CONTRACEPTION

WOMEN'S PREVENTIVE SERVICES INITIATIVE UPDATE

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CURRENT WPSI RECOMMENDATIONS

Clinical Recommendations (2016)

The Women's Preventive Services Initiative recommends that adolescent and adult women have access to the full range of female-controlled contraceptives to prevent unintended pregnancy and improve birth outcomes. Contraceptive care should include contraceptive counseling, initiation of contraceptive use, and follow-up care (e.g., management, and evaluation as well as changes to and removal or discontinuation of the contraceptive method). The Women's Preventive Services Initiative recommends that the full range of female-controlled U.S. Food and Drug Administration-approved contraceptive methods, effective family planning practices, and sterilization procedures be available as part of contraceptive care.

The full range of contraceptive methods for women currently identified by the U.S. Food and Drug Administration include: (1) sterilization surgery for women, (2) surgical sterilization via implant for women, (3) implantable rods, (4) copper intrauterine devices, (5) intrauterine devices with progestin (all durations and doses), (6) the shot or injection, (7) oral contraceptives (combined pill), 8) oral contraceptives (progestin only, and), (9) oral contraceptives (extended or continuous use), (10) the contraceptive patch, (11) vaginal contraceptive rings, (12) diaphragms, (13) contraceptive sponges, (14) cervical caps, (15) female condoms, (16) spermicides, and (17) emergency contraception (levonorgestrel), and (18) emergency contraception (ulipristal acetate), and additional methods as identified by the FDA. Additionally, instruction in fertility awareness-based methods, including the lactation amenorrhea method, although less effective, should be provided for women desiring an alternative method.

Implementation Considerations

The Women's Preventive Services Initiative recommends as a preventive service, access to and provision of the full range of female-controlled U.S. Food and Drug Administration-identified contraceptive methods. This includes access to contraceptive counseling, initiation of contraceptive use, and follow-up care (e.g., management, evaluation, as well as changes to and

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removal or discontinuation of the contraceptive method) by a health care provider or appropriately trained individual. Additionally, effective family planning practices, and patient-specific services or U.S. Food and Drug Administration-approved methods that may be required based on individual women's needs are recommended as part of contraceptive preventive services.

The Women's Preventive Services Initiative recommends accommodation of an alternative form of contraception when a particular drug or device (generic or brand name) is medically inappropriate for a patient as determined by the individual's health care provider. Research indicates that delayed initiation or disruption of contraceptive use increases the risk of unintended pregnancy; therefore, the Women's Preventive Services Initiative recommends timely authorization of contraceptives.

The Women's Preventive Services Initiative also recommends as a preventive service counseling that emphasizes patient-centered decision-making and allows for discussion of the full range of contraceptive options.

For some women, more than one visit may be needed to achieve effective contraception. More than one visit may also be necessary to identify the appropriate contraceptive methods to optimize compliance and effectiveness as determined by a woman and her health care provider, based on shared decision-making.

INTRODUCTION

The goal of preventing unintended pregnancy is to support women in achieving their pregnancy objectives and to improve maternal and child health by increasing the likelihood that every pregnancy is desired and planned.[2] When choosing a contraceptive, women may consider effectiveness, adverse effects, convenience, prevention of sexually transmitted infections (STIs), and non-contraceptive benefits. Most contraceptives are specific to biologic females and can be delivered in the context of routine clinical care in a variety of settings.

Contraceptive counseling offers an opportunity to discuss reproductive health goals, provide education about contraceptives, correct misinformation, and, through shared decision-making, facilitate the provision of a contraceptive that will be successful for an individual woman. Contraceptive counseling can facilitate use and increase the provision of effective contraception while honoring a woman's preferences and life circumstances.

Current Recommendations and Coverage of Services

The gap in services provided under the provisions of the Patient Protection and Affordable Health Care Act of 2010 (ACA) previously identified by the Institute of Medicine (now the National Academy of Medicine) Committee on Clinical Preventive Services for Women was the absence of coverage for contraception.[3,4] (**Table 1**).

Table 1. Summary of Recommendations Currently Covered by the Affordable Care Act

WPSI[5]	Recommends that adolescent and adult women have access to the full range of female-controlled contraceptives to prevent unintended pregnancy and improve birth outcomes. Contraceptive care should include contraceptive counseling, initiation of contraceptive use, and follow-up care (e.g., management, and evaluation as well as changes to and removal or discontinuation of the contraceptive method). The WPSI recommends that the full range of female-controlled U.S. Food and Drug Administration-approved contraceptive methods, effective family planning practices, and sterilization procedures be available as part of contraceptive care.
USPSTF	Not addressed
Bright Futures[6]	Recommends a developmentally targeted sexual history, assessment of STI and pregnancy risk, and provide appropriate screening, counseling, and, if needed, contraceptives.

Abbreviations: STI, sexually transmitted infection; USPSTF, U.S. Preventive Services Task Force; WPSI, Women's Preventive Services Initiative

Contraceptive coverage under the ACA requires that plans in the Health Insurance Marketplace cover contraceptives and counseling for women with potential for pregnancy, as prescribed by a health care provider, without charging copayment or coinsurance when provided by an in-network provider regardless of whether the deductible has been met.[7] Private companies are increasingly challenging the contraception provisions in the ACA,[8] and employed women may have plans that are exempt from contraceptive coverage.[9] Nonetheless, as a result of the ACA's

contraceptive coverage requirement, more than 55 million women currently have access to contraception without copayments.[10]

Several national and professional organizations have issued recommendations for contraceptive use (**Table 2**). In addition, the United States Medical Eligibility Criteria for Contraceptive Use, 2016 (US MEC),[11,12] adapted from the World Health Organization (WHO) medical eligibility criteria (MEC) 5th edition,[13] provides recommendations for contraceptive safety and efficacy based on updated scientific evidence for women with a wide range of medical conditions.[12] These documents provide clinicians with comprehensive safety and prescribing guidelines for patients with comorbidities and potential contraindications to particular contraceptives.

The U.S. Selected Practice Recommendations for Contraceptive Use 2016 (U.S. SPR),[11] comprises recommendations that address a select group of common, yet sometimes controversial or complex issues regarding initiation and use of specific contraceptives, serve as a supplement to the MEC, and are specific to U.S. family planning practices.[14] The document offers guidance related to the use of contraceptives including initiation, choice of method, follow-up criteria, and testing prior to initiation of methods, with additional guidance on problems that may arise during use, such as missed pills or unscheduled bleeding.[14]

The CDC recommendations for Providing Quality Family Planning Services (QFP) provide additional guidance on contraceptive counseling and provision for the full range of contraceptives,[15] with specific guidance for offering comprehensive contraceptive services. Some organizations, including the CDC, now recommend increasing access to long-acting reversible contraception (LARC) to reduce unintended pregnancy because of its high level of effectiveness.[16] The American Academy of Pediatrics (AAP) updated its policy statement in 2014 to emphasize that the first-line contraceptive choice for adolescents who choose not to be abstinent is a LARC method, specifically an intrauterine device or a subdermal implant.[17] In 2015, the American College of Obstetricians and Gynecologists (ACOG) strengthened its LARC recommendations to underscore LARC as the most effective reversible contraceptive option for most women, including nulliparous women and adolescents who are sexually active.[18]

Table 2. Recommendations of Professional Organizations

American College of Obstetricians and Gynecologists (ACOG)[19]	• Regardless of a patient's age or previous sexual activity, the obstetrician–gynecologist routinely should address her contraceptive needs, expectations, and concerns. • Statutes on the rights of minors to consent to health care services vary by state, and obstetrician–gynecologists should be familiar with the regulations that apply to their practice. • Emergency contraception routinely should be included in discussions about contraception, including access issues. The American College of Obstetricians and Gynecologists recommends that obstetrician–gynecologists write advance prescriptions for oral emergency contraception for their patients. • Long-acting reversible contraceptive (LARC) methods have higher efficacy, higher continuation rates, and higher satisfaction rates compared with short-acting contraceptives. Because LARC methods are safe, they are excellent contraceptive choices for adolescents. • Discussions about contraception should begin with information on the most effective methods first. • Obstetrician–gynecologists should be aware of and be prepared to address the most common misperceptions about contraceptive methods in a way that is age appropriate and compatible with the patient's health literacy. • The initial encounter and follow-up visits should include continual reassessment of sexual concerns, behavior, relationships, prevention strategies, and testing and treatment for sexually transmitted infections (STIs) per the Centers for Disease Control and Prevention's (CDC) guidelines.

