive lives at risk for unintended pregnancy[10]; nearly a third of Canadian women have at least one induced abortion over their reproductive lifespan.[11] Unintended pregnancies represent a significant cost, both directly and indirectly,[12] thus health care providers and policy makers must provide patient care and support policies that help to reduce this cost at the individual and the societal level.

Trends in Births and Induced Abortions in Canada

Although there have been fluctuations in birth trends over the past century, there has been a significant overall decrease in pregnancy and birth rates among Canadian women. Between 1996 and 2005, there were 9.3% fewer pregnancies; this decline was mostly concentrated in women under 30 years of age.[10] Between 2005 and 2011, the birth rate increased slightly again from 10.6 to 11.0/1000 population.[13] In 2005, births accounted for 77% of pregnancy outcomes, induced abortions for 21%, and fetal loss for 2%.[14] In Canada, national adolescent pregnancy rates have decreased (Figure 1); in 2010, the adolescent fertility rate (number of pregnancies per 1000 women aged 15 to 19 years) was 28.2 compared with 35.4 in 2001.[15] In 2012, over 80 000 induced abortions were performed in Canada with the highest number being reported in the 20- to 24-year old age group (over 21 000).[16] The persistent need for abortion services indicates that we are not meeting the contraceptive needs of Canadian women. Different approaches to the provision of contraception are necessary to meet these needs (Figure 1).

Contraceptive Use

The 2006 Canadian Contraception Survey found that among sexually active women aged 15–49 who were not attempting to conceive, 14.9% were using no contraception while 20% were using contraception inconsistently.[17] This is consistent with a series of earlier studies.[18–20] In the latest data from the CCHS involving a representative sample of Canadians aged 15 to 24,[21] 15.5% of sexually active youth wishing to avoid pregnancy reported using no contraceptive method at last intercourse, with significant regional variation from 28% in the territories, 20% in British Columbia and Ontario, 13% to 17% in Atlantic and Prairie provinces and Alberta, and 7% in Quebec.[22] Only 4.6% reported use of a LARC (e.g. intrauterine contraceptives and implants). The Canadian Contraception Survey found that the most commonly used methods of contraception in Canada were oral contraceptives (44%) and condoms (54%) while the third most commonly used method of contraception was withdrawal (12%).[17] Contraceptive use is affected by a number of variables. The CCHS found that contraceptive use at last intercourse varied by income quintile[23]; females in the lowest income quintile were twice as likely to report no contraceptive use compared to those in the highest quintile (20.5% vs. 10.0%). Lower education level has been correlated with poorer contraceptive adherence in women seeking abortion services.[24] Population-based studies have also shown

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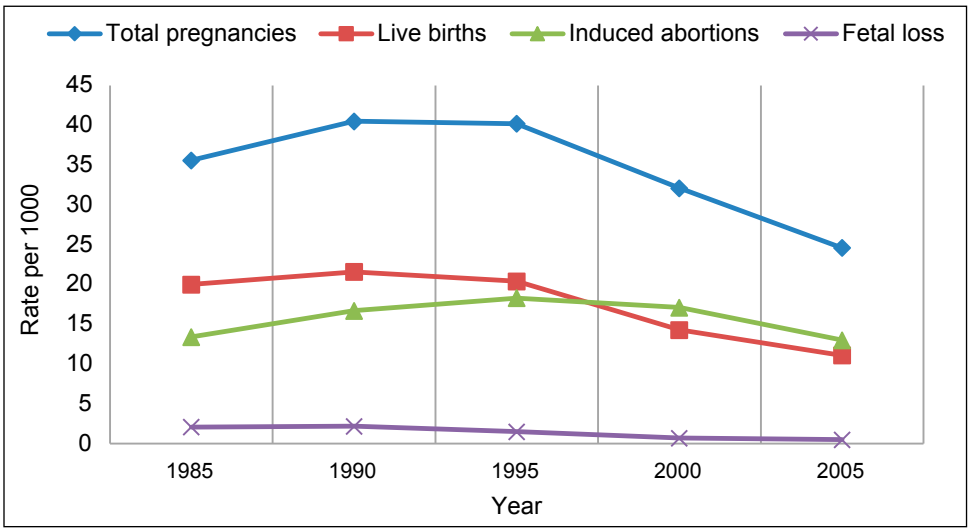
Figure 1. Pregnancy rates and outcomes in Canadian females under age 20. Rate per 1000 Canadian women under age 20 (CANSIM table 106-9002).*



*Abortion rates in Canada during the past 10 years are not calculated because of incomplete data.[16]

a significant correlation between lower income and higher rates of abortion.[25] Recently arrived immigrant women are less likely than Canadian-born women to be using more effective methods of contraception at the time of conceiving an unintended, unwanted pregnancy, and more likely to have experienced barriers to accessing contraceptive methods.[26,27] Among Nova Scotia youth, mental health issues, particularly depression, were associated with lack of contraceptive use.[28]

Thus, there are significant variations in use of effective contraception in Canada, with low rates of use ("high unmet need") among vulnerable populations such as youth, those living in rural and remote territories, recent immigrants, and those of lower socio-economic status.

Contraceptive Efficacy Versus Contraceptive Effectiveness

Contraceptive "efficacy" refers to how many pregnancies are prevented during correct and consistent use of a method ("perfect use"). Contraceptive "effectiveness" refers to the number of pregnancies that are prevented during typical use of the method. Hence, effectiveness relies on both the inherent efficacy of the contraceptive method as well as how consistently and correctly it is used (adherence). The difference between typical use failure rates and perfect use failure rates tends to increase as the method becomes more dependent on user adherence, with methods that are less dependent on user adherence having typical use failure rates closer to perfect use failure rates.[29]

Contraceptive methods may be arranged into 3 tiers based on typical use effectiveness (Table 2).[30] Although the use of top tier methods is advised for achieving the highest effective contraception, the choice of contraceptive must be made in collaboration with each individual woman taking into account safety, effectiveness, accessibility, affordability, and acceptability. This discussion must respect her personal beliefs, culture, preferences, and ability to be adherent.[31,32] Women should be informed about the range and effectiveness of contraceptive options for which they are medically suitable so that they can identify the best "user-method fit" for them.[33,34] Additional discussion regarding the prevention of STIs and the use of condoms (dual protection) should take place in the context of contraception counselling.

The Role of Adherence

Adherence refers both to continuation rates and to correct and consistent use of a contraceptive method. Correct and consistent use of a contraceptive method may require an individual to perform a complicated series of intrapersonal and interpersonal acts (e.g., anticipating sexual contact in advance, publicly acquiring a method, discussing contraception with a partner or health care provider, using the method correctly in the context of every sexual interaction, addressing STI risk) that are rarely directly taught or discussed and the complexity of contraceptive behaviour may negatively affect adherence. LARC methods offer the highest effectiveness and highest continuation rates at one year, since they are effective independent of any action by users on a daily, monthly, or coitally-dependent basis (Table 2). Unfortunately, the only LARC methods available in Canada are intrauterine contraceptive devices; contraceptive implants are not available to women in Canada.[35]

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Table 2. Percentage of women experiencing unintended pregnancy within the first year of perfect and typical use, percentage of women continuing use at the end of the first year, and percentage of sexually active Canadian women using contraceptives

Tier of effectiveness	Contraceptive method	% of women experiencing a pregnancy within the first year of perfect use	% of women experiencing a pregnancy within the first year of typical use	% of women still using the method at the end of one year	% of sexually active Canadian women who are not trying to conceive using each method[17]
I	IUC progesterone-releasing (IUS)	0.2	0.2	80	2
I	IUC copper-releasing (IUD)	0.6	0.8	78	2.3
I	Implant (Implanon)	0.05	0.05	84	0.1
I	Vasectomy	0.5	0.5	100	7.4
I	Tubal ligation	0.1	0.15	100	6.0
II	Progesterone injection (Depo-Provera)	0.2	6	56	2.4
II	Combined hormonal contraceptive (pill, patch or ring)	0.3	9	67	45.5
III	Diaphragm	6	12	57	0.2
III	Male condom	2	18	43	54.3
III	Female condom	5	21	41	0.3
III	Sponge, spermicide	9–20	12–28	36–42	0.8
III	Coitus interruptus (“withdrawal”)	4	22	46	11.6
III	Natural family planning	0.4–5	24	47	2.5
	No method	85	85		14.9*

Adapted from Table 3-2 in Contraceptive Technology 2011, 20th edition,[31] with data from Black et al.[17]

Figures add to more than 100% because some women used more than one method.

