

What Do We Know About Males and Emergency Contraception? A Synthesis of the Literature

By Arik V. Marcell,
Ashten B. Waks,
Lainie Rutkow,
Rob McKenna,
Anne Rompalo
and M. Terry
Hogan

Arik V. Marcell is assistant professor, Department of Pediatrics, The Johns Hopkins University School of Medicine, and Department of Population, Family and Reproductive Health, Bloomberg School of Public Health, Baltimore. Ashten B. Waks is a graduate student, Department of Population, Family and Reproductive Health; and Lainie Rutkow is assistant professor, Department of Health Policy and Management—both at the Bloomberg School of Public Health. Rob McKenna is director of training programs, Male Training Center of Family Planning and Reproductive Health, Family Planning Council, Philadelphia. Anne Rompalo is professor, Departments of Medicine and Obstetrics and Gynecology; and M. Terry Hogan is program administrator—both at The Johns Hopkins University School of Medicine.

CONTEXT: Unintended pregnancy rates are high in the United States. It is important to know whether improving males' access to emergency contraceptive pills may help prevent unintended pregnancy, especially in cases of condom failure.

METHODS: A search of the PubMed, PsycINFO and Cumulative Index of Nursing and Allied Health Literature databases was conducted to identify studies published from January 1980 to April 2011 concerning males and emergency contraception. Forty-three studies met the specified criteria and examined relevant knowledge, attitudes, beliefs, intentions or behaviors, from the perspectives of males, clinicians or pharmacists.

RESULTS: The proportion of males who were familiar with emergency contraception ranged from 38% among teenagers to 65–100% among adults. Small proportions reported that they and their partner had used or discussed using emergency contraceptive pills (13–30%) or that they themselves had ever purchased them (11%). Most providers (77–85%) reported general knowledge about emergency contraceptives, but the proportions who knew the time frame within which the pills can be prescribed were smaller (28–63%). Most males approved of emergency contraceptive use following contraceptive failure (74–82%) or unprotected sex (59–65%), or in cases of rape (85–91%), but both pharmacists and college students reported concerns that females might feel pressured to use the method. No study examined clinicians' attitudes and behaviors (e.g., counseling or advance provision) regarding males and emergency contraception.

CONCLUSIONS: Studies are needed to determine whether male involvement in emergency contraception can reduce rates of unintended pregnancy and to assess health professionals' ability to counsel males about the method.

Perspectives on Sexual and Reproductive Health, 2012, 44(3):184–193, doi:10.1363/4418412

Unintended pregnancy rates in the United States are high, particularly among adolescents and young adults.¹ Although efforts to reduce the incidence of unintended pregnancy have focused on females, males also have a role in pregnancy prevention. Yet, in one nationally representative study, male adolescents reported having used condoms, on average, only eight of the last 10 times they had had vaginal sex, and those aged 18–24 reported having used condoms fewer than five of the last 10 times.² In another study, almost two-thirds of unmarried men who had used a condom at last sex said they had done so to prevent both pregnancy and disease (63%), and another 31% had used one solely to prevent pregnancy.³ Nearly half of the 3.1 million unintended pregnancies that occur in the United States each year are the result of contraceptive failure,^{4–6} including condom failure due to breakage or slippage,⁷ or of nonuse. One step that males who wish to prevent unintended pregnancy can take following condom failure is to encourage their partner to use emergency contraceptive pills; this approach has been especially feasible since 2006, when levonorgestrel-only products became available over the counter. However, little is known about males' emergency contraception-related knowledge, attitudes

and behavior, let alone their access to and purchase of these products.

Timely emergency contraception may reduce women's risk of unintended pregnancy by 89–95%.⁸ One goal of the Healthy People 2020 initiative is to increase the proportion of family planning agencies that offer emergency contraceptives,⁹ and the American Academy of Pediatrics and the Society for Adolescent Health and Medicine recommend that health care providers routinely offer information and counseling about emergency contraception to all of their patients, whether female or male.^{10,11} Despite these gender-neutral recommendations, we know little about health care providers' knowledge, attitudes and counseling behaviors concerning males and emergency contraception.

Emergency contraceptive pills have excellent safety profiles in nearly all females.¹² Systematic reviews have found that advance provision of the pills does not increase the likelihood that females will engage in risky sexual behavior (e.g., have unprotected intercourse), acquire an STD, have a greater number of sexual partners or switch to a less reliable contraceptive method.^{8,13} However, these reviews have also found that advance provision to females does not reduce pregnancy rates, even though it facilitates

access.^{8,13} This raises the question of whether involving male partners would improve the effectiveness of advance provision.