American Academy of Family Physicians (AAFP)[20]	• The American Academy of Family Physicians (AAFP) supports policies and legislation that would require public and private insurance plans to provide coverage and not impose cost sharing for all Food and Drug Administration approved contraceptive methods, sterilization procedures, and patient education and counseling for all women and men with reproductive capacity including those contraceptive methods for sale over the counter. • The AAFP supports the position that Long-Acting Reversible Contraception (LARC) be offered as a first-line contraceptive method and encouraged as an option for most women with reproductive capacity. The AAFP supports assuring coverage and adequate payment of LARC. Placement prior to hospital discharge, should be paid separate from the global fee. The AAFP also supports adequate coverage and payment for LARC as a treatment for dysfunctional uterine bleeding. • The AAFP is concerned about the sexual health of adults and adolescents and believes physicians should provide patient education and counseling to both men and women to decrease the number of unwanted pregnancies. This includes information about abstinence, contraceptive methods, sterilization procedures, and providing emergency contraception. It includes the discussion of all contraceptive methods, where to obtain them, and the reliability of each. In addition, the family physician should explain how the different contraceptive methods do and do not prevent sexually transmitted diseases. If the family physician is uncomfortable providing these services, the patient should be referred to another physician or provider who is willing to provide the education and counseling and/or services.

American Academy of Pediatrics (AAP)[21-23]	Recommendations to increase access to long-acting reversible contraceptive (LARC) by adolescents: • Recognize LARCs as safe options for adolescents. The US MEC can help clarify questions related to safety of use in a variety of complex medical conditions. • Have a clear discussion of expected side effects with their adolescent patients, including expected changes in bleeding patterns, as part of LARC counseling. Providing this type of information and understanding the short-term options to control abnormal uterine bleeding are associated with higher LARC continuation. • Seek and obtain the required training for placement and removal of LARCs. • Understand that LARC placement does not need to be delayed for STI screening. IUD placement should be delayed if purulent cervicitis is noted or if an untreated gonorrhea or Chlamydia infection is present. • Emphasize dual therapy with condoms in LARC users to prevent STIs. • Be aware that confidentiality can be compromised when delivering LARC services during the consent process and inadvertently by insurance billing and various automated features of the electronic health record. Understand state laws surrounding reproductive health and the financial options available to cover LARC services. • When providing same-day LARC services, care must be taken to ensure all available contraceptive methods are reviewed, medical eligibility is considered, side effects are discussed, and personal safety related to intimate partner violence and coerced sexual activity is assessed. • Provide LARC counseling within the reproductive justice framework to prevent directive and potentially coercive counseling. • Focus on an end goal of improving the availability of LARC services to adolescents and not on increasing adolescent use of LARC methods. Recommendations regarding barrier contraceptives: • Discuss abstaining from sexual intercourse as the most effective way to prevent genital STIs, as well as HIV infection, and unintended pregnancy. • Support and encourage the consistent and correct use of barrier methods, as well as other reliable contraception, as part of anticipatory guidance during visits with adolescents who are sexually active or contemplating sexual activity. • Support the provision of free or low-cost barrier methods within communities, including providing barrier methods within clinics. • Promote communication between parents and adolescents about healthy sexual development, sexuality, prevention of STIs and pregnancies, and proper use of barrier methods.

American Medical Association (AMA)[24]	1) Urges health care professionals to provide care for women of reproductive age, to assist them in planning for pregnancy and support age-appropriate education in esteem building, decision-making and family life in an effort to introduce the concept of planning for childbearing in the educational process; 2) Supports reducing unintended pregnancies as a national goal; and 3) Supports the training of all primary care physicians and relevant allied health professionals in the area of preconception counseling, including the recognition of long-acting reversible contraceptives as efficacious and economical forms of contraception.
Centers for Disease Control, U.S Office of Population affairs (CDC)[15]	Recommends contraceptive services to delay or prevent pregnancy. These include a full range of FDA-approved contraceptive methods, a brief assessment to identify the methods that are safe for the client, contraceptive counseling to help a client choose a method of contraception and use it correctly and consistently, and provision of one or more selected contraceptive method(s), preferably on site, but by referral if necessary. Education is an integral component of the contraceptive counseling process that helps clients to make informed decisions and obtain the information they need to use contraceptive methods correctly.

Abbreviations: FDA, Food and Drug Administration; HIV, human immunodeficiency virus; IUD, intrauterine device; MEC, Medical Eligibility Criteria

Background

In the United States, nearly half of pregnancies are unintended,[25,26] defined as a pregnancy that is either mistimed (27% of all pregnancies) or unwanted (18% of all pregnancies).[26,27] Despite the availability of effective forms of contraception (**Table 3**),[28,29] disparities exist in contraceptive use and rates of unintended pregnancy.[30] Unintended pregnancies disproportionately occur in women age 18 to 24 years, especially among those with low incomes or from racial/ethnic minorities.[31] Adverse effects of unintended pregnancies are well known including delayed prenatal care, premature birth, and negative physical and mental health effects for children;[32-34] and maternal depression, physical violence during pregnancy, and others for women.[35-38]

Primary prevention is aimed at preventing the onset of a specific condition.[39] Delivering contraceptive care to all patients with potential for pregnancy is a preventive health service that also includes an evaluation of a patient's satisfaction with her contraceptive at subsequent visits to reduce discontinued or interrupted use. Over a 1-year period, as many as a one fourth of women experience a gap in contraceptive use and approximately two out of five women may use their oral contraceptives inconsistently, contributing significantly to the risk for unintended pregnancy.[40]

Table 3. Contraceptive Effectiveness, Proportion Pregnant Over 1 Year of Use[28,29]

Contraceptive method	Typical use (%)
Implant	0.1
Vasectomy	0.15
IUD, levonorgesterol-releasing	0.1-0.4
Tubal sterilization	0.5
IUD, Copper-T	0.8
Injectable	4
Pill	7
Vaginal ring	7
Patch	7
Male condom	13
Diaphragm or cervical cap	17
Sponge*	14/27
Female condom	21
Withdrawal	>13
Fertility awareness methods†	2-23
Spermicides	21
Emergency contraception‡	NA
No method	85

*For sponge, first figure is for women without prior birth and second for women who have.
†Includes cervical mucus methods, body temperature methods, and periodic abstinence.
‡Estimated to reduce the incidence of pregnancy by approximately 90% when used to prevent pregnancy after 1 instance of unprotected sex.
Abbreviations: IUD=intrauterine device

The most frequently used contraceptives in the United States continue to be oral contraceptives and sterilization (**Table 4**), despite an increase in the availability of more effective methods.[41] Long acting reversible contraception has been recommended to effectively reduce unintended pregnancy,[16] although these methods are less frequently used in the United States compared with other developed countries.[42] Women who do not use any form of contraception represent 10% of women at risk for unintended pregnancies, yet account for over half of the unintended pregnancies that occur annually.[43] Notably, the annual risk of pregnancy associated with nonuse of contraception is 85%.

Table 4. Contraceptive Method Choice, U.S. Women 2015-2017*[41]

Method	**Women aged 15-49 years (%)**
Tubal sterilization (female)	18.6
Pill	12.6
Male condom	8.7
Intrauterine device (IUD)	7.9
Vasectomy	5.9
Withdrawal	3.9
Implant	2.3
Injectable	2.1
Periodic abstinence – calendar rhythm	1.3
Patch or contraceptive ring	1.2
Periodic abstinence – natural family planning	0.2
Other methods†	0.2
Diaphragm	0
No method, at risk of unintended pregnancy‡	7.9
No method, not at risk	27.2
Total	100.0

*Most effective method used in the past month by U.S. women.
†Includes emergency contraception, female condom, foam, cervical cap, sponge, suppository, jelly/cream, and other methods.
‡At risk refers to women who are sexually active; not pregnant, seeking to become pregnant, or postpartum; and not non-contraceptive sterile.

EVIDENCE SUMMARY

This section of the WPSI update summarizes selected results of a recently completed comprehensive systematic review of contraceptive care funded by the Resource Legacy Fund Grant #14338 relevant to the scope of the WPSI contraception recommendation.[1] This summary primarily includes studies of the effectiveness of contraceptive care in increasing use of contraceptives. Studies eligible for inclusion were applicable to preventive care delivery in U.S practice, evaluated contraceptive services specifically for patients with potential for becoming pregnant without the use of contraception, and included currently available FDA-approved devices, medications, and other female specific contraceptives within the WPSI scope.