*Different denominator from other figures in this column.

IUC: intrauterine contraceptive

FAMILY PLANNING IS MORE THAN CONTRACEPTION: FOSTERING A REPRODUCTIVE LIFE PLAN

Very frequently, health care providers approach contraceptive practice with a focus only on preventing pregnancy rather than on family planning in the broader context of a woman’s life. Assisting women to explore their plans for childbearing is an important part of family planning and contraceptive care. Women may be unaware, as they delay their first pregnancy, of the natural decline in fertility with advancing maternal age and the potential difficulties to achieve a planned pregnancy at an advanced age (Table 3)[36–39] When providing contraception counselling, it is critical to determine plans for future pregnancies and to proactively counsel women about the significant decrease in fertility that occurs by the late 30s.[39,40] Family planning providers should address concerns about potential contraceptive effects on fertility and counsel on optimal reversible methods (including barrier contraception, as part of a “dual method” approach) that allow women to delay childbearing if that is what is desired.

Table 3. Effect of age on fertility[39]

Age when beginning attempts to conceive, years	% of women remaining childless
20–24	6
25–29	9
30–34	15
35–39	30
40–44	64

Access to Contraception

There are a number of barriers that can prevent women from obtaining, initiating, and continuing their contraceptive method of choice.[41] These include issues related to the individual user as well as wider system-related medical, financial, and regulatory barriers. Medical barriers include lack of appropriate counselling, delaying initiation of contraception for menses or unnecessary investigations, applying inappropriate contraindications, and lack of trained health care providers. System and structural barriers to equitable contraceptive access may

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Table 4. Contraceptive methods covered under the NIHB Program

Method	Name
Male condoms	[Various]
Cu-IUD (Limited use: 1 device per 12 months)	Flexi-T IUD Liberte UT 380 short Liberte 380 standard Nova-T IUD Mona Lisa N Mona Lisa 5 Mona Lisa 10
Levonorgestrel IUS (Limited use: 1 unit every 2 years)	Mirena 52 mg insert Jaydess 13.5 mg unit
Depo-medroxyprogesterone acetate	
Combined hormonal contraceptive pills	
Progestin-only pill	Micronor
Vaginal contraceptive ring	Nuvaring
Transdermal contraceptive patch	Evra
Progestin-only EC	Plan B Norlevo Next Choice Option 2

involve health policies that do not include contraception subsidies, inefficient approval processes for new contraceptives, and limited scopes of practice of allied health professionals who, with adequate training, could help to provide contraceptive care.[41] Canadian family planning health policies and services that support equitable contraception access equal to that of other nations are pending.[42–53]

Task-Sharing and Contraceptive Provision

There is significant potential to widely increase access to prescription contraceptives in a cost-efficient manner by expanding the scope of practice among a range of allied health professionals. Nurse practitioners and midwives currently prescribe contraception in many provinces in Canada. In some Canadian jurisdictions, nurse practitioner scope of practice includes IUD insertion. Although international evidence shows that IUD insertion may be appropriate within the scope of midwifery,[54–57] for any health care professional such a practice requires enough training and maintenance of skill to ensure safety.[58] Both Quebec and British Columbia have instituted protocol-based contraception management by registered nurses allowing them to provide contraception[59–63] and have been exploring potential for independent prescription by pharmacists or nurses.[59,64,65] Depending on the community, pharmacists, nurse practitioners, nurses, and midwives may often be more accessible than physicians, particularly in rural and remote communities, and may offer longer or more convenient patient contact hours. Such provincial initiatives should influence other Canadian health jurisdictions to consider expanded scope of practice and task-sharing in family planning.

Health Policy and Contraception Subsidy

Cost of contraception is an important barrier to equitably meeting women's contraceptive needs.[66–68] In Canada, with only a few exceptions, the cost of the method is almost exclusively borne by the user or their private insurer, rather than by the health system. This is in contrast to health policies in the United Kingdom, United States, Australia, New Zealand and more than 11 European Union countries that provide universal subsidy for contraception and contraception services.[45–50] There is increasing evidence that a universal contraception subsidy in developed nations is cost-effective for the health system due to savings incurred through avoidance of costs related to the management of unintended pregnancy.[68–71] A United States study indicated a health system savings of over $7 for every dollar invested in contraception and contraception counselling.[72] A 2014 analysis[73] of the effect of the LARC promotion efforts in the United Kingdom have estimated a first 5 years cost-savings to the health system in excess of predicted, in addition to baseline saving due to pre-existing contraception subsidy. A comparable study done in Canada showed that if 10% of oral contraceptive users switched to IUDs and used them for a minimum of 12 months, as much as $12 million in health system costs could be saved annually.[12]

One challenge faced by Canadian health system decision makers in evaluating strategies such as a universal subsidy for contraception is the lack of a national indicator collection. The CCHS has historically collected intention for pregnancy and contraception data among 15- to 24-year olds and does not provide options on contraception questions regarding several modern methods. To effectively implement strategies that reduce the rate of unintended pregnancies and the need for abortion, regular data collection on pregnancy intention and the use/adherence of modern contraceptive methods among people throughout the reproductive age range is required.[21] Collection of these indicators is part of the WHO's Millennium Development Goal 5.[74] Such data are currently collected in the United States,[75] Australia,[76] France,[77] and the United Kingdom.[78–80]

Some Canadians may qualify for financial assistance that provides coverage for various contraceptive methods. For example, the NIHB Program is a national program that provides coverage to registered First Nations and recognized Inuit for a limited range of medically necessary items and services that are not covered by other plans and programs. Most contraceptive options are covered under this program (Table 4).[81,82]

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Government- and Industry-Related Issues

Canadian women deserve access to all safe and effective contraceptive choices. Nevertheless, women in Canada have limited contraceptive choices compared to women in other developed countries. In 2004, Canadian women had access to only 35% of all contraceptive products available worldwide and to 37% of all hormonal contraceptives available worldwide, compared with 58% and 59%, respectively, in the United States; 52% and 54%, respectively, in the United Kingdom; 44% and 54%, respectively, in France; and 44% and 50%, respectively, in Sweden.[83] For example, the single rod contraceptive implant, a safe, effective, and cost-effective LARC method, is approved in over 85 countries but did not receive Health Canada approval. Although health policy and decision makers in many countries, including the United Kingdom, United States, Australia, and New Zealand, have encouraged both health professionals and the public to increase uptake of LARC methods due to their superior effectiveness and higher adherence rates, Canadian women still do not have access to contraceptive implants, one of the most effective LARC methods.[47,49,83–87]

There are several possible reasons for the narrower range of contraceptive options in Canada. It may be due to a lack of drug applications by manufacturers, to non-conformity of applications related to Health Canada's extensive requirements, or to processes within Health Canada that delay approval of contraceptives. Approval for contraceptives in Canada takes more than 2 years longer than approvals for new agents in other drug classes.[83] In this environment, sponsors may not submit applications for new hormonal contraception when there appears to be a significant delay or low chance of successful approval, particularly if Canada is perceived to be a small market. Canadian health policy makers should consider a proactive process whereby an application for important products regarding reproductive health could be invited from prospective manufacturer applicants as happened in France in 1988 when the French government declared mifepristone to be "the moral property of women".[88]

SUMMARY

Effective contraception is underutilized in Canada, particularly among vulnerable populations, and Canadians' choice of contraceptive methods is narrow. Health care providers can guide women to understand the best evidence on the range of contraception methods available and the effectiveness of each method in typical use. Women require access to a wide range of contraception choices, as the method selected must be acceptable in the context of their priorities, values, culture, and relationships. Clinicians can assist women to choose, and use, appropriate methods to meet their individual and family reproductive goals within the context of their lives.

