Mini-Review

# Advance Provision of Emergency Contraception among Adolescent and Young Adult Women: A Systematic Review of Literature

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A B S T R A C T

*Objective:* The purpose of this review is to summarize the findings of randomized controlled trials assessing the advance provision of emergency contraception (EC) to women 24 years of age or younger.

*Design:* We conducted a comprehensive search of the PubMed database from 1950 to November 11, 2009. This review includes seven studies that randomly assigned women aged 24 and younger to advance provision of EC or a control group.

*Results:* All studies reviewed found that women assigned to advance provision were more likely to use EC, though not all reached statistical significance. Furthermore, studies assessing time to EC use (N = 4) found that those with advance provision used EC sooner following intercourse. Most studies found that women assigned to advance provision of EC did not engage in more sexual risk taking behaviors (assessed by reported number of sexual partners, number of episodes of unprotected intercourse, and acquisition of sexually transmitted infections) or switch to less reliable contraceptive methods. Despite increased use and decreased time to use, women who were provided EC in advance did not report significantly lower pregnancy rates.

*Conclusions:* The existing literature suggests that among women 24 years of age or younger, advance provision has a positive impact on use and time to use of EC. Most findings indicate that increased use of EC does not have significant negative effects for ongoing contraceptive use or sexual risk taking behaviors. Despite increased use, advanced provision of EC has not been associated with a significant corresponding decrease in pregnancy.

*Key Words:* Adolescents, Contraceptive, Postcoital contraception, Emergency contraception, Pregnancy, Sexually transmitted infection, Advance provision

## Introduction

The birth rate for women 15 to 17 and 18 to 19 years of age decreased 45% and 26%, respectively between 1991 and 2005.[1] Unfortunately, this trend has reversed with a 3% increase between 2005 and 2006 for adolescents 15 to 19 years of age. This trend was also observed among 20 to 24-year-olds with a 1% increase between 2004 and 2005, and a 4% increase between 2005 and 2006. Not surprisingly, a large portion of these births were unintended, corresponding to a higher number of abortions.[2,3] Since 1973, the number of abortions per live births has been highest for those $<$15 years of age.[3] Women 15 to 19 years of age have had the second highest ratio since the early 1980s, although the ratio for women $\geq$40 years of age did exceed that of this age group briefly in the early 1990s. The ratio for women 20 to 34 years of age is generally lower than the ratio for those $\geq$40 years of age, but has been higher than that of women 35 to 39 years of age since the late 1990s. Furthermore, women 20 to 24 years of age account for 33% of all legal abortions. The risk of unintended pregnancy among young women is demonstrated by the fact that 26% of women 15 to 19 years of age did not use any contraceptive method the first time they had sex.[4] Further, among women 24 years and younger who were obtaining abortions, less than half reported contraceptive use in the month prior to conception.[5]

While combination oral contraceptive pills and condoms are the most common methods used among women $\leq$24 years of age,[6] intrauterine devices, implantable contraceptive methods, hormonal injectables, the patch, and the contraceptive ring are other contraceptive options young women may consider to prevent unplanned pregnancy. Emergency contraception (EC) may still be warranted for individuals who choose hormonal methods in the event that an injection is not received in a timely manner or if the patch or ring is not applied/inserted on time. EC pills undoubtedly have the most potential for women who choose to use time-sensitive hormonal birth control methods and those who choose to use less reliable, coitally timed methods including barrier methods, spermicides, withdrawal, fertility awareness, or no method at all.

Plan B™, the most commonly used EC pill available in the United States, consists of two tablets, each containing 0.75mg of levonorgestrel; it is estimated to prevent 85% of pregnancies when started within 72 hours of unprotected sexual intercourse. As time passes following unprotected intercourse, the effectiveness of this method diminishes.[7] While the FDA has approved over-the-counter access to Plan B™ for women ages 17 years of age and older, state regulations vary. Some states have passed regulations to

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further restrict EC availability, while others provide less restricted access compared to the federal regulations.[8] Access restrictions impacting adolescent and young adult women may hinder EC effectiveness considering the importance of timely use after unprotected intercourse. One alternative for adolescent women is to provide EC prior to unprotected intercourse, which may overcome some potential access barriers.