Methods

Literature Search. A research librarian conducted electronic database searches in OVID MEDLINE, Cochrane Database of Systematic Reviews, CENTRAL (Cochrane Central Register of Controlled Trials), PsycINFO, and SocINDEX databases from January 1, 2000 to July 1, 2021. Investigators also manually reviewed reference lists of relevant articles and systematic reviews. For the full evidence review, 17,416 abstracts and 1,482 full-text articles were dual-reviewed for inclusion; of these, 34 randomized controlled trials (RCTs) were included in the WPSI summary.

Study Selection. Studies were selected for inclusion based on pre-established eligibility criteria defined by populations, interventions, comparators, outcomes, timing, and setting. Eligible studies evaluated the effectiveness of contraceptive care delivered to patients using currently available contraceptives. Studies that evaluated the efficacy of specific contraceptives were not included. Contraceptives included FDA-approved devices, medications, and other methods in clinical use in the United States as of 2020. Since the scope of the WPSI includes female specific contraceptives, trials of condom or dual use (i.e., condoms in addition to another method) for contraception purposes and male sterilization were not included in this summary.

For this review, *contraceptive care* included screening, counseling, education, and provision of contraceptives including follow-up care. Contraceptive care occurs in a variety of settings by a broad range of health care professionals. *Screening* was defined as the process of determining an individual's need for contraception and assessing risk factors relevant to specific contraceptives, pregnancy, and birth. *Counseling* included education and consideration of benefits, harms, and patient preferences, among other components, often involving a shared decision-making process. *Education* alone was considered less comprehensive than counseling and generally involved relaying information. *Provision* of contraception included prescribing, delivering, or dispensing contraceptives as well as providing follow-up care.

Only randomized controlled trials (RCTs) comparing contraceptive use following contraceptive care interventions versus no interventions, usual care, or alternative interventions were included in this update for the WPSI. Interventions included contraceptive counseling and/or provision of contraceptives that could also include additional components, such as education and follow-up.

The primary outcome for the WPSI update was contraceptive use at various time periods after the intervention. Rate of unintended pregnancy was an included outcome only if trials indicated that 1) pregnancy was a primary or secondary outcome of the trial; and 2) the trial was appropriately powered for the pregnancy outcome. Trials with pregnancy outcomes are described qualitatively in the relevant sections of the update.

Trials that reported potential harms of contraceptive care were also included, such as anxiety, stigma, coercion, reduced condom use, and sexually transmitted infections (STIs).

Data Abstraction and Synthesis. For studies meeting inclusion criteria, data were abstracted into tables by a single investigator including characteristics of study populations, interventions, comparators, outcomes, study design, settings, methods, and results. A second investigator reviewed data for accuracy and completeness. Each study was independently rated for quality by two investigators and disagreements were resolved by consensus with a third reviewer.

Predefined criteria of the USPSTF were used to assess the quality of individual studies rating them as *good, fair,* or *poor*.[44] Studies were also rated for applicability which is the extent to which the effects observed in published studies are likely to reflect the expected results when a specific intervention is applied to a population under real-world conditions. Factors important for understanding applicability were considered for each study including differences in the interventions, comparators, populations, and settings. Based on these factors, applicability of individual studies was rated *good, fair,* or *poor*.[44] Strength of evidence and applicability of the body of evidence was based on the number, quality, and size of studies; the consistency of results between studies; and directness of evidence. Grades were assessed by one investigator and then reviewed by all investigators for consensus and graded *high, moderate, low*, or *insufficient.*[44]

All eligible RCTs were included in the WPSI update regardless of quality rating. The most common limitations of RCTs in the systematic review included no or unclear descriptions of blinding, high loss to follow-up, and lack of or unclear descriptions of intention-to-treat analysis that resulted in downgrading study quality ratings. However, these criteria are generally less appropriate for effectiveness trials of behavioral interventions, such as the trials in this update, than for efficacy trials of medications for which they were intended.

Statistical Meta-analysis. Results of RCTs were combined using meta-analysis that considered clinical and methodological differences. Outcomes from the most common follow-up time among included trials were used and generally ranged from 3 to 12 months after the intervention. Estimates of risk ratios (RRs [rate ratio, hazard ratio, or relative risk]) and their standard errors were abstracted or calculated from each study and used as effect measures. Statistical heterogeneity was assessed using Cochrane χ^2 tests and the magnitude of heterogeneity using the *I* statistic.[45] The RRs were combined by using a profile likelihood random-effects model to account for variation among studies.[46] All analyses were performed by using Stata/SE 16.1 (StataCorp, College Station, TX), and all results were provided with 95 percent confidence intervals.

Results

A total of 34 RCTs (in 39 publications) met inclusion criteria for the WPSI update and are summarized below. Of these, 31 trials of contraceptive care interventions reported contraceptive use and 11 reported pregnancy as a primary or secondary outcome; seven trials evaluated STIs and condom use as potential harms of interventions.

Trials of interventions were categorized by their clinical intentions and may be relevant to more than one category. Trials included in meta-analysis evaluated the effectiveness of contraceptive counseling and provision interventions to increase contraceptive use:

- In general populations of adolescents and women
- For advanced provision of emergency contraception
- Immediately postpartum
- At the time of abortion

Fewer trials were available describing additional interventions and outcomes. These were summarized descriptively and were not included in meta-analysis:

- Pharmacist provided contraceptives
- Interventions to increase adherence to contraceptives
- Potential harms of contraceptive care

Effectiveness of Contraceptive Counseling and Provision Interventions in General Populations

Contraceptive use. Eight trials compared contraceptive use between women receiving counseling and provision interventions versus usual or alternative care (**Table 5**).[47-54] Three trials compared enhanced versus routine contraceptive counseling;[47,51,54] two trials compared contraceptive computer modules versus computer modules with generic information[48] or covering other health topics.[52] Additional trials compared onsite contraceptive services that included follow-up and payment incentives versus usual care;[49] family physician training on LARC to increase access to services versus no training;[50] and monthly home visits with follow-up calls versus usual care.[54]

Trials enrolled adolescent[53,54] and adult[47-53] women from multiple clinical settings including family planning clinics, family medicine and OB-GYN clinics, STD clinics, emergency departments and urgent care clinics, an opioid treatment center, public and national health clinics, and hospital postpartum units in the United States, Sweden, Australia, and Spain. Two trials enrolled pregnant and postpartum women[51,54] and another trial enrolled women undergoing outpatient opioid treatment.[49] Contraceptive use at 3, 4, 6, or 12 months after the intervention was the main outcome reported as LARC use in three trials[47,50,54] and effective types in five trials.[48,49,51-53] The definition of effective types varied across trials, but generally included IUDs, implants, injectable contraceptives, combined oral contraceptives, progestin-only pills, contraceptive ring, and contraceptive patch with the addition of male and female sterilization for some studies.

A meta-analysis indicated higher rates of contraceptive use at 3 to 6 months follow-up for participants receiving interventions compared with usual care or alternatives (RR 1.47; 95% CI 1.20 to 1.89; 8 trials). Results were generally consistent across trials, although effects were minimal in two trials. These included a trial comparing a computer module, education, and an offer of a contraceptive prescription versus a computer module on chlamydia screening in emergency departments and an urgent care clinic in the United States[52]; and a trial comparing enhanced prenatal and postpartum counseling sessions versus usual care in Spain.[51]

Pregnancy: Five trials reported pregnancy as a primary or secondary outcome including four trials with contraceptive use outcomes included in the meta-analysis[47,49,53,54] and an additional trial that reported pregnancy but not contraceptive use.[55]

A trial of 598 adolescent mothers in OB-GYN clinics and hospital postpartum units in the United States reported increased use of LARC at 6 months after an intervention that included monthly home visits and telephone calls with nurses, contraception clinic visits, transportation, and a social worker compared with usual care (36% vs 22%, p=0.002).[54] In this trial, unintended repeat pregnancies by self-report were reduced at 18 months (17.2% vs 34.7%, p=0.0001). Another trial of 877 adolescents and women in an urban STD clinic in the United States indicated increased use of effective types of contraceptives after enhanced contraception counseling at 4 months (49.7% vs 22.3%, p<0.0001). In this trial, self-reported unintended pregnancies at 12 months were only slightly reduced (21.9% vs. 26.5%, p=0.17).[53] Pregnancy rates were lower after interventions compared with usual care in a trial of onsite services and incentives in an opioid treatment program (services and incentives 4.9% vs services alone 16.7% vs usual care 22.2%; p=0.03; n=138).[49] Pregnancy rates did not differ in a trial comparing structured with routine counseling in Sweden.[47]

An additional cluster randomized trial was not included in the meta-analysis for the WPSI update because it reported initiation of LARC and unplanned pregnancies, not contraceptive use following the intervention (CHOICE trial).[55] The trial enrolled 1,500 women across 17 abortion care and 23 family planning clinics in the United States and compared clinician training on LARC procedures and patient education videos versus no training or videos. Results demonstrated increased initiation of LARC methods during the clinic visit for the intervention group (28% vs. 17%; OR 1.91; 1.31 to 2.79). Pregnancy outcomes at 12 months based on urine testing differed by type of clinic. Participants in the intervention group attending family planning clinics had fewer pregnancies compared with usual care (7.9 vs. 15.4 per 100 person-years; hazard ratio [HR] 0.54; 95% CI 0.34 to 0.85), while rates did not differ significantly among participants in the intervention group attending abortion clinics (26.5 vs. 22.3 per 100 person-years; HR 1.35; 95% CI 0.91 to 2.02).