Both health professionals and health policy makers can contribute to improving access to high quality knowledge, services, and the full range of contraceptive methods to ensure that all Canadians are equally able to plan and space their pregnancies and to achieve their reproductive goals. Health policy makers can address equitable access to contraception through: subsidies for contraceptive methods; a review of Health Canada processes and policies to ensure a wide range of modern contraceptive methods are available to Canadian women; and task-shifting that increases the scope of practice of various health care professionals thereby allowing women to access prescription contraceptive methods from a range of health professionals (e.g., nurses, nurse practitioners, and pharmacists). Health professionals should provide proactive, evidence-based, accurate information and avoid creating medical barriers to contraceptive access.

Summary Statements

1. Canadian women spend a significant portion of their lives at risk of an unintended pregnancy. (II-2)
2. Effective contraceptive methods are underutilized in Canada, particularly among vulnerable populations. (II-2)
3. Long-acting reversible contraceptive methods, including contraceptive implants and intrauterine contraception (copper-releasing and levonorgestrel-releasing devices/systems), are the most effective reversible contraceptive methods and have the highest continuation rates. (II-1)
4. Canada currently does not collect reliable data to determine the use of contraceptive methods, abortion rates, and the prevalence of unintended pregnancy among reproductive-age women. (II-2)
5. A universal subsidy for contraceptive methods as provided by many of Canada's peer nations and a few Canadian provinces may produce health system cost-savings. (II-2)
6. Health Canada approval processes for contraceptives have been less efficient than those of other drug approval agencies and Health Canada processes for other classes of pharmaceuticals. (II-2)
7. It is feasible and safe for contraceptives and family planning services to be provided by appropriately trained allied health professionals such as midwives, registered nurses, nurse practitioners, and pharmacists. (II-2)

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Recommendations

1. Contraceptive counselling should include a discussion of typical use failure rates and the importance of using the contraceptive method consistently and correctly in order to avoid pregnancy. (II-2A)
2. Women seeking contraception should be counselled on the wide range of effective methods of contraception available, including long-acting reversible contraceptive methods (LARCs). LARCs are the most effective methods of reversible contraception, have high continuation rates, and should be considered when presenting contraceptive options to any woman of reproductive age. (II-2A)
3. Family planning counselling should include counselling on the decline of fertility associated with increasing female age. (III-A)
4. Health policy supporting a universal contraception subsidy and strategies to promote the uptake of highly effective methods as cost-saving measures that improve health and health equity should be considered by Canadian health decision makers. (III-B)
5. Canadian health jurisdictions should consider expanding the scope of practice of other trained professionals such as nurses, nurse practitioners, midwives, and pharmacists and promoting task-sharing in family planning. (II-2B)
6. The Canadian Community Health Survey should include adequate reproductive health indicators in order for health care providers and policy makers to make appropriate decisions regarding reproductive health policies and services in Canada. (III-B)
7. Health Canada processes and policies should be reviewed to ensure a wide range of modern contraceptive methods are available to Canadian women. (III-B)

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Contraceptive Care and Access

INTRODUCTION

Choosing a method of contraception is an important decision. A method that is not effective can lead to an unintended pregnancy. A method that is not safe can create unfortunate medical consequences. A method that does not fit the user's personal lifestyle is not likely to be used correctly or consistently. The best method of contraception for an individual or couple is one that is effective, safe, and used correctly and consistently. Individuals must make choices about their contraceptive methods in the context of their own needs, attitudes, social, and cultural circumstances.[1]

The Context of Contraceptive Care

Although the stereotypical contraceptive visit may consist of history taking, screening for contraindications, and dispensing or prescribing a method of contraception, contraceptive care and adherence takes place in the broader context of an individual's own social circumstances, belief systems, health, sexual behaviour, and reproductive health needs.

WHAT IS THE SPECIFIC NATURE OF THE WOMAN'S CURRENT CONTRACEPTIVE NEEDS?

While many women will directly request a particular method of contraception (e.g., "I'd like to go on birth control," with "birth control" commonly referring to the oral contraceptive pill), it may be valuable to clarify the nature of the woman's current contraceptive need. The clinical inquiries "What are you doing to prevent pregnancy?" and "What are you looking for in a contraceptive?" may provide important guidance for contraceptive care. The contraceptive care implications of "I'm going off to university" (after brief counselling, the woman decides on a supply of condoms and to begin hormonal contraception later if appropriate) differ from the contraceptive care implications of "My periods are terrible" (after brief counselling, the woman decides on hormonal contraception for cycle control). These may differ from the contraceptive care implications of "I sort of drank too much last night and had a one night stand with a guy I just met" (after counselling that addresses possible sexual coercion and choices for EC, the woman decides on the emergency contraceptive pill, STI testing, and the "quick start" of a hormonal vaginal ring). The contraceptive care implications of "I'm moving in with my boyfriend and we want to stop using condoms" (after counselling, the woman decides to talk with her partner about mutual STI testing and then have an IUD inserted or start hormonal contraception) may differ from the contraceptive care implications of "I would like an abortion" (after counselling, the woman decides on a Cu-IUD inserted immediately after abortion).

Explore Contraceptive User-Method "Fit"

Contraceptive effectiveness requires adherence to a contraceptive method regimen.[1,2] If it is problematic for the woman or her partner(s) to adhere to a specific contraceptive method because of its complexity or acceptability, effectiveness may be in peril. Pre-existing positive attitudes towards a contraceptive method and partner support may help to enhance adherence and ensure a better user–partner–method fit. Exploring a woman's needs, attitudes, and concerns as well as those of her partner, will favour adherence and thereby effectiveness. If a woman requests an oral contraceptive pill because she thinks her partner dislikes condoms but she believes that the pill causes weight gain, it is important to counsel her that studies have not found that the pill causes weight gain,[3,4] to explore whether or why her partner dislikes condoms, and to present contraceptive options that may provide a better user–partner–method fit. In women presenting for abortions with repeated contraceptive failures, health professionals may offer intrauterine contraception immediately post-abortion; this provides effective long-acting reversible contraception without the discomfort of insertion.[5–8]

Contraceptive Methods Are Diverse but Contraceptive Choices Are Narrow

Although there are many hormonal and non-hormonal contraceptive options in Canada, only a very narrow range of contraceptive methods are chosen and employed by those of reproductive age. Although contraceptive method choice is not monitored by government organizations in Canada, many studies have indicated that the most commonly used contraceptive methods by Canadians, by a wide margin, are the oral contraceptive pill and condoms.[9,10] In women over

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the age of 40, permanent contraception is the second most common method of contraception after condom use, with male sterilization more frequent than female sterilization.[9,10] Use of other hormonal contraceptives (injectable: 2.4%; patch: 1.2%; ring: 0.6%), intrauterine contraception (4.3%), and diaphragm/sponge (1.0%) is considerably lower.[9] In contrast, withdrawal is the third most commonly used method (11.6%).[9] The dominance of the oral contraceptive pill, condoms, and sterilization may be due to their acceptability and effectiveness at particular points in the reproductive life cycle; however, it may be that more education and counselling is needed to emphasize a greater range of contraceptive options to determine the best user-method fit.