In this article, our goal is to synthesize the literature regarding emergency contraception-related knowledge, attitudes and behavior of males in the United States; we examine the topic from multiple perspectives (i.e., those of both male populations and health care providers) and focus especially on studies examining advance provision.

METHODS

We searched PubMed, the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and PsycINFO for quantitative and qualitative studies concerning emergency contraception that were published between January 1980 and April 2011. Search terms included “Plan B,” “Yuzpe,” “postcoital contraception” and “emergency contraception” (as well as variations on the terms “contraception” and “contraceptive”). The search strategy delimited studies that focused on males, or that included both males and females, but not those restricted to females (unless the study examined females’ views on male’s involvement in emergency contraception); it yielded 668 references (474 from PubMed, 140 from CINAHL and 54 from PsycINFO), of which 568 were unduplicated. We identified four additional studies via hand-search.

Two investigators independently reviewed all abstracts to assess the studies’ eligibility for this review. Studies were eligible if they assessed male’s emergency contraception-related knowledge, attitudes, intentions or behaviors; health care providers’ emergency contraception-related knowledge, attitudes, intentions or behaviors, either in general or specifically related to males or to advance provision of emergency contraceptive pills; or related topics, such as females’ perceptions of males’ involvement in emergency contraception. Studies were excluded if the abstracts contained no information relevant to the topics of this review, if participants did not live in the United States or if the studies were not written in English.

The investigators agreed on studies’ eligibility more than 95% of the time. In cases of disagreement, they reviewed the abstract or article and reached a mutual decision regarding eligibility. Forty-three articles met the inclusion criteria. Two assessed both males and health care providers, and two presented findings from the same data source; thus, the total number of studies is greater than the number of identified references.

One investigator extracted the data from all papers, and a second reviewed and verified the data. We conducted a content analysis of included studies, and report findings from multivariate analyses whenever possible.

RESULTS

Seventeen studies assessed males’ knowledge of, attitudes toward, or intentions or behaviors related to emergency contraception. Of these, 14 studies examined outcomes among males in school- or community-based settings,

two used clinical samples and one assessed female clinic patients’ perspectives of males’ involvement in emergency contraception.

Twenty-seven studies focused on health care providers. Twelve of these studies sampled primary care clinicians, one assessed clinicians in school-based health settings, three surveyed medical residents and 11 focused on pharmacists.

No studies examined advance provision of emergency contraceptive pills to males. Table 1 (page 186) provides a summary of the sample characteristics and content domains for each study; a table summarizing the results of these studies is available from the authors.

Male Perspectives

•**Nonclinical samples.** Twelve quantitative^{14–25} and three qualitative^{26–28} studies assessed males’ perspectives concerning emergency contraception. Seven studies used representative sampling methods; of these, three were based on national telephone surveys, one used a telephone survey conducted in California, two assessed college samples and one examined a community sample.^{14–17,19,23,25} Four studies focused on or included adolescents, using either household- or community-based samples^{16,19,22,27}; the others examined adult populations, either in college settings^{14,20,21,24} or in household- or community-based settings.^{19,22–24,26–28} Only one study assessed adult males’ attitudes and behaviors related to over-the-counter access to emergency contraceptive pills.²⁵

Delbanco and colleagues were the first to report data on awareness of emergency contraception by gender, using nationally representative samples of adults (in 1994) and teenagers (in 1996). They found that 51% of adult males and 24% of adolescent males had heard of emergency contraception.^{16,17} More recent assessments found a wide range in the proportion of males who were aware of emergency contraception; the proportion varied according to respondents’ age and location, and was lower among adolescents attending high school (38%)²² than among older males in college or community settings (65–100%).^{21,24,25} Studies examining gender differences consistently reported that awareness of emergency contraception was lower among males than among females, regardless of setting or participants’ age.^{19,21–25} Adults often confused emergency contraceptive pills with the “abortion pill” (mifepristone, or RU 486).^{14,19,21,24}

In studies that examined attitudes and beliefs, the majority of males reported approval of emergency contraception following condom breakage or other forms of contraceptive failure (74–82%), after unprotected sex (59–65%) or in cases of rape (85–91%).^{19,23} Only a small proportion of adult males (14%) reported moral or religious objections to it.¹⁹