Table 5. Trials of the Effectiveness of Contraceptive Counseling and Provision Interventions in General Populations

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applica-bility
Emtell Iwarsson, 2021[47]	Abortion, youth, maternal health clinics (33); Sweden	Women (1364)	Structured contraceptive counseling with standardized materials	Routine contraceptive counseling	LARC use at 3 months; pregnancy at 12 months	LARC: 40.3% (213/528) vs 28.8% (153/531); OR 1.74 (95% CI 1.22 to 2.49) Pregnancy: 6.2% (39/634) vs 8.5% (55/655); OR, 0.75 (95% CI, 0.43-1.31)	Fair; Poor
Garbers, 2012[48]	Public family planning clinics (2); US	Women (269)	Computer module with educational materials and individualized contraception information	Brief version of computer module with generic contraception information	Use of effective types* at 4 months	95% (74/78) vs 77% (54/70); OR 5.48 (95% CI 1.72 to 17.42); p=0.004	Fair; Fair
Harper, 2015[55]	Abortion care (17) and family planning clinics (23); US	Adolescents; women (1356)	Clinician training to improve LARC knowledge, counseling, and insertion skills	No training	Pregnancy at 12 months	Family planning clinics: HR, 0.54 (95% CI 0.34-0.85) Abortion clinics: HR, 1.35 (95% CI, 0.91-2.02)	Good; Good
Heil, 2021[49]	Opioid treatment program (1); US	Women (138)	Group 1: Onsite contraceptive services; 6 months follow-up visits; Group 2: add financial incentives for attending follow-up visits	Usual care	Use of effective types† at 6 months; pregnancy at 12 months	Effective types: onsite + incentives 54.8% (23/42) vs onsite 29.2% (14/48) vs usual care 10.4% (5/48); p<0.001 Pregnancy: onsite + incentives 4.9% vs onsite 16.7% vs usual care 22.2%; p=0.03	Fair; Poor
Mazza, 2020[50]	Family medicine clinics; Australia	Women (740); family physicians (57)	6-hour, online physician training on LARC counseling and referral based on the US Contraceptive CHOICE Project	Usual care	LARC use at 6 and 12 months	6 months: 44.4% vs 29.3%; RR 1.6 (95% CI 1.2 to 2.17); p=0.001 12 months: 46.6% vs 32.8%; RR 1.5 (95% CI 1.2 to 2.0); p=0.0015	Fair; Fair
Reyes-Lacalle, 2020[51]	National Health System reproductive health clinics (20); Spain	Pregnant and postpartum women (1004)	Enhanced prenatal and postpartum counseling sessions and materials	Routine postpartum contraceptive counseling	Use of effective types* at 6 and 12 months	6 months: 157/377 vs 150/384 12 months: 175/354 vs 143/349	Poor; Poor
Shlay, 2003[53]	Urban STD clinic (1); US	Adolescents, women (877)	Enhanced contraceptive counseling; provision of contraceptive; facilitated referral to primary care; condoms with spermicide	Condoms with spermicide and a referral list of primary care	Use of effective types‡ at 4 months; pregnancy at 12 months	Effective types: 49.7% (147/296) vs 22.3% (68/305); p<0.0001 Pregnancy: 21.9% vs 26.5%, p=0.17; HR,	Fair; Fair

Schwarz, 2013[52]	Emergency departments (3), urgent care clinic (1); US	Women (814)	Computer module of screening for contraindications to OC; education; offer prescription for OC, ring, or patch	Computer module of screening for chlamydia infection	Use of effective types§ at 3 months	47.0% (55/117) vs 43.8% (35/80); aOR 1.41 (95% CI 0.62 to 3.19)	Fair; Good
Stevens, 2017[54]	OB-GYN clinics (7), hospital post-partum units (5); US	Adolescent mothers (598)	Monthly home visits and telephone calls with nurses; contraceptive clinic visits; transportation; social worker	Usual care; educational handouts on contraceptives, interpregnancy intervals	LARC use at 6 and 18 months; pregnancy at 18 months	LARC 6 months: 36% vs 22%, p=0.002; 18 months: 40.2 vs 26.5%, p=0.002 Pregnancy: 17.2% vs 34.7%, p<0.0001	Good; Good

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; LARC, long-acting reversible contraception; OC, oral contraceptive; OR, odds ratio; RR, risk ratio; STD, sexually transmitted disease

*Female sterilization, male sterilization (vasectomy), contraceptive implants, IUDs, injectable contraceptives, combined oral contraceptives, progestin-only pills, contraceptive ring, and contraceptive patch.

†Pills, patches, rings, injections, IUDs, implants.

‡Oral contraceptives, depot medroxyprogesterone acetate (DMPA) injection, levonorgestrel implants, IUD, spermicide with condoms, tubal ligation, or vasectomy.

§Combined oral contraceptive, progestin-only pill, contraceptive ring, or patch.

Effectiveness of Advanced Provision of Emergency Contraception

Emergency contraception is a method of preventing pregnancy after unprotected sex or contraceptive failure that is effective, safe, and generally available without a prescription and without age restrictions (e.g., 1.5 mg oral levonorgestrel). Price ranges between $20 to $50 per dose depending on medication, distributer, and insurance coverage. However, lack of information and barriers to access within 5 days of unprotected sex, when it is effective, limit its use. Advanced provision of emergency contraception for women at risk of unprotected sex provides medication to patients before it is needed to assure its availability at the right time.

Contraceptive use. Eight trials evaluated the effectiveness of advanced provision of emergency contraception compared with receiving information about emergency contraception without provision,[56-59,60] routine contraceptive counseling,[61-63] or counseling on a nonrelated topic[64] (**Table 6**). Trials enrolled adolescent[56,57,60-62] and adult[58-60,63,64] women, including adolescent mothers[56] and postpartum women,[63] from inpatient, urgent care, family planning, case management, and outpatient clinic settings in the United States, Sweden, and Hong Kong. Emergency contraception use at 3, 6, or 12 months after the intervention was the main outcome measure.

A meta-analysis indicated higher rates of emergency contraception use at 6 months for participants receiving advanced provision compared with alternatives (RR, 2.12; 95% CI 1.79 to 2.36; 8 trials). Results were consistent across trials regardless of patient population, setting, or comparison group. Trials reporting results at different time points indicated increased use over time. For example, a trial of 420 teenagers in Sweden indicated use for participants randomized to advanced provision versus contraceptive counseling as 24% versus 13% at 3 months;[61] 31% versus 19% at 6 months;[61] and 40% versus 22% at 12 months, respectively.[62]

Pregnancy. A trial of emergency contraception provision compared with counseling on a nonrelated topic indicated reduced pregnancy at 6 months (0.5% vs 4.0%, p=0.01).[64] Two other trials indicated no statistically significant differences in pregnancy rates between intervention and comparison groups,[60,65] although trials were insufficiently powered for pregnancy as an outcome, few pregnancies were reported, and follow-up was incomplete.