CONTRACEPTION AND SEXUAL BEHAVIOURAL PATTERNS

Contraceptive counselling must consider the relationship between patterns of sexual behaviour and appropriate contraceptive choice. Contraceptive care in the setting of unpredictable or intermittent sexual activity may differ from contraceptive care in the case of predictable and ongoing sexual activity, with respect to both of contraceptive method and prevention of STIs. In the case of unpredictable or intermittent sexual activity, condoms in dual use with a hormonal contraceptive method or IUD might address contraception and STI prevention, while in the case of ongoing and predictable sexual activity recommending a highly effective reversible contraceptive choice might be more appropriate.[1] The health care provider should also be aware of the potential for contraceptive methods to influence sexual function, including the potentially liberating effect of freedom from concern about pregnancy, the potential for condom use to improve or impair sexual function, and the potential effect of hormonal contraception on a woman's libido.[11]

Contraception and Sexually Transmitted Infection

It is necessary to consider contraceptive care in the context of vulnerability to STIs.[12–14] Contraceptive care should include discussion of STIs as appropriate, including recommendations for condom use and dual protection (condoms together with a non-barrier contraceptive such as the oral contraceptive pill or intrauterine contraception) and STI screening and its limitations. Several studies have shown that condom use decreases with longer relationship tenure and when the sexual partner is considered to be the main partner,[15–18] likely due to a lower perceived risk of STI in that relationship.[16] Given these findings, health care providers should highlight the use of condoms not only for STI protection but also as a back-up method when adherence to a hormonal contraceptive may be suboptimal.[17] Health care providers should also be aware that coital onset in Canada often occurs during adolescence and that the age of first birth in Canada averages 30 years.[19] A lengthy interval of serial monogamy and risk of unintended pregnancy and STI often extends between the two.[20] The number of sexual partners a woman has or has had in her lifetime is not necessarily diagnostic of STI risk. It is very common for women to have one sexual partner at present, but a history of several serially monogamous sexual partners, presenting an underappreciated risk of STIs and their sequelae. Health care providers should consider visits for contraceptive care as an opportunity to address STI prevention and screening at the level of method choice (e.g., dual protection), recommendations for vaccination (hepatitis B and human papillomavirus), recommendations for screening (e.g., Pap tests, STI screening), and post-exposure prophylaxis for secondary prevention of sequelae of STIs.

Long-Term Contraceptive Needs and Method Transitions

A woman's contraceptive needs may change throughout her reproductive years and thus consultations for contraception require sensitivity to her longer term family planning needs and the likelihood that she and her partner(s) will likely transition from one contraceptive method to another across time.[9,10] Common contraceptive transitions in response to changing contraceptive needs over time might involve movement from barrier methods or dual protection (for women in less stable and less predictable relationships), to transition to sole reliance on hormonal contraception or intrauterine contraception (for women in more stable and predictable relationships). Contraception may be stopped when pregnancy is desired, followed by a transition to appropriate methods during breastfeeding, and then hormonal contraception, condoms, or IUD use can be continued until menopause. Alternatively, permanent contraceptive methods (male or female) may be chosen once childbearing is complete.

Contraception and the Media

The media can influence women's reproductive health practices and acceptance of contraceptives. Whether in relation to third and fourth-generation progestin-containing oral contraception,[21,22] human papillomavirus vaccination,[23,24] or postmenopausal hormone replacement therapy,[25] the media may accurately inform, partially inform, or misinform women in a fashion that can directly impair adherence or lead to abandonment of a chosen contraceptive method or reproductive health practice. Health care providers must be aware of current media controversies in this area, arm themselves with evidence-based facts from reliable sources, and be able to briefly and directly communicate the correct

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information so that women are appropriately informed about media controversies concerning reproductive health. Clinicians should also provide assistance for women seeking to switch methods in the wake of media controversy should she decide to do so.

CONTRACEPTION IN THE BROADER CONTEXT OF WOMEN'S HEALTH CARE

The contraception visit provides an opportunity for screening, discussion, and management of a broad range of women's health concerns, including BMI, blood pressure, and smoking cessation. Family planning counselling may naturally segue into screening for sexual function concerns and intimate partner violence. For example, given that 38% of abortions in Canada are second or subsequent abortions, clinicians should be sensitive to the fact that women who have had more than one therapeutic abortion may be twice as likely to have a history of intimate partner violence and twice as likely to have a history of sexual coercion.[26–29]

Contraceptive Care Access

Counselling regarding the nature of women's contraceptive needs and determining a good user-method fit, often assumes that women have access to care, but this is far from uniformly the case. Young women may prefer to receive contraceptive care from dedicated contraception clinics (i.e. youth clinics, Planned Parenthood), a school-based clinic, or a walk-in clinic; however, such access may or may not exist in their community, these clinics may or may not have after school hours, and there may or may not be rural satellite clinics to serve the needs of women who live outside of urban areas.[30] Women may not have access to contraceptive methods due to barriers of cost, immigration status, language, lack of knowledge of options, partner or peer pressures/coercion, or lack of understanding of the health care system. Health care providers may also be barriers to contraceptive access, either intentionally or unintentionally, through lack of appropriate counselling, by applying inappropriate contraindications, by delaying initiation for menses or investigations, through selective prescribing practices, due to lack of training or comfort in contraceptive provision (including IUD insertion), or by applying their own personal beliefs and values to their patients.[31] Slow regulatory approval of contraceptive and reproductive health formulations due to several factors such as pharmaceutical concerns about lack of profitability can further limit access to contraception in Canada.[32]

Available Contraceptive Methods, Effectiveness, Side Effects and Risks, and Contraindications

With sensitivity to the broader context of family planning issues that range from the nature of the woman's contraceptive needs to her sexual behaviour patterns, STI risk, and aging and fertility, health care providers can review and discuss contraceptive options with a woman to determine which would be most appropriate for her. Contraceptive methods include intrauterine contraceptives, hormonal contraceptives, barrier methods, natural family planning, and permanent methods. Intrauterine devices are the most effective reversible contraceptives available. They vary in composition (copper or LNG), possible side effects, length of use, and cost. Hormonal methods vary in compliance requirements (e.g., daily oral contraceptive pill, weekly transdermal patch, monthly vaginal contraceptive ring, quarterly injectable progestins), in hormonal composition (e.g., combined estrogen-progestin, progestin-only), in possible side effects, and in cost. Most hormonal contraceptive methods are highly effective with perfect use but less effective with typical use. Permanent contraceptive methods for women and men are also highly effective. Barrier methods are coitally-dependent and must be used consistently if chosen. Discussion on barrier methods should include their additional role for STI protection, particularly when non-barrier contraception is chosen. Natural family planning, although much less effective, may suit specific needs such as spacing children. Emphasis on LARC and on highly effective methods to avoid unintended pregnancy is appropriate and must take into consideration the nature of the woman's need for contraception and STI protection and her personal preferences, circumstances, and beliefs. The challenge of contraceptive counselling is to craft brief and informative clinical contacts that can identify a woman's priorities and situation and match them to method characteristics to achieve optimum fit while taking into consideration relative and absolute contraindications.

TOWARDS AN INTEGRATED APPROACH TO CONTRACEPTIVE CARE IN THE CONTEXT OF WOMEN'S HEALTH

A woman's knowledge about contraception, her motivation to act on this knowledge, and her ability to act on it effectively will influence contraceptive choice and adherence over time. Supportive environmental factors such as knowledge of potential choices, access to contraceptive care, affordable contraception, and a supportive partner or family are also critical to a person's ability to use contraception effectively (Figure 2). Well-informed and well-motivated individuals who have the necessary skills to negotiate the occasionally complex social and sexual challenges of contraceptive adherence are more likely to choose and adhere to safe and effective contraception.[33] An integrated approach to contraceptive counselling informs, motivates, and enhances an individual's skills to successfully use contraception.

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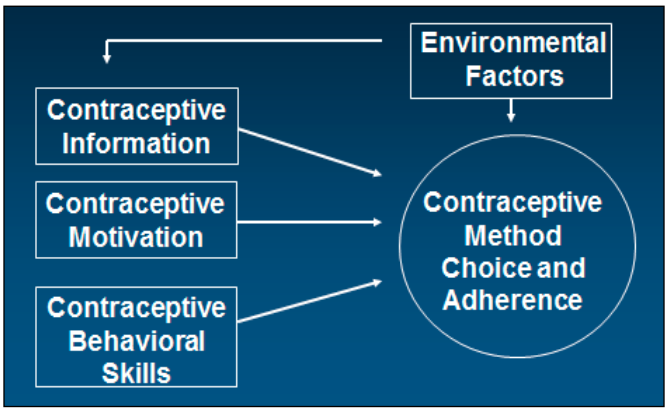
Figure 2. Individual and environmental determinants of contraceptive choice and adherence.