Three studies assessed males’ beliefs concerning emergency contraception decision-making,^{25,26,28} and one examined females’ beliefs about the role of males in access to and use of the pills.¹⁸ In a qualitative study, college-age

TABLE 1. Summary of emergency contraception–related studies among males and health care providers

Participant and study type	Sample	Measures/analyses
MALES		
Quantitative/nonclinical samples		
Corbett et al., 2006 ²¹	<ul style="list-style-type: none"> • Convenience sample of 97 college students in Wilmington, NC • 25% male 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results reported by gender
Delbanco et al., 1997 ¹⁵	<ul style="list-style-type: none"> • Random national sample of 2002 adults • 50% male • 50% response rate 	<ul style="list-style-type: none"> • Measured knowledge • Results not reported by gender • Multivariate analyses focused on females
Delbanco et al., 1998 ¹⁶	<ul style="list-style-type: none"> • Stratified random national sample of 1,510 teenagers • 50% male • 50% response rate 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Some results reported by gender • Most multivariate analyses focused on females
Delbanco et al., 1998 ¹⁷	<ul style="list-style-type: none"> • Stratified random national sample of 843 adults • 23% male • 59% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results reported by gender
Harper and Ellertson, 1995 ¹⁴	<ul style="list-style-type: none"> • Random sample of 550 university students in Princeton, NJ • 58% male • 82% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Some results reported by gender • Multivariate analyses did not stratify by gender or examine interactions between gender and other measures
Harper et al., 2003 ¹⁸	<ul style="list-style-type: none"> • Convenience sample of 519 adults in San Francisco • 0% male 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Examined women's views of males' role • Multivariate analyses presented
Miller, 2011 ²⁴	<ul style="list-style-type: none"> • Convenience sample of 692 college students in Edinboro, PA • 49% male • 97% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results reported by gender • Bivariate analyses presented
Nguyen and Zaller, 2009 ²⁵	<ul style="list-style-type: none"> • Selective sample of 303 adults in Providence, RI • 46% male 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results reported by gender • Multivariate analyses presented
Salganicoff et al., 2004 ¹⁹	<ul style="list-style-type: none"> • Random sample of 1,151 California teenagers and adults • Proportion of males not reported • 95% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Some results reported by gender
Sawyer and Thompson, 2003 ²⁰	<ul style="list-style-type: none"> • Convenience sample of 693 college students in College Park, MD • 50% male • 95% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Some results reported by gender
Urena and Yen, 2009 ²²	<ul style="list-style-type: none"> • Convenience sample of 518 California high school students • 41% male 	<ul style="list-style-type: none"> • Measured knowledge, attitudes • Results reported by gender
Vahratian et al., 2008 ²³	<ul style="list-style-type: none"> • Random sample of 1,585 college students in Ann Arbor, MI • 29% male • 23% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results reported by gender
Qualitative/nonclinical samples		
Harper and Ellertson, 1995 ²⁶	<ul style="list-style-type: none"> • Convenience sample of 100 adults in Princeton, NJ • 30% male 	<ul style="list-style-type: none"> • Measured knowledge, attitudes • Results not reported by gender
Johnson et al., 2010 ²⁷	<ul style="list-style-type: none"> • Snowball sample of 47 teenagers and adults in New York • 40% male 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Results not reported by gender
Merkh et al., 2009 ²⁸	<ul style="list-style-type: none"> • Purposive sample of 41 sexually active young adults in Pennsylvania • 100% male • 71% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior
Quantitative/clinical samples		
Armstrong et al., 2010 ³⁰	<ul style="list-style-type: none"> • Convenience sample of 157 teenagers and adults in New York • 100% male • 90% response rate 	<ul style="list-style-type: none"> • Measured knowledge
Cohall et al., 1998 ²⁹	<ul style="list-style-type: none"> • Convenience sample of 197 teenagers and adults in New York • 20% male • 87% response rate 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Some results reported by gender