Table 6. Trials of the Effectiveness of Advanced Provision of Emergency Contraception

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applicability
Belzer, 2005[56]	Case management program (1); US	Adolescent mothers (160)	One course advanced EC; instructions for refills; information	Information about primary contraception and EC	EC at 6 and 12 months	6 months: 28% (15/54) vs 4% (2/57); 12 months: 29% (14/48) vs 7% (3/43)	Poor: Fair
Ekstrand, 2008[61]	Youth clinic (1); Sweden	Adolescents (420)	Two courses EC for immediate and future use; 10 condoms; leaflet about EC and condom use; follow up visit for contraceptive counseling and pregnancy test	Single course EC for immediate use on request; follow up visit for contraceptive counseling and pregnancy test	EC at 3 and 6 months	3 months: 24% (37/154) vs 13% (20/150), p=0.02; 6 months: 31% (54/172) vs 19% (29/157), p=0.01	Good; Good
Ekstrand, 2013[62]	Youth clinic (1); Sweden	Adolescents (420)	See Ekstrand, 2008	See Ekstrand, 2008	EC at 12 months	40% (57/142) vs 22% (26/119)	Fair; Fair
Gold, 2004[57]	Hospital-based adolescent clinic (1); US	Adolescents (301)	One course advanced EC; access to 2 additional courses; standard care information	Information about EC use, risks, and access; EC access when needed	EC at 6 months	30% (26/88) vs 19% (20/104); aOR 1.6 (95% CI 0.77 to 3.4), p=0.20	Poor; Fair
Harper, 2005*[66]	Family planning clinics (4); US	Adolescents; women (2,117)	Advanced provision of 3 packs of EC	Instruction card to return to the clinic for EC if needed	EC at 6 months	Age 15-19: 44.3% vs 28.9%, p=0.001; age 20-24: 31.5% vs 14.3%, p≤0.001	Good; Good
Jackson, 2003[63]	Public hospital (1); US	Postpartum women (371)	One course advanced EC with instructions; 5-minute education session; brochure	Routine contraceptive counseling	EC at 6 and 12 months	6 months: aOR 3.8 (95% CI 1.2 to 12); 12 months: aOR 5.8 (95% CI 1.6 to 21)	Fair; Fair
Lo, 2004[58]	Family planning clinics (2); Hong Kong	Women (1,030)	Three courses advanced EC; information	Information on EC and instructions on access when needed	EC at 12 months	30% (149/499) vs 16% (63/487), p<0.001	Fair; Fair
Raine, 2005*[65]	Family planning clinics (4); US	Adolescents; women (2,117)	See Harper, 2005	See Harper, 2005	Pregnancy at 6 months	OR, 1.10 (95% CI, 0.66-1.84)	Good; Good
Raymond, 2006[60]	NR	Adolescents; women (1,490)	Two free packages of EC with replacements as needed	Advice on obtaining EC if needed	EC at 5-7 and 12-14 months; pregnancy at 1 year	5-7 months, 16.7% (104/624) vs 3.0% (19/630); p<0.01; 12-14 months, 10.0% (57/569) vs 3.0% (17/572); p<0.01 Pregnancy: HR, 0.95 (95% CI, 0.68-1.33)	Fair; Good

Rocca, 2007*[59]	Family planning clinics (4); US	Women (2,117)	Three courses advanced EC	Instruction card to return to the clinic for EC if needed	EC at 6 months	OR 2.43 (95% CI 1.24 to 4.80)	Poor; Poor
Schwarz, 2008[64]	Urgent care clinics (2); US	Women (446)	Two courses advanced EC; counseling	Counseling on preconception folate; sample of folate	EC and pregnancy at 6 months	EC: 10% (13/127) vs 4% (6/138), p=0.06; aOR 7.17 (95% CI 1.38 to 37.21) Pregnancy: 0.5% vs 4.0%, p=0.01	Good; Fair

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; EC, emergency contraception; OR, odds ratio.
*Harper, 2005; Rocca, 2007; and Raine, 2005 are publications of the same trial.

Effectiveness of Contraceptive Counseling and Provision Interventions Immediately Postpartum

Contraceptive counseling and provision during the immediate postpartum period is an opportunity to deliver care at a time when women are transitioning from pregnancy and are currently engaged in their reproductive health care. Although contraceptive counseling is a routine practice in the postpartum setting and at postpartum clinic visits, additional efforts, such as in-hospital placement of implants and IUDs, provision of other contraceptives, or enhanced counseling could improve access to contraception, particularly for women facing barriers after hospital discharge.

Contraceptive use. Five trials compared postpartum contraceptive use between women receiving post-delivery, in-hospital interventions with those receiving usual care (**Table 7**).[63,67-70] Interventions included implant placement before hospital discharge versus at the 6-week postpartum visit;[67] immediate IUD insertion post-delivery versus IUD insertion at the 8-week postpartum visit;[68] enhanced contraceptive counseling with emphasis on LARC methods versus routine counseling;[69,70] and provision of emergency contraception versus routine counseling.[63]

Trials enrolled postpartum adolescent[67,69] and adult[63,67,68,70] women from hospitals in the United States; one trial enrolled postpartum women with preterm births.[70] Contraceptive use at 3, 6, or 12 months after the intervention was the main outcome measure in all trials. Trials were generally small, and follow-up was incomplete.

A meta-analysis indicated higher rates of contraceptive use at 3 to 6 months for participants receiving interventions compared with usual care (RR 1.15; 95% CI 1.01 to 1.52; 5 trials). Results were generally consistent across trials, although the various types of interventions and contraceptives increased clinical heterogeneity across studies.

Three trials providing contraception prior to hospital discharge indicated higher use for immediate versus delayed implant[67] or IUD insertion,[68] and for advanced provision of emergency contraception versus routine counseling.[63] Differences between intervention and comparison groups were not large and may reflect limitations of the trials as well as the effectiveness of usual care alternatives, particularly in the context of a research study. A trial of IUD insertion reported a higher expulsion rate within 6 months for immediate versus delayed placement (24% [12/50] vs. 4% [2/46]; p=0.008);[68] a higher rate than generally reported for immediate insertion in other studies.[71] Most IUDs expelled in the trial were replaced at the 6 to 8-week postpartum visit.[68]

Pregnancy. The only trial in the meta-analysis with pregnancy outcomes indicated no differences in unintended pregnancies among 100 postpartum adolescents receiving enhanced versus routine contraceptive counseling before hospital discharge (9 pregnancies by 12 months; numbers per group not reported).[69] This trial also reported similar rates of use for LARC (IUD, implant) and effective types of contraception (LARC, depot medroxyprogesterone acetate [DMPA], oral contraceptives, patch, ring) pre-discharge and at 6 and 12-months follow-up suggesting lack of effect overall.

Table 7. Trials of the Effectiveness of Contraceptive Counseling and Provision Interventions Immediately Postpartum

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applicability
Bryant, 2016[67]	Academic hospital (1); US	Postpartum adolescents and women (96)	Etonogestrel-releasing contraceptive implant placed before hospital discharge	Implant at postpartum visit 6 weeks post-delivery	Implant use at 3, 6, and 12 months	Use: 3 months: 95% (38/40) vs 77% (26/34), p=0.02; 6 months: 88% (35/40) vs 77% (26/34), p=0.8; 12 months: 63% (30/48) vs 44% (21/48), p=0.07	Fair; Fair
Chen, 2010[68]	Women's hospital (1); US	Postpartum women (163)	Immediate IUD insertion post-delivery	IUD insertion 8 weeks post-delivery	IUD use at 6 months	Initiation: 98% (50/51) vs 90% (46/51); p=0.20; 6 months: 94% (43/46) vs 87% (39/44); OR for delayed insertion, 0.80 (95% CI 0.19 to 3.41)	Poor; Fair
Frarey, 2019[69]	University hospital (1); US	Postpartum adolescents (100)	Contraceptive counseling (20 min) with emphasis on LARC safety and efficacy; empowerment messaging; shared decision making	Routine contraceptive counseling	LARC use (IUD, implant) and effective types (LARC, DMPA, OC, patch, ring) at 6 and 12 months; pregnancy at 12 months	Initiation (pre-discharge), LARC: 22% (11/50) vs 26% (13/50); effective types: 38% (19/50) vs 32% (16/50) 6 months, LARC: 27% (12/44) vs 32% (13/41); effective types: 39% (17/44) vs 37% (15/41) 12 months, LARC: 31% (12/39) vs 33% (13/40); effective types: 46% (18/39) vs 30% (12/40) Pregnancy: 5 versus 4, NS	Fair; Fair
Jackson, 2003[63]	Public hospital (1); US	Postpartum women (371)	Emergency contraception (1 treatment of 8 pills 0.15 mg levonorgestrel/30 ug EE) with instructions; 5-minute education session; and brochure	Routine contraceptive counseling	EC use at 6 and 12 months	6 months: aOR 3.8 (95% CI 1.2 to 12); 12 months: aOR 5.8 (95% CI 1.6 to 21)	Fair; Fair
Torres, 2018[70]	Academic Hospital (1); US	Postpartum women with preterm births (134)	Counseling script about contraceptives and their risks, benefits, and side effects with emphasis on LARC	Routine postpartum care	LARC use (IUD, implant) at 3 months	51% (29/57) vs 31% (16/51); aOR 4.6 (1.3-15.6)	Poor; Fair

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; DMPA, depot medroxyprogesterone acetate; EC, emergency contraception; EE, ethinyl estradiol; IUD, intrauterine device; LARC, long-acting reversible contraception; NS, not statistically significant; OC, oral contraceptive; OR, odds ratio.