Contraceptive Information

Contraceptive information that is relevant, practical, and easy to act upon is central to a woman's ability to choose a contraceptive method that meets her needs and to adhere to it over time. Canadians continue to have limited awareness of their contraceptive options and have suboptimal adherence to contraceptive methods.[9,10] Health care providers can help address these challenges by providing accurate, non-judgemental information about:

- the range of birth control options and each method's effectiveness, health benefits, and possible side effects and risks
- how to use a chosen method
- strategies to assist an individual's or couple's correct and consistent use of a chosen method
- what to do if problems occur with using the chosen method
- back-up strategies such as EC and/or condoms
- information on preventing STIs in conjunction with using the chosen method

To provide information that is relevant to an individual's needs and lifestyle, health care providers must elicit information about their sexual activity, family planning intentions, and personal preferences. A two-way flow of contraceptive information is essential to achieving an optimal user-method fit that will promote appropriate choice, satisfaction, and adherence.

Motivation

Motivation is an additional critical determinant of effective contraceptive use. Ambivalence about pregnancy is common and is associated with a decreased likelihood of using an effective method of contraception.[34,35] Personal motivation (attitudes towards specific contraceptive practices) strongly influences contraceptive choice. People with negative attitudes about contraception or who are uncomfortable with their sexuality are unlikely to anticipate the need for contraception in advance, to calmly choose an appropriate method, or to carefully adhere to a method.[36–42] They are also unlikely to be able to discuss this matter with their partner(s) or with their health care provider.[41,43–45] A health care provider can seek to moderate negative attitudes that may interfere with a woman's choice of and adherence to a contraceptive method and work with her to determine which method would be most acceptable and appropriate for her. A woman's perceptions about what is accepted or rejected by a partner, a parent, an ethno-cultural community, or the health care provider him/herself can also influence contraceptive choice and adherence.[33,43] By considering the characteristics of a range of contraceptive methods, individuals can tailor the method they choose to their own attitudes and set of social expectations. Perceived vulnerability to and perceived costs of unwanted pregnancy may also play a role in the decision to use contraception.[46–49] Motivational interviewing techniques[50] or structured counselling[51] may help women to choose the most appropriate method of contraception and increase contraceptive adherence.

Behavioural Skills

Specific behavioural skills are needed to acquire contraception and use it correctly and consistently. The individual must acknowledge the fact that she is (or soon will be) sexually active. She then must formulate a contraceptive health agenda that may involve acquiring and using a method of birth control, practicing safer sex, and seeking reproductive health care. Once this agenda is set, the individual must actively seek information about contraception and related reproductive health issues, choose and obtain a method of contraception, negotiate its use with a partner, and use it correctly and consistently over time. By being aware that contraception is a complex matter involving a number of tasks, health care providers may be proactive and assist women to develop the skills required to acquire and adhere to a method over time. Health care providers should review with individuals how they might use these skills in situations when sexual activity is likely. For example, discussing how to bring up condom use with a partner can help build skills essential for practicing safer sex ("Tell him: I want to have sex. Go get a condom."). Simple information about routines in one's life ("A lot of my patients take their pill every morning or every evening when they brush their teeth.") can identify naturally occurring adherence-boosting cues.

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Environmental Factors

Environmental factors may lessen the ability of even well-informed and well-motivated women to use contraception effectively. Those who are in abusive or disempowered relationships, who cannot afford contraception, who have limited access to care, who are chemically dependent, and who have major competing life demands are less likely to use adherence-dependent contraception effectively, unless such environmental barriers are addressed.[26,33] Environmental factors can also facilitate the provision of contraceptive care. Health care providers can provide environmental cues in the clinical care setting that signal to women that they are an approachable, non-judgemental, and knowledgeable resource for contraceptive and reproductive health care (e.g., a poster advertising sexandu.ca, the SOGC supported sexual health education website). Proactive creation of a referral network for specialized care allows family planning providers to have confidence in the availability of referral resources for issues of intimate partner violence, STIs, sexual dysfunction, induced abortion services, child protection services, and other challenges that the clinician may uncover while providing contraceptive care in the broader context of women's health.

Summary Statements

8. Although there are many contraceptive options in Canada, only a narrow range of contraceptive methods are commonly used by those of reproductive age. (II-3)
9. Condom use decreases with longer relationship tenure and the perception of one sexual partner as primary, likely due to a lower perceived risk of sexually transmitted infection in that relationship. Condom use may also decrease markedly as an unintended consequence when an effective non-barrier method, such as hormonal contraception or intrauterine contraception, is initiated. (II-3)
10. Family planning counselling provides a natural segue into screening for concerns about sexual function or intimate partner violence. (III)
11. Well-informed and well-motivated individuals who have developed skills to practise safer sex behaviours are more likely to use contraceptive and safer sex methods effectively and consistently. (II-2)

Recommendations

8. Comprehensive family planning services, including abortion services, should be accessible to all Canadians regardless of geographic location. These services should be confidential, non-judgemental, and respectful of individuals' privacy and cultural contexts. (III-A)
9. A contraceptive visit should include history taking, screening for contraindications, dispensing or prescribing a method of contraception, and exploring contraceptive choice and adherence in the broader context of the individual's sexual behaviour, reproductive health risk, social circumstances, and relevant belief systems. (III-B)
10. Health care providers should provide practical information on the wide range of contraceptive options and their potential non-contraceptive benefits and assist women and their partners in determining the best user-method fit. (III-B)
11. Health care providers should assist women and men in developing the skills necessary to negotiate the use of contraception and the correct and consistent use of a chosen method. (III-B)
12. Contraceptive care should include discussion and management of the risk of sexually transmitted infection, including appropriate recommendations for condom use and dual protection, STI screening, post-exposure prophylaxis, and Hepatitis B and human papillomavirus vaccination. (III-B)
13. Health care providers should emphasize the use of condoms not only for protection against sexually transmitted infection, but also as a back-up method when adherence to a hormonal contraceptive may be suboptimal. (I-A)
14. Health care providers should be aware of current media controversies in reproductive health and acquire relevant evidence-based information that can be briefly and directly communicated to their patients. (III-B)
15. Referral resources for intimate partner violence, sexually transmitted infections, sexual dysfunction, induced abortion services, and child protection services should be available to help clinicians provide contraceptive care in the broader context of women's health. (III-B)

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Emergency Contraception

INTRODUCTION

Emergency or post-coital contraception is used to prevent pregnancy after intercourse but before implantation. EC is used as a back-up method when regular contraception is not used, is used improperly, or when a contraceptive accident has occurred (e.g. condom slippage). It is not intended to be used as a regular method of contraception.

OPTIONS

There are 2 options for EC: hormonal methods, also known as emergency contraceptive pills, and post-coital insertion of a Cu-IUD. Hormonal EC options include LNG-EC, UPA-EC, and the Yuzpe regimen.

In Canada, commercial LNG-EC preparations include Plan B, Norlevo, Option 2, and Next Choice. All consist of 2 tablets of LNG 750 mcg to be taken together as a single 1.5 mg dose. They are approved for use up to 72 hours after UPI and there is evidence of efficacy up to 5 days.[1] They are available over-the counter in pharmacies across Canada without a prescription but are kept behind the counter in Saskatchewan and Quebec for reimbursement reasons. Pharmacies in other provinces may decide to keep LNG-EC behind the counter for various other reasons, for example concerns about theft.

The Yuzpe method uses combined oral contraceptives to deliver 2 doses of ethinyl estradiol (100 mcg) and LNG (500 mcg) 12 hours apart. This can be achieved using multiple pills of a variety of combined oral contraceptives (Table 5) but requires the use of prescription medication. The Yuzpe method is less effective and has more side effects than LNG-EC[2] or UPA-EC and is recommended only when other EC methods are not available.

UPA is a selective progesterone receptor modulator. The approved regimen for EC is one oral dose of 30 mg up to 5 days after UPI. In Canada, UPA-EC currently requires a prescription, but in Europe it was recently approved for over-the-counter use.[3] It may be directly available through pharmacists in provinces where EC prescription rights have been delegated to these professionals.[4,5]

The antiprogestin mifepristone (RU-486) is also highly effective as an emergency contraceptive,[1] but is not available in Canada and not approved elsewhere for EC.