CLINICIANS

Quantitative

Beckman et al., 2001 ³⁸	<ul style="list-style-type: none"> • Convenience sample of 102 clinicians (64% physicians, 36% other clinicians) in San Diego County, CA • 62% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Baseline data from intervention study
Chuang and Freund, 2005 ³⁹	<ul style="list-style-type: none"> • Convenience sample of 56 clinicians (87% physicians, 13% other clinicians) at a Boston hospital • 78% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Baseline data from intervention study
Chuang et al., 2004 ³⁶	<ul style="list-style-type: none"> • Convenience sample of 292 clinicians (36% obstetrician-gynecologists, 34% family physicians, 31% internists) in Massachusetts • 59% response rate 	<ul style="list-style-type: none"> • Measured behavior • Did not focus on males • Multivariate analyses presented
Delbanco et al., 1997 ¹⁵	<ul style="list-style-type: none"> • Random national sample of 307 obstetrician-gynecologists • 77% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males
Delbanco et al., 1998 ¹⁷	<ul style="list-style-type: none"> • Random national sample of 754 clinicians (40% obstetrician-gynecologists, 31% family physicians, 30% nurse practitioners or physician assistants) • 83% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
Gold et al., 1997 ⁴⁰	<ul style="list-style-type: none"> • Random national sample of 167 clinicians (67% pediatricians, 23% obstetrician-gynecologists, 10% other physicians) • 55% response rate 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Did not focus on males
Golden et al., 2001 ³⁴	<ul style="list-style-type: none"> • Convenience sample of 233 clinicians (type not reported) in New York State • 24% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males
Kelly et al., 2008 ³²	<ul style="list-style-type: none"> • Convenience sample of 96 primary care providers (52% family physicians, 30% obstetrician-gynecologists, 18% pediatricians) at universities in the South and Midwest • 70% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Multivariate analyses presented
Lawrence et al., 2010 ⁴¹	<ul style="list-style-type: none"> • Random national sample of 1,154 obstetrician-gynecologists • 66% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
Lim et al., 2008 ⁴³	<ul style="list-style-type: none"> • Convenience sample of 101 pediatric residents at three hospitals in New York • 84% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
McCarthy et al., 2005 ⁴⁵	<ul style="list-style-type: none"> • National convenience sample of 250 providers (70% nurse practitioners, 9% physician assistants, 21% other staff) at health centers based in public high schools • 73% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males • Multivariate analyses presented
Sable et al., 2006 ³¹	<ul style="list-style-type: none"> • Convenience sample of 96 primary care providers (52% family physicians, 30% obstetrician-gynecologists, 18% pediatricians) at universities in the South and Midwest • 70% response rate 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Did not focus on males
Sills et al., 2000 ³⁵	<ul style="list-style-type: none"> • Convenience sample of 121 providers (type not reported) in Washington, DC • 61% response rate 	<ul style="list-style-type: none"> • Measured behavior • Did not focus on males • Multivariate analyses presented
Sobata et al., 2008 ³⁷	<ul style="list-style-type: none"> • Convenience sample of 35 providers (type not provided) at a community-based health center in New York • 80% response rate 	<ul style="list-style-type: none"> • Measured behavior • Did not focus on males
Upadhyaya et al., 2009 ⁴²	<ul style="list-style-type: none"> • Convenience sample of 141 Baltimore-area pediatric residents • 50% response rate 	<ul style="list-style-type: none"> • Measured behavior • Did not focus on males
Veloudis and Murray, 2000 ⁴⁴	<ul style="list-style-type: none"> • Convenience sample of 176 physicians in training (43% internists, 26% pediatricians, 21% family physicians, 11% obstetrician-gynecologists) at a hospital in Lexington, KY • 48% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Multivariate analyses presented
Xu et al., 2007 ³³	<ul style="list-style-type: none"> • Random sample of 252 providers (type not reported) in Michigan • 32% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males • Multivariate analyses presented