Effectiveness of Contraceptive Counseling and Provision Interventions at Time of Abortion

Contraceptive counseling and provision at the time of abortion provide contraception services directly to women imminently experiencing unintended pregnancies who may have previously lacked information or access, as well as to those who may benefit from the convenience of coordinated services.

Contraceptive use. Five trials compared contraceptive use between women receiving contraception interventions at the time of spontaneous or induced abortion versus those receiving usual care (**Table 8**).[72-76] Interventions included immediate IUD insertion within 15 minutes post-surgical abortion versus 2 to 4 weeks post abortion;[72] IUD insertion at 1-week post-medical abortion versus 4 to 6 weeks post abortion;[75] and enhanced counseling with provision of chosen contraceptive versus usual care with provision.[73,74,76]

Trials enrolled adolescent[72,76] and adult[72-76] women from family planning clinics[72,73] and academic medical centers[72,75] in the United States and an abortion clinic in Scotland.[74] Trial participants received the intervention or usual care after medical[74-76] or surgical[72-74] abortion and contraceptive use was determined 3, 4, or 6 months later.

A meta-analysis indicated higher rates of contraceptive use at 3 to 6 months for participants receiving interventions versus usual care (RR 1.19; 95% CI 1.09 to 1.32; 5 trials). Results were consistent across trials regardless of type of intervention.

Pregnancy. The only trial of contraceptive use included in the WPSI meta-analysis with unintended pregnancy outcomes reported no pregnancies at 6 months among women randomized to immediate IUD insertion versus 5 pregnancies among women with delayed insertion (p=0.07).[72] All pregnancies occurred in women who never received an IUD (100% [258/258] of participants in the immediate IUD group vs. 71.3% [226/317] in the delayed IUD group received IUDs). The trial was designed as a noninferiority trial and was powered for expulsion rates. The 6-month expulsion rate was 5.0% after immediate insertion versus 2.7% after delayed insertion.

An additional RCT of 748 women at a hospital clinic in Finland was not included in the meta-analysis because it reported unplanned pregnancies only, not contraceptive use.[77] The trial compared IUD insertion at the time of surgical abortion versus 1-year of oral contraceptives and indicated reduced unplanned pregnancies among women receiving immediate IUD placement (9 [2.4%] vs. 20 [5.4%] pregnancies; p=0.038).

Table 8. Trials of the Effectiveness of Contraceptive Counseling and Provision Interventions at Time of Abortion

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applica-bility
Bednarek, 2011[72]	Family planning clinics and university clinic (4); US	Women, adolescents post-surgical abortion (575)	Immediate IUD insertion (within 15 minutes post-abortion)	Delayed IUD insertion (2-6 weeks post-abortion)	IUD use and pregnancy at 6 months	IUD initiation: 100% (258/258) vs 71.3% (226/317), p<0.001; RR 1.40 (95% CI 1.31 to 1.50); use at 6 months: 92.3% (179/194) vs 76.6% (177/231), p<0.001; RR 1.20 (95% CI 1.11 to 1.31) Pregnancy: 0 vs 5, p=0.07	Good; Good
Langston, 2010[73]	Family planning referral clinic (1); US	Women post-surgical abortion (222)	Counseling with 2005 WHO decision aid; samples of each type; provision of contraceptive	Usual care with provision of contraceptive	LARC use (IUD, implant) and effective types* (pills, rings, patches, injections) at 3 months	Initiation, LARC: 50.0% (57/114) vs 57.4% (62/108), p=0.27; effective types: 42.1% (48/114) vs 34.3% (37/108), p=0.27 3 months, LARC: 41/89 vs 40/83; aOR 1.06 (95% CI 0.53 to 2.14); effective types: 69/89 vs 61/83; aOR 1.59 (95% CI 0.77 to 3.28)	Fair; Fair
Pohjoranta, 2015[77]	Hospital clinic; Finland	Women (748)	Immediate IUD	1-year supply of oral contraceptives	Pregnancy at 12 months	9 (2.4%) vs 20 (5.4%), p=0.038	Poor; Fair
Schunmann, 2006[74]	Abortion clinic (1); Scotland	Women post-surgical or medication abortion (613)	Usual care + 15-20 minute consultation with physician; immediate IUD, implant, Depo Provera, or 3-month supply of OC as chosen	Usual care (discussion before abortion; contraceptives after procedure or at clinic or 1-month supply of OC; condoms; educational materials)	LARC use (implant, injectable, IUD) at 4 months	37% (63/168) vs. 26% (38/145), p=0.04	Fair; Good
Shimoni, 2011[75]	University medical center (1); US	Women post-medication abortion (156)	Immediate IUD insertion (1-week post abortion)	Delayed IUD insertion (4-6 weeks post abortion)	IUD use at 6 months	Initiation: 97% (69/71) vs 76% (65/85), p<0.001; 6 months: 69% (49/71) vs 60% (51/85), p=0.24	Poor; Fair
Whitaker, 2016[76]	Academic medical center (1); US	Women, adolescents post-medication abortion (60)	7-step motivational interview counseling session with USAID/WHO guide + usual care	Usual care (non-standardized contraception counseling and provision of contraceptive)	LARC use (IUD, implant) at 3 months	Initiation <4 weeks post-abortion: 65.5% (16/29) vs 32.3% (10/31), p=0.01; RR 2.03 (95% CI 1.14 to 3.61); 3 months: 60.0% (15/25) vs. 30.8% (8/26), p=0.05; RR 1.95 (95% CI 1.01 to 3.77)	Good; Fair

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; IUD, intrauterine device; LARC, long-acting reversible contraception; OC, oral contraceptives; RR, risk ratio; WHO, World Health Organization.
*Pills, rings, patches, injections

Additional Trials of Effectiveness of Contraceptive Counseling and Provision Interventions

Pharmacist provision of contraceptives. Two trials evaluated the effectiveness of pharmacist provision of oral contraceptives to adolescents and women receiving emergency contraception from pharmacies in the United Kingdom (**Table 9**).[78,79] The initial pilot study of 11 pharmacies and 168 participants compared three groups receiving either 1) pharmacist provision of one packet of 35 progestogen-only pills at no cost; 2) pharmacist instructions to take the empty packet of emergency contraception to local specialists to discuss long-term contraception; or 3) standard dispensing procedures.[79] At 6 to 8 weeks after the intervention, more participants in the intervention groups were using effective contraceptives (i.e., all types except barrier or natural methods) or LARC than those in the standard care group (effective types: 56% provision vs. 52% instruction vs. 16% standard care).

An expansion of this trial included 29 pharmacies and randomized 406 women receiving emergency contraception to either 1) intervention: provision of three packets of progestogen-only pills and a rapid access card to discuss and obtain other no-cost, effective contraceptives from local clinics; or 2) standard care. At 4-months follow-up, more women receiving the intervention were using IUD or hormonal agents compared with women receiving standard care (58.4% vs. 40.5%; p=0.011).[78]

Interventions to increase adherence. Five trials evaluated the effectiveness of interventions to increase contraceptive adherence (**Table 10**).[80-84] In these trials, all participants received contraceptives and the intervention was designed to maintain use over time.

A trial of 401 adolescents and women in family planning clinics in the United States compared DMPA use after teaching participants to self-inject their DMPA doses versus administration by clinic personnel.[83] Rates of use at 6 and 12 months were higher with self-injection (87% vs. 69%, p<0.0001; 69% vs. 54%, p=0.005, respectively).