Insertion of a Cu-IUD is highly effective for EC[1] and has the advantage of providing long-term contraception at a low cost. Several Cu-IUDs are approved in Canada for EC (Liberte, Mona Lisa, Flexi-T), although other Cu-IUDs may be provided off-label for EC use. LNG-IUS is not currently recommended or approved for EC.

EFFECTIVENESS

The effectiveness of all EC methods available in Canada is summarized in Table 6. The Cu-IUD is the most effective method of EC.[1] In a systematic review of 42 studies conducted in 6 countries between 1979 and 2011 on the EC use of 8 different Cu-IUDs in 7034 women, the global pregnancy rate was estimated to be 0.09% (95% CI 0.04% to 0.19%).[6] In these studies, the time from intercourse to insertion of the IUD ranged from 2 days to 10 or more days, but the majority of women had the IUD inserted within 5 days of intercourse. In a secondary analysis of data from a study on the use of the Copper T380A IUD for EC,[7] there were no pregnancies in the first month following emergency Cu-IUD insertion, regardless of the timing of insertion[8] Based on confidence intervals, the risk of pregnancy was estimated from 0% to 3% for insertions more than 5 days after the estimated day of ovulation and 0% to 5% for insertions 5 days after UPI.[8] More studies are needed to confirm the effectiveness of a Cu-IUD inserted more than 5 days after the estimated date of ovulation or of UPI.

LNG-EC and UPA-EC are less effective than the Cu-IUD, and their effectiveness is influenced by various factors. In the largest LNG-EC trial ever done in the 1990s, women using LNG-EC within 72 hours of UPI had a pregnancy rate of 1.1% compared to 3.2% with the Yuzpe regimen; this corresponded to an 85% reduction of the risk of pregnancy with LNG-EC compared with 57% with Yuzpe.[2] Subsequent studies have found higher pregnancy rates with LNG-EC (1.7%[9] and 2.6%[10]) such that it may reduce pregnancy risk by only 50%.[9,10] Although there is some conflicting research,[11] most studies have shown

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Table 5. Combined oral contraceptive pills for use as EC

	Pills per dose	Ethinyl estradiol (mcg/dose)	Levonorgestrel (mcg/dose)
Alesse	5	100	500
Triquilar	4 yellow	120	500
Min-Ovral	4	120	600

Table 6. Summary table of risks of pregnancy with different methods of EC according to timing since UPI

Day since UPI	≤ 1	2	3	4	5	6	7
Methods, %				Risk of pregnancy			
Yuzpe EC[2]		3.2		> 3.2		NA	
LNG EC[11,12]	2.3	1.6	2.7	2.8	3.0	NA	
UPA EC[11,12]	0.9	2.2	0.9	0*	0*	NA	
Emergency, %							
Cu-IUD[8]	0.01	0.01	0.01	0.01	0.01	0.01	0.01

*Small sample size

Table 7. Effectiveness of UPA-EC versus LNG-EC (meta-analysis)

	Pregnancies, n/N (%)			
Interval between UPI and EC use	Ulipristal acetate	Levonorgestrel	Odds ratio	*P**
0–24 hours	5/584 (0.9)	15/600 (2.5)	0.35	0.035
0–72 hours	22/1617 (1.4)	35/1625 (2.2)	0.58	0.046
0–120 hours	22/1714 (1.3)	38/1731 (2.2)	0.55	0.025

*Inferential statistics based on the logistic regression model including significant covariates and the study factor

Adapted from Table 2 in Glasier, et al. Ulipristal acetate versus levonorgestrel for emergency contraception: a randomised non-inferiority trial and meta-analysis. *Lancet* 2010;375(9714):555–62.[9]

that LNG-EC is more effective the earlier it is taken.[12–14] Although 3 RCTs also demonstrated that LNG regimens were effective when taken from 72 to 120 hours after UPI,[15,16] several studies found reduced efficacy from 72 to 120 hours (more likely on the fifth day) compared with < 72 hours.[1,9,16–19]

A meta-analysis of 2 large RCTs[9,10] reported that UPA-EC was significantly more effective than LNG-EC (Table 7).[9] For UPA, no significant relationship has been seen between efficacy and timing of EC.[9,10,20] The lower pregnancy rates seen with UPA are likely related to the fact that it can disrupt ovulation even after the LH surge has begun,[21] whereas LNG is ineffective after the start of the LH surge.[22,23]

Mifepristone

Two RCTs comparing the use of one 10 mg dose of mifepristone with 1.5 mg LNG or two doses of 0.75 mg LNG given 12 hours apart, within 120 hours of UPI, showed no significant difference in pregnancy rates between the 3 groups.[11,15] The pregnancy rate was 1.7% (95% CI 1.3% to 2.2%) in a study that combined data from 12 RCTs of mifepristone 10 mg for EC (10 989 women) for an estimate of 83.4% of pregnancies prevented.[24] A 2015 RCT reported a higher efficacy with mifepristone 10 mg than with mifepristone 5 mg, with a pregnancy rate of 0.7% (95% CI 0.3% to 1.4%) compared with 1.2% (95% CI 0.7% to 2.0%).[25]

FACTORS AFFECTING EFFECTIVENESS OF EC PILLS

Weight

A 2011 secondary analysis of data from 2 RCTs evaluating the effectiveness of UPA-EC versus LNG-EC showed significantly higher pregnancy rates for LNG-EC in women with a BMI ≥ 30 kg/m^2 (5.8%, 95% CI 3.5% to 9.5%) than in women with a normal BMI (1.3%, 95% CI 0.8% to 2.2%).[26] Pregnancy rates for women with a BMI

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25 to 29 kg/m^2 (2.5%, 95% CI 1.3% to 4.6%) were not significantly higher.[26] A 2015 re-analysis of the same data reported a similar increase in pregnancy rates with increasing body weight or BMI in users of LNG-EC.[27] The 2011 secondary analysis also found that the pregnancy rate was not significantly higher in women with a BMI ≥ 30 kg/m^2 using UPA-EC (2.6%, 95% CI 1.2% to 5.6% vs. 1.1% CI 0.6% to 1.9%) or women with a BMI of 25 to 29 kg/m^2 (1.1%, 95% CI 0.4% to 2.7%) than in women with a normal BMI (1.1% CI 0.6% to 1.9%).[26] Another meta-analysis of these data showed that significantly more obese women had further acts of intercourse after taking EC than women who were not obese.[20] These data were the basis for a Health Canada warning on the LNG-EC label about the lack of efficacy of the product for women over 80 kg in March 2014.[28] After examining data from WHO that contradicted the previous study's findings,[26,27] the European Medicines Agency concluded that "the data available are too limited and not robust enough to conclude with certainty that contraceptive effect is reduced with increased bodyweight" and that "emergency contraceptives can continue to be taken after unprotected intercourse or contraceptive failure, regardless of the woman's bodyweight."[29] Until new data are available, health care providers should not withhold LNG-EC for the reason of body weight. No population studies have been conducted to determine whether increasing the LNG-EC dose would improve its effectiveness, so offering a higher dose is not currently recommended. However, after considering access and cost, it would be reasonable to offer UPA-EC to women with BMI ≥ 25 kg/m^2 because of its better effectiveness.

Data from an RCT comparing the effectiveness of LNG-EC and mifepristone showed no significant association between the effectiveness of EC and age, BMI, method of contraception used, circumstances leading to EC request, interval between UPI and treatment, or day in the menstrual cycle on which UPI occurred for the 2 EC methods used.[11] Pharmacokinetic studies have shown that hormone serum levels may be slightly reduced among obese women taking hormonal contraceptives.[30,31] In the case of EC, reduced serum levels of LNG can reduce the length of time that ovulation is delayed[32] and may put obese women more at risk for pregnancy with subsequent acts of intercourse.