PHARMACISTS		
Quantitative		
Bennett et al., 2003 ⁴⁶	<ul style="list-style-type: none"> • Random sample of 315 pharmacists (70% chain, 30% nonchain) in Pennsylvania • 98% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Multivariate analyses presented
Borrego et al., 2006 ⁴⁸	<ul style="list-style-type: none"> • Convenience sample of 523 pharmacists (setting type not reported) in New Mexico • 40% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes • Did not focus on males
Davidson et al., 2010 ⁵³	<ul style="list-style-type: none"> • Convenience sample of 668 pharmacists (setting type not reported) in Nevada • 34% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
El-Ibiary et al., 2007 ⁵⁰	<ul style="list-style-type: none"> • Convenience sample of 76 pharmacists (setting type not reported) in San Francisco • 62% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes • Did not focus on males
Fuentes and Azize-Vargas, 2007 ⁵¹	<ul style="list-style-type: none"> • Convenience sample of 332 pharmacists (47% community, 28% chain, 25% hospital) in Puerto Rico 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males
Gordon, 2007 ⁵⁵	<ul style="list-style-type: none"> • Stratified random survey of 155 pharmacists (setting type not reported) in New York 	<ul style="list-style-type: none"> • Measured knowledge, behavior • Did not focus on males
Landau et al., 2009 ⁵⁶	<ul style="list-style-type: none"> • Stratified random national sample of 2,725 pharmacists (64% chain, 31% independent, 5% other) • 19% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males
Nguyen and Zaller, 2010 ⁵²	<ul style="list-style-type: none"> • Convenience sample of 226 pharmacists (88% chain, 11% independent) in Rhode Island • 60% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males • Multivariate analyses presented
Orr and Kachur, 2007 ⁴⁹	<ul style="list-style-type: none"> • Random sample of 85 pharmacists (62% chain, 17% grocery store, 15% independent, 6% superstore) in Rhode Island • 61% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
Sommers et al., 2001 ⁵⁴	<ul style="list-style-type: none"> • Convenience sample of 159 pharmacists (58% chain, 26% independent, 10% other, 6% unknown) in Washington • 51% response rate 	<ul style="list-style-type: none"> • Measured attitudes, behavior • Did not focus on males
Van Riper and Hellerstedt, 2005 ⁴⁷	<ul style="list-style-type: none"> • Convenience sample of 510 pharmacists (69% retail, 22% hospital, 8% government) in South Dakota • 67% response rate 	<ul style="list-style-type: none"> • Measured knowledge, attitudes, behavior • Did not focus on males • Multivariate analyses presented

Notes: Where no response rate is shown, the rate was not reported or measured. Percentages may not total 100 because of rounding. For complete references (indicated by superscripts), see page 191.

males and females expressed a number of concerns about the method, including that it may be used irresponsibly, that it does not protect against HIV and other STDs, and that males might use it to pressure females into having unplanned or unprotected sex; they also noted that a male's role in emergency contraception depends on the nature of the relationship, but that the decision to use the method is ultimately the female's.²⁶ In another qualitative study, males reported providing their partner with information on contraceptive options, and said that they might try to persuade her to use emergency contraceptive pills but would not force her to do so.²⁸ A quantitative study found that 78% of men believed that a male should be able to purchase emergency contraceptive pills as long as use remains the female's decision; 74% of women believed that they and their partner should have equal over-the-counter access to the pills.²⁵ Another study found that females who perceived power-related issues in their relationship (e.g., felt pressured to have sex) and a strong desire on the part of their partner to avoid preg-

nancy were more likely than other women to use emergency contraceptive pills.¹⁸

In studies of use and access among adults, 34–46% of males reported that they would recommend emergency contraceptive pills to their partner,^{21,23} while 13–30% reported that they and their partner had used or discussed the method^{24,25}; 11% of males reported having ever purchased the pills.²⁵ The most common barriers cited by adult males to obtaining emergency contraceptive pills were not knowing how to obtain them (50%) and preferring that a female get them (38%)²⁵; smaller proportions reported that embarrassment is a factor (14–17%).^{21,25} The proportions reporting having discussed emergency contraception with their health care provider were even smaller (0–9%).^{19,21} However, in a mixed-sex sample, 87% of adolescents said that they would recommend emergency contraception to a partner (or use it themselves, if they were female) if they had previously discussed the method with their primary health care provider.¹⁹ One study found that adult males' comfort with emergency contraception was

positively associated with their knowledge of the method and with the belief that it is a contraceptive, rather than an abortifacient.²⁴

•**Clinical samples.** Two studies assessed male patients' knowledge of emergency contraception.^{29,30} In a 1998 study, the proportion of patients who were aware of emergency contraception was substantially lower among males than among females (17% vs. 35%).²⁹ A decade later, 61% of young males participating in a multicomponent health education intervention reported during their initial clinic visit that they had heard of emergency contraception; at a three-month follow-up, the proportion had increased to 95%.³⁰ Because the study did not include a control group, the extent to which outside factors contributed to increased awareness could not be determined.

Health Care Provider Perspectives

•**Clinicians.** We did not find any studies of providers' attitudes or behaviors related to male patients and emergency contraception. Sixteen studies, published in 17 articles, assessed providers