We systematically review studies designed to determine the effect of advance provision of EC prior to unprotected intercourse on its rate of and time to use following unprotected intercourse. Changes in sexual risk taking behaviors will be reviewed to determine whether or not advance provision is associated with more frequent reporting of these behaviors. Pregnancy rates will also be assessed given that the ultimate goal of EC use is pregnancy prevention.

## Methods

This review includes original, peer-reviewed journal articles that evaluated the impact of advance provision on the use of EC among women ≤24 years of age. Advance provision refers to providing EC before, rather than after, unprotected intercourse. Randomized trials assessing the use of EC among women assigned to advance provision versus a control group were included in this review. Publications were excluded if they did not address the specific intervention mentioned, did not provide stratified results comparing the interventions among women ≤24 years of age, or did not present original research findings.

The original intention of this review was to focus solely on adolescents who often do not have other means to promptly obtain EC, such as pharmacy access. However, all articles on this topic include women 17 years of age and older, so studies of adolescent and young adult women ≤24 years of age were included because this age range constitutes those at highest risk for unplanned pregnancy.

Articles were obtained by searching the PubMed database from 1950 to November 11, 2009. The following search strategy was used: (emergency contracep* OR emergency contraception OR "contraceptives, postcoital" [MESH] OR "contraception, postcoital" [MESH] OR "contraceptives, postcoital" [Pharmacological Action]) AND (advance OR provision). This search was further limited to Humans, English Language, and Randomized Controlled Trials, resulting in 19 articles. After evaluating abstracts and texts to determine which articles assessed the impact of advance provision on use of EC among women ≤24 years of age, six articles remained. The reference lists of the six remaining articles were searched, which yielded one additional article.

## Results

Studies assessing the advance provision of EC among adolescent and young adult women are characterized in Table 1 with findings and limitations addressed in Table 2. Several studies have been conducted comparing educational information about EC plus advance provision of EC to information alone.[9–11] The primary aim of a randomized clinical trial conducted by Gold and colleagues was to assess whether providing EC in advance corresponded with an increase in risk-taking behavior among 301 sexually active women 15 to 20 years of age recruited form a hospital-based adolescent health clinic.[9] The young women were randomized to either advance provision or the control group stratified by age (15–16 years, 17–18 years, and 19–20 years). Both groups received information about EC, but women in the intervention group additionally received one package of EC and were told they could obtain up to two more packages during the study period. A high loss to follow-up was observed with 80% of the enrollees available at one month and 64% available at the 6-month follow-up. In addition, a significantly higher proportion of participants from the control group were available for follow-up ($P = 0.02$), but those lost to follow-up did not differ compared to those who completed the study in regard to age, ethnicity, or age at first intercourse. The women in this study had a mean age of 17.1 years, were predominantly African American, and nearly half used public health insurance.

A borderline significant difference in reported EC use was seen between the two groups at the 1-month follow-up (15% intervention vs 8% control, $P = 0.05$) and a nonsignificant difference was observed at the 6-month follow-up (8% vs 6%, $P = 0.54$). This relationship was unchanged after controlling for patterns of contraceptive use, sexual history, or awareness of and expected need for EC. Importantly, young women in the intervention group reported using EC significantly sooner following unprotected intercourse than women in the control group (11.4 hours vs 21.8 hours, respectively; $P = 0.005$). At the 1-month follow-up interview, there were no significant differences between the intervention and control groups with regard to unprotected intercourse, condom use, or any hormonal contraceptive use either at last intercourse or in the past month. Similar results were noted at the 6-month follow-up with the exception of a higher proportion of the intervention group reporting the use of condoms in the past month compared to the control group (77% vs 62%, respectively; $P = 0.02$). This study was not powered to assess sexually transmitted infections (STIs) or pregnancy rates.

During the course of this study, the standard emergency contraceptive administered to women changed, so participants returning to the clinic received Plan B™ instead of the Yuzpe regimen that had been administered in the beginning of the study. This may have important consequences for assessing repeat use and pregnancy rates because the Yuzpe regimen has been found to have more side effects and to be less effective in preventing pregnancy compared to Plan B™.[12]

Belzer and colleagues conducted a randomized clinical trial of 160 parenting female adolescents recruited from a non-medical case management office or at events sponsored by case management programs for adolescent parents.[10] Participants randomly assigned to the advance provision group received one package of EC and were instructed to call the research assistant to obtain additional packages. The participants were mostly Hispanic (83%), had completed 8 years of education or less (84%), were not