Timing of UPI and EC Administration

Hormonal EC (LNG and UPA) has not been shown to be effective if given the day of or the day just prior to ovulation.[23,26] and it has no effect if given after ovulation.[23,33] A meta-analysis of the mechanism of action of LNG-EC suggests that LNG-EC will not delay ovulation if administered the day before or the day of ovulation.[21]

Further acts of UPI

For all types of EC, women who have further unprotected acts of intercourse are 4 to 26 times more likely to get pregnant after taking EC than those who do not.[1,2,14–16,24,26,34–36] A meta-analysis of studies on UPA-EC confirmed that the most significant contributor to decreased effectiveness was subsequent UPI.[20]

MECHANISM OF ACTION

Conception is only possible during a limited period in the menstrual cycle because of the limited life span of sperm in the female reproductive tract (up to 5 days) and the length of oocyte survival post-ovulation (12 to 24 hours).[37] Thus the fertile window extends from 5 days before ovulation to 1 day after, with the highest rates of conception when intercourse occurs within 2 days prior to ovulation.[38]

LNG acts by interfering with ovulation. It affects follicular development after selection of the dominant follicle but before the beginning of the pre-ovulatory rise in LH. Once the LH rise begins, LNG fails to inhibit ovulation.[21,22,37,39] The addition of a single oral dose of meloxicam 15 mg has been shown to improve the delay of ovulation by LNG.[21,40] LNG also influences muscular contractility of the Fallopian tubes[37] and concentrations of glycodelin-A (known as an inhibitor of sperm binding to the zona pellucida).[41] LNG does not affect endometrial receptivity or implantation[37,39] thus it is not an abortifacient. The best available evidence suggests that its ability to prevent pregnancy is not related to post-fertilization events.

UPA has a longer window of effectiveness than LNG-EC because it has a direct inhibitory effect on follicular rupture that allows it to be effective even when given shortly before ovulation. When given before the onset of the LH surge, it inhibits 100% of follicular ruptures versus 0% with placebo.[42] In a meta-analysis of 3 small RCTs, UPA-EC was significantly more effective than LNG-EC in delaying follicular rupture (UPA: 58.8% versus LNG: 14.6%; $P = 0.0001$), particularly after the initial LH rise but before the LH surge (UPA: 79% versus LNG: 14%; $P = 0.0018$).[21] Both treatments were ineffective when administered on the day of the LH surge. UPA has little or no effect on the endometrium.[37,39]

Mifepristone administered during the pre-ovulatory phase either blocks or delays ovulation in a dose–dependent fashion.[37,39] Mifepristone induces minor effects on the endometrium and influences muscular contractility of the Fallopian tubes.[37,39]

Cu-IUDs induce a sterile inflammatory reaction in the uterine cavity.[43] Copper ions and by-products of

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inflammation are toxic for spermatozoa and oocytes,[43] increase Fallopian smooth muscle activity, and stimulate myometrial contractility.[37] Copper can alter molecules such as cytokines and integrins in the endometrial lining and thereby inhibit implantation in the event that a blastocyst reaches the uterus.[37] Studies have rarely shown increased hCG and early pregnancy factor in IUD users.[43] In vitro studies showed that Cu-IUDs adversely affect the viability and fertilizing capacity of human spermatozoa, both in culture medium and in cervical mucus.[37]

INDICATIONS

EC should be considered for women wishing to reduce their risk of pregnancy after UPI or a contraceptive accident such as:

- failure to use any method of contraception
- condom slippage, breakage, or leakage
- missed hormonal contraception (pill, patch, vaginal ring, or medroxyprogesterone acetate injection)[44]
- error in using withdrawal (ejaculation in vagina or on external genitalia)
- dislodgement, incorrect insertion, or premature removal of a diaphragm or cervical cap
- mistimed fertility awareness (intercourse occurred on fertile cycle day)
- sexual assault when the woman is not using reliable contraception.

It is difficult to determine with certainty the fertile time of a women's cycle, thus EC should be offered regardless of the cycle day on which UPI occurred if a woman is concerned about her risk of pregnancy. The risk of pregnancy is very low for the first 3 days after the onset of menses, then rises significantly until ovulation, after which is falls. However, a US study estimated a persistent small risk of pregnancy of 1% late in the cycle and even when menses were delayed.[45]

Contraindications

There are no evidence-based absolute contraindications to any EC pills with the exception of pregnancy and hypersensitivity to the product or to any ingredient in the formulation. Known pregnancy is a contraindication because the medication will not work; accidentally ingesting LNG-EC while pregnant will not cause harm to the fetus nor will it disrupt an established pregnancy.[46,47] Women who have contraindications to regular use of combined oral contraceptive pills can safely use any of the hormonal EC methods as the duration of action is very brief. LNG-EC or UPA-EC is generally preferred because it is better tolerated and carries no theoretical risk, particularly in women with strong contraindications to estrogen such as those at higher risk of venous thromboembolism.

Contraindications to use of the Cu-IUD for EC are the same as for its use for contraception (please refer to the IUD Chapter). A pre-existing pregnancy should be excluded prior to insertion. As an EC method, the Cu-IUD can be provided safely to women who are nulliparous, to adolescents, and to those with a history of multiple sexual partners unless there is evidence of current or recent pelvic infection or current purulent cervicitis.[48]

Side Effects

LNG-EC is associated with a significantly lower incidence of nausea (23.1%), vomiting (5.6%), dizziness (11.2%), and fatigue (16.9%) than the Yuzpe regimen.[2] UPA is associated with side effects similar to LNG-EC.[9] Both LNG-EC and UPA-EC may be associated with a change in timing of the next menses. The next menses might be early, on time, or late.[9,49] In one study, when menses did occur it was within 7 days of the expected time in 75% of women using UPA-EC and 71% of women using LNG-EC.[9]

Risks

Although there have been case reports of ectopic pregnancy following use of LNG-EC, a systematic review found no increase in ectopic pregnancy rates with LNG-EC or mifepristone compared with the general population.[50] Because EC prevents some pregnancies, its use actually lowers the risk of ectopic pregnancy after UPI. There is no evidence that the high dose of LNG used for EC is harmful to adolescents[48]; therefore, access to EC should not be limited by age. There is no effect on physical growth, mental development, or occurrence of birth defects in children born after LNG-EC exposure.[51] Data are limited on pregnancy outcomes with UPA-EC failure,[50] but in utero exposure does not appear to increase the risk of birth defects.[52]

The risks of the Cu-IUD are believed to be the same whether it is used for EC or for ongoing contraception. These risks include uterine perforation, infection, expulsion, and, with continued use, an increase in menstrual flow and cramping.

PROVIDING EMERGENCY CONTRACEPTION

All EC methods should be initiated as soon as possible after UPI. Due to its superior efficacy in EC and ongoing contraception, the emergency Cu-IUD should be offered as a first choice to all eligible women (see Contraindications to Copper IUD in the IUD Chapter). However, knowledge

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of the Cu-IUD for EC is limited among women and health care providers[53–55] and even experienced family planning providers rarely offer it as an option.[55,56] Barriers to its use may include lack of provider availability for urgent IUD insertion and the immediate cost of the IUD. Women for whom EC pills are likely to be less effective should be encouraged to consider a Cu-IUD (women with BMI ≥ 30, women delayed in presentation, and those presenting one day prior to, on the day of, or after presumed ovulation for hormonal EC). Because the date of ovulation is difficult or often impossible to assess in women consulting for EC, a Cu-IUD can be inserted up to 7 days after UPI provided that a pregnancy test is negative. Studies have shown that women who choose the Cu-IUD for EC have very low odds of pregnancy 4 weeks after insertion.[7,8]

LNG-EC is available from pharmacies without a prescription and should be taken as soon as possible within 5 days of UPI. UPA-EC is taken as a single 30 mg dose within 5 days of UPI. UPA-EC is more effective than LNG-EC, especially at days 4 and 5 after UPI.[9]

ASSESSMENT

Very little information is required to determine whether EC is indicated. History taking must determine that UPI occurred within the time when EC is effective. The woman's risk for having a pre-existing pregnancy should be assessed by determining the timing and normalcy of her last menstrual period, prior acts of UPI, and whether or not she is currently overdue for an expected period. A urine pregnancy test is only required if there is uncertainty and a Cu-IUD is to be inserted.[8] If the woman has a negative urine pregnancy test and there are no other contraindications, a copper IUD can be inserted up to 7 days after UPI.[6–8]

A woman who had UPI earlier in the cycle may be at risk of pregnancy because the EC therapeutic window has passed, but she should not be denied EC pills if she also had UPI within the 5-day window. She also can be offered a Cu-IUD if UPI occurred within the 7-day window and her urine pregnancy test is negative. For example, if a woman had UPI on days 8 and 13 of her menstrual cycle and presents on day 17 for EC, she can be offered a post-coital IUD if her urine pregnancy test is negative. Repeated use of LNG 0.75 mg in a cycle does not appear to be associated with any serious adverse events.[57] Repeated use of UPA has not been specifically studied.