Other trials of methods to improve adherence with oral contraceptives have not demonstrated effectiveness. Two RCTs comparing interventions to support oral contraceptive use, such as weekly phone calls[80] and daily text reminders,[82] indicated no differences in adherence compared with standard care. Two RCTs comparing quick start (i.e., observed ingestion of the first dose of oral contraceptives in clinic) versus conventional start (i.e., wait until next menstrual period) approaches to initiating oral contraceptives indicated no differences in use at 3 or 6 months or in pregnancy rates at 6 months.[81,84]

Table 9. Trials of the Effectiveness of Pharmacist Provided Contraceptives

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applicability
Michie, 2014[79]	Pharmacies (11); Scotland	Adolescents; women receiving EC from pharmacies (168)	1) Pharmacist dispensed one packet of 35 progestogen-only pills provided at no cost vs 2) pharmacist instructions to take empty packet of EC to local specialist to discuss contraception	Standard dispensing procedures	Use of any effective contraceptive (not barrier or natural methods); LARC at 6-8 weeks	Dispensed vs instructions vs standard Effective contraceptive: 56% (22/39) (p<.0.001 vs standard) vs. 52% (13/25) (p=0.006 vs standard) vs. 16% (5/31) LARC: 8% (3/39) (p=0.07 vs standard) vs. 20% (5/25) (p=0.004 vs standard) vs 0% (0/31)	Poor; Fair
Cameron, 2020[78]	Pharmacies (29); UK	Adolescents; women receiving EC from pharmacies (406)	Provision of three packets of progestogen-only pill; rapid access card to discuss and obtain other no-cost, effective contraceptives from local clinic	Standard advice to see usual clinician for contraception	Use of effective contraception (IUD, hormone) at 4 months	58.4% vs 40.5%; p=0.011	Poor; Fair

Abbreviations: CI, confidence interval; EC, emergency contraception; IUD, intrauterine device; LARC, long-acting reversible contraception.

Table 10. Trials of the Effectiveness of Contraceptive Counseling and Provision Interventions to Increase Adherence

Author, Year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; Applicability
Berenson, 2012[80]	Publicly funded reproductive health clinics (5); US	Adolescents, women (1,155)	1) Standard care plus: individual session with contraceptive counselor; post-clinic visit 2) Standard care plus with calls: weekly phone calls until OC initiation, then monthly calls for 6 months	Oral and written instructions, 4-month supply of OCs and 24 free condoms; additional 9-month supply at 3-month follow up	OC use at 3, 6 and 12 months	Standard plus vs standard plus with calls vs comparison: 49.9% (191/383) vs 58.3% (224/384) vs 55.2% (214/388), p=0.06	Good; Good
Edwards, 2008[81,84]	Urban clinics (2); US	Adolescents (539)	Quick start OC: directly observed ingestion in clinic after negative pregnancy test, 3-month supply	Conventional start OC: standardized instructions, 3-month supply	OC use at 3 months; pregnancy rates during study period	Use: OR 1.0 (95% CI 0.7 to 1.6) Pregnancy: 6.5% (17/272) vs 10.5% (28/267), p=0.08)	Fair; Good
Hou, 2010[82]	Planned Parenthood Clinic (1); US	Women (82)	Daily text reminder to take OC at time preferred by participant	Standard care	OC use	Missed pills: 4.9 (3.0) per cycle vs 4.6 (3.5) per cycle, p=0.60	Fair; Poor
Kohn, 2018[83]	Family Planning Clinics (3); US	Women, adolescents (401)	Taught to self-inject DPMA with printed instructions	DMPA administered by clinic personnel	DMPA use at 6 and 12 months	6 months: 87.3% (137/157) vs 69.2% (110/159), p<0.0001 12 months: 68.8% vs 53.5%, p=0.005	Fair; Good
Westhoff, 2007[81]	University-based family planning clinics; US	Adolescents, women (1,716)	Quick start: received package of pills and swallowed the first pill under direct observation	Conventional start: received package of pills and standard instructions	OC use at 3 months; pregnancy at 6 months	OC use: OR 1.1 (95% CI 0.9 to 1.4) Pregnancy: 8.2% (66/802) vs 9.1% (72/788); HR 0.90 (95% CI 0.64 to 1.25)	Good; Fair

Abbreviations: CI, confidence interval; DMPA, depot medroxyprogesterone acetate; HR, hazard ratio; OC, oral contraceptives; OR, odds ratio.

Harms of Contraceptive Counseling and Provision Interventions

Seven trials (in 10 publications) evaluated STIs and condom use as potential harms of interventions to increase contraceptive use (**Table 11**)[53,54,57,60-62,65,66,85,86] No trials reported other harms, such as anxiety, stigma, and coercion, among others. Adverse effects of specific contraceptives were not included in this review because they are well-established and summarized elsewhere.

Sexually transmitted infections. STI rates did not differ between intervention and comparison groups in five trials reporting STIs rates 6 to 12 months following the intervention. Three trials compared advanced provision of emergency contraception with standard care.[57,60,65,66] Additional trials compared individualized contraception counseling, primary care referral, and provision of condoms and spermicide versus standard contraceptive information, contacts for services, and provision of condoms and spermicide;[53] and clinician training to improve LARC knowledge, counseling, and insertion skills versus no training.[85,86] Trials enrolled adolescents and women from abortion care, family planning, and STI clinics in the United States.

Condom use. Condom use or dual-use (condom with an additional method) did not differ between intervention and comparison groups at 6 or 12-months follow-up in four of the same trials,[53,57,65,66,85] and in two additional trials of advanced provision of emergency contraception[61,62] and contraception support services.[60]

Table 11. Trials of Contraceptive Counseling and Provision Interventions Reporting STIs and Condom Use

Author, year	Setting (number of sites); location	Population (N)	Intervention	Comparison	Outcome measure	Results (intervention vs comparison)	Quality; applica-bility
El Ayadi, 2017*[85]	Abortion care (17) and family planning clinics (23); US	Adolescents; Women (1356)	Clinician training to improve LARC knowledge, counseling, and insertion skills	No training	Dual-method and condom use at last sex; STI incidence over 12 months	Dual-method use: aOR 1.03 (95% CI 0.74-1.44); condom use: aOR 1.03 (95% CI 0.79-1.35); STI incidence: aHR 1.20 (95% CI 0.88-1.64)	Good; Good
El Ayadi, 2021*[86]	Abortion care (17) and family planning clinics (23); US	Adolescents; women (1,356)	See El Ayadi, 2017	See El Ayadi, 2017	Incidence of GC/CT over 12 months	aHR, 1.12 (95%, CI 0.74-1.71)	Good; Good
Ekstrand, 2008[61]	Youth clinic (1); Sweden	Adolescents (420)	Two courses EC for immediate and future use; 10 condoms; leaflet about EC and condom use; follow up visit for contraceptive counseling and pregnancy test	Single course EC; follow up visit for contraceptive counseling and pregnancy test	Condom use at last intercourse at 3 and 6 months	3 months: 32.2% (48/149) vs 38.1% (56/147), p=0.33 6 months: 29.3% (46/157) vs 34.6% (47/136), p=0.38	Good; Good
Ekstrand, 2013[62]	Youth clinic (1); Sweden	Adolescents (420)	See Ekstrand, 2008	See Ekstrand, 2008	Condom use at last intercourse at 12 months	27.5% (39/142) vs 31.1% (37/119), NS	Fair; Fair
Gold, 2004[57]	Hospital-based adolescent clinic (1); US	Adolescents (301)	One course EC; access to 2 additional courses; standard care information	Information about EC use, risks, and access; EC access when needed	Condom use; STI incidence at 6 months	Condom use: 83% vs 77%, p=0.34 STIs: 12 vs 12 cases, NS	Poor; Fair
Harper, 2005†[66]	Family planning clinics (4); US	Adolescents; Women (1950)	A: Pharmacy access to EC B: Advanced provision of 3 packs of EC	C: Access to clinic only	STI rates over 6 months	Rates by age (years): 15-19: 45% (53/118) vs. 39% (46/118) vs. 16% (19/118); 20-24: 42% (50/118) vs. 42% (49/118) vs. 16% (19/118)	Good; Good
Raine, 2005†[65]	Family planning clinics (4); US	Adolescents; Women (1950)	A: Pharmacy access to EC B: Advanced provision of 3 packs of EC	C: Access to clinic only	Frequency of condom use; STI rates over 6 months	Condom use: A vs. C, p=0.80; B vs. C, p=0.61; STI for A: aOR 1.08 (95% CI 0.71-1.63); STI for B: aOR 0.94 (95% CI 0.62-1.44); chlamydia (A vs. B vs. C): 3% (23/814) vs. 2.3% (18/826) vs. 1.4% (4/310); herpes simplex virus type 2 (A vs.	Good; Good