Health care providers should also discuss broader sexual health concerns, such as whether the UPI was coerced, the need for ongoing contraception, the risk of STIs, and the need for post-exposure prophylaxis. Screening for chlamydia and gonorrhea should be offered to all women and recommended for those at higher risk.[58] If a Cu-IUD is chosen in a woman at high risk for STIs, swabs for chlamydia and gonorrhea should be taken at the time of IUD insertion and prophylactic antibiotics that cover chlamydia and gonorrhea can be considered.[59] Women using EC pills should be advised that they do not prevent pregnancy if UPI occurs in the days or weeks after treatment and that a reliable ongoing method of contraception should be used. Women who want to start oral contraceptives, the patch, the ring, or medroxyprogesterone acetate can begin using it the day of or the day following LNG-EC (the "quick start" method).[60] There is some concern that quick start of regular hormonal contraceptives or continuation of hormonal contraceptives after missed pills may interfere with the action of UPA-EC.[61] For this reason it is prudent to wait 5 days before starting or continuing hormonal contraceptives after UPA-EC.[61] There is no evidence that quick start of hormonal contraceptives after EC harms a pregnancy in the event of EC failure.[62] Back-up contraception/abstinence should be used for 7 days after LNG-EC even if a woman has started another method of hormonal contraception or is using her usual hormonal contraception.[60] Women who choose UPA-EC must use back-up contraception/abstinence for the first 5 days after taking UPA-EC and then for the first 14 days after starting hormonal contraception.[61] If delaying initiation of hormonal contraception until the next menses, abstinence or a barrier method should be used in the interim.

DRUG INTERACTIONS

Although certain enzyme-inducing medications may theoretically reduce the efficacy of LNG-EC, UPA-EC, and the Yuzpe regimen,[63,64] the World Health Organization in its last Medical Eligibility Criteria for Contraceptive Use of 2015[65] does not consider these drugs as a contraindication to the use of any EC pill. Some guidelines[66] recommend doubling the dose of LNG-EC to 3.0 mg in women using enzyme-inducing medication, but there is currently no evidence to support this statement. Women taking one of these medications also have the opportunity to choose a Cu-IUD for EC.

FOLLOW-UP

Women should have a pregnancy test if they do not have normal menstrual bleeding by 21 days following EC treatment (LNG-EC, UPA-EC, or Cu-IUD) or by 28 days if cyclic hormonal contraception was initiated and withdrawal bleeding does not occur. Women who start

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medroxyprogesterone acetate or continuous hormonal contraception should do a pregnancy test 21 days after using EC to rule out EC failure. Women who obtain an emergency Cu-IUD should come for a follow-up visit 4 to 6 weeks after the insertion to check that the IUD is in place and that there are no other concerns.

ACCESS TO EMERGENCY CONTRACEPTION

Emergency contraception is a woman's last chance to prevent an unintended pregnancy. To maximize the potential for EC to reduce the number of unintended pregnancies, women at risk of pregnancy and their partners need to be knowledgeable about both hormonal EC and the post-coital IUD *before they need it* and must be able to access it quickly should they need it.

Possible barriers to EC use include lack of knowledge, negative attitudes, fear of side effects, judgemental attitudes from providers, overstating of associated health risks, impractical business hours of medical clinics and pharmacies, cost of EC, unavailability of the product in some pharmacies, and lack of Health Canada approval for all EC methods. Although women are increasingly familiar with and using hormonal EC, specific knowledge is often poor[67,68] and knowledge of IUDs is even more limited.[69] Pharmacy availability of LNG-EC has been shown to increase access and use and to reduce the time to use.[70] Systematic reviews and meta-analyses have shown that women with advance provision of EC used it more frequently and with less delay than those accessing EC through the usual channels.[71–73] Most studies have shown that women and adolescents receiving LNG-EC in advance did not differ from those receiving usual care in their use of hormonal contraception or in subsequent sexual risk-taking behaviours.[71,72] Increased access to EC pills through pharmacies and advance provision has not been shown to reduce population pregnancy rates in individual studies or meta-analyses.[71–73] However, a recent observational study found that women receiving post-coital IUDs were more likely to be using an effective method of contraception and less than half as likely to have had a pregnancy in the following year compared with those who received LNG-EC.[74] Despite evidence for its superior effectiveness, the Cu-IUD may be difficult for women to access. Even clinics specializing in sexual health services seldom offer this option.[55] Organized efforts are warranted to make this option available to all Canadian women in need.

Summary Statements

12. The copper intrauterine device is the most effective method of emergency contraception. (II-2)
13. A copper intrauterine device can be used for emergency contraception up to 7 days after unprotected intercourse provided that pregnancy has been ruled out and there are no other contraindications to its insertion. (II-2)
14. Levonorgestrel emergency contraception is effective up to 5 days (120 hours) after intercourse; its effectiveness decreases as the time between unprotected intercourse and ingestion increases. (II-2)
15. Ulipristal acetate for emergency contraception is more effective than levonorgestrel emergency contraception up to 5 days after unprotected intercourse. This difference in effectiveness is more pronounced as the time from unprotected intercourse increases, especially after 72 hours. (I)
16. Hormonal emergency contraception (levonorgestrel emergency contraception and ulipristal acetate for emergency contraception) is not effective if taken on the day of ovulation or after ovulation. (II-2)
17. Levonorgestrel emergency contraception may be less effective in women with a body mass index > 25 kg/m^2 and ulipristal acetate for emergency contraception may be less effective in women with a body mass index ≥ 35 kg/m^2. However, hormonal emergency contraception may still retain some effectiveness regardless of a woman's body weight or body mass index. (II-2)
18. Hormonal emergency contraception is associated with higher failure rates when women continue to have subsequent unprotected intercourse. (II-2)
19. Hormonal contraception can be initiated the day of or the day following the use of levonorgestrel emergency contraception, with back-up contraception used for the first 7 days. (III)
20. Hormonal contraception can be initiated 5 days following the use of ulipristal acetate for emergency contraception, with back-up contraception used for the first 14 days. (III)

Recommendations

16. All emergency contraception should be initiated as soon as possible after unprotected intercourse. (II-2A)
17. Women should be informed that the copper intrauterine device (IUD) is the most effective method of emergency contraception and can be used by any woman with no contraindications to IUD use. (II-3A)
18. Health care providers should not discourage the use of hormonal emergency contraception (EC)

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on the basis of a woman's body mass index (BMI). The copper intrauterine device for EC should be recommended for women with a BMI > 30 kg/m^2 who seek EC. If access and cost allow, ulipristal acetate for EC should be the first choice offered to women with a BMI ≥ 25 kg/m^2 who prefer hormonal EC. (II-2B)

19. Health care providers should discuss a plan for ongoing contraception with women who use pills for emergency contraception (EC) and should provide appropriate methods if desired. Hormonal contraception should be started within 24 hours of taking levonorgestrel for EC, and back-up contraception or abstinence should be used for the first 7 days after starting hormonal contraception. (III-B) Women who use UPA-EC should start hormonal contraception 5 days after using UPA-EC. UPA-EC users must use back-up contraception or abstinence for the first 5 days after taking UPA-EC and then for the first 14 days after starting hormonal contraception. (III-B)
20. Ulipristal acetate and levonorgestrel should not be used together for emergency contraception. (III-B)
21. A pregnancy test should be conducted if the woman has no menstrual period within 21 days of using pills or inserting a copper intrauterine device for emergency contraception. (II-B)
22. Health services should be developed to allow Canadian women to have timely access to all effective methods of emergency contraception. (III-A)

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