						B vs. C): 4.2% (29/814) vs. 4.4% (31/826) vs. 4.8% (13/310)	
Raymond, 2006[60]	NR	Adolescents; Women (1490)	Two free packages of EC with replacements as needed	Advice on obtaining EC if needed	STI rates over 12 months	No STI: 87% (647/746) vs. 85% (6636/744); STI: 7% (49/746) vs. 7% (53/744); unknown: 7% (50/746) vs. 7% (55/744); chlamydia: 38/746 vs. 29/744; gonorrhea: 10/746 vs. 17/744; trichomonas: 7/746 vs. 9/74	Fair; Good
Stevens, 2017[54]	OB-GYN clinics (7), hospital post-partum units (5); US	Adolescent mothers (598)	Monthly home visits and telephone calls with nurses; contraceptive clinic visits; transportation; social worker	Usual care; educational handouts on contraceptives, interpregnancy intervals	Condom use	6 months, 49.2% vs 47.2%, p=0.674 18 months, 43.4% vs 37.9%, p=0.244	Good; Good
Shlay, 2003[53]	Urban STD clinic (1); US	Adolescents; Women (759)	Individualized contraception counseling; primary care referral; condoms and spermicide	Standard contraceptive information; contacts for services; condoms and spermicide	STI rates over 12 months	8.2% (36/437) vs 8.4% (37/440)	Fair; good

Abbreviations: aHR, adjusted hazard ratio; aOR, adjusted odds ratio; CI, confidence interval; GC/CT, *N gonorrhoeae* or *C trachomatis*; LARC, long-acting reversible contraception; NS, not statistically significant ((p-value not provided by study; unless otherwise stated, cutoff p>0.05); RCT, randomized controlled trial; STI, sexually transmitted infection.

*El Ayadi, 2017; El Ayadi, 2021; and Harper, 2015 are publications of the same trial.

†Harper, 2005 and Raine, 2005 are publications of the same trial.

Conclusions

The effectiveness of specific contraceptives is well established. Delivering contraceptive care to patients with potential for pregnancy as a preventive health service is a standard of care in the United States and provided under the provisions of the Patient Protection and Affordable Health Care Act of 2010. Assuring effective contraceptive care, particularly for women facing barriers to access, is an ongoing goal for improving women's health.

In this update, 34 RCTs relevant to the WPSI contraception recommendation were identified from a recent systematic review of studies published since 2000. Trials evaluated the effectiveness of contraceptive counseling and provision interventions to increase contraceptive use. Comparisons included enhanced counseling, additional support services, or provision of contraceptives versus usual care or alternative interventions, such as educational materials without counseling. Most studies evaluated use of LARC or effective types of contraception from 3 to 12 months after the intervention as outcomes. Although the definition of effective types varied across studies, LARC and hormonal contraceptives were most frequently reported. Despite the inherent clinical heterogeneity of the trials, results consistently indicated increased contraceptive use with interventions regardless of clinical intention. This included counseling and provision for general populations of adolescents and women, advanced provision of emergency contraception, counseling and provision delivered immediately postpartum or at the time of abortion, and provision directly by pharmacists.

Based on the number, quality, and size of studies; consistency of results between studies; and directness of evidence, the strength of evidence is high for counseling and provision interventions to increase use for general populations, and for provision of advanced emergency contraception (**Table 12**). Strength of evidence is moderate for interventions provided immediately postpartum or at the time of abortion. Strength of evidence is low for interventions provided by pharmacists and to increase adherence largely due to the limited number and size of studies. Strength of evidence for pregnancy outcomes ranges from insufficient to moderate based on the lack of trials and limitations related to inadequate power and measurement. The strength of evidence for potential harms of contraceptive care is moderate for STIs and condom use. Applicability is generally moderate to high.

No studies were identified that specifically evaluated the effectiveness of screening. Important harms beyond STIs and condom use, such as anxiety, stigma, and coercion, were not reported in trials. Several trials enrolled small numbers of participants, lacked blinding or did not describe efforts to blind, had high loss to follow-up, or lacked intention-to-treat analysis. Meta-analysis for the systematic review used outcomes from the most common follow-up times in trials, most frequently 3 to 6 months, when loss to follow-up was minimal compared to longer time periods.

Future research should further evaluate effective approaches to counseling and provision of contraceptives that prioritize individual's goals and preferences and reduce barriers to care. Gaps remain in determining best practices and approaches to contraceptive care, particularly for populations at risk for disparities.

Table 12. Summary of Evidence

Intervention or outcome	Outcome measure	Studies; design; participants (N)	Summary of findings	Consistency; precision	Limitations*	Strength of evidence; applicability
Effectiveness of contraceptive counseling and provision interventions						
General populations of adolescents and adult women	Use at 3-6 months	8 RCTs (5,804)	Higher use of LARC and effective types† for intervention vs comparison (RR, 1.47 [95% CI, 1.20-1.89]; 8 trials [n=3,816]).	Consistent; precise	Interventions and contraceptives varied across trials; different definitions of effective types	High; high
	Unintended pregnancy at 12-18 months	5 RCTs (4,333)	Lower pregnancy rates for intervention vs comparison in 4 trials; no differences in 1 trial of structured vs routine counseling.	Consistent; precise	Interventions and contraceptives varied across trials	Moderate; moderate
Advanced emergency contraception	Use at 6-12 months	8 RCTs (6,335)	Higher use of emergency contraception for intervention versus comparison (RR, 2.12 [95% CI, 1.79-2.36]; 8 trials [n=4796])	Consistent; precise	Some non-US studies	High; high
	Unintended pregnancy at 6-12 months	3 RCTs (4,053)	Lower unintended pregnancies in 1 trial of counseling and provision of emergency contraception vs folate but not in 2 trials of provision vs information on how to obtain emergency contraception.	Inconsistent; imprecise	Few trials with pregnancy outcomes	Low; moderate
Immediately postpartum	Use at 3-6 months	5 RCTs (864)	Higher use of LARC, IUD, implant, effective types, and emergency contraception for intervention vs comparison (RR, 1.15 [95% CI, 1.01-1.52]; 5 trials [n=644]).	Consistent; precise	Trials enrolled small numbers of participants; interventions and contraceptives varied across trials	Moderate; low
	Unintended pregnancy at 12 months	1 RCTs (100)	No differences in pregnancy rates for enhanced vs routine contraceptive counseling before hospital discharge.	NA	One small trial with few pregnancies reported	Insufficient; insufficient
At time of abortion	Use at 3-6 months	5 RCTs (1,626)	Higher use of LARC, IUD, and effective types for intervention vs comparison (RR, 1.19 [95% CI, 1.09-1.32]; 5 trials [n=1,117]).	Consistent; precise	Some trials enrolled small numbers of participants	Moderate; moderate
	Unintended pregnancy at 6-12 months	2 RCTs (1,323)	Lower unintended pregnancies with immediate vs delayed IUD insertion and immediate IUD vs 1-year supply of oral contraceptives.	Consistent; precise	Few trials with pregnancy outcomes	Low; low
Pharmacist provided	Use at 2-4 months	2 RCTs (574)	Higher use of LARC and effective contraception for intervention vs comparison in both trials.	Consistent; precise	Few trials; non-US studies	Low; low

	Unintended pregnancy	No trials	NA	NA	NA	Insufficient; insufficient
To increase continuation	Use at 3-12 months	5 RCTs (3,893)	• Higher use of DMPA with self-injection vs clinic injection in 1 trial. • No differences in use of oral contraceptives with text or phone reminders (2 trials) or quick versus conventional start (2 trials).	Consistent for oral contraceptives; precise	Effective intervention was only evaluated in a single trial	Low; moderate
Potential harms of contraceptive care						
STIs	Rates at 3-6 months	5 RCTs (5,859)	No differences between intervention vs comparison in 5 trials.	Consistent; precise	Self-report may be unreliable	Moderate; high
Less condom use	Condom and dual-use at 6-12 months	6 RCTs (5,384)	No differences between intervention vs comparison in 6 trials.	Consistent; precise	Self-report may be unreliable	Moderate; moderate

Abbreviations: CI, confidence interval; DMPA, depot medroxyprogesterone acetate; IUD, intrauterine device; LARC, long-acting reversible contraception; aOR, adjusted odds ratio; RCT, randomized controlled trial.
*The most common limitations include no or unclear descriptions of blinding, high loss to follow-up, and lack of or unclear descriptions of intention-to-treat analysis; additional limitations are listed in the table.
†Definition of effective types varies by trial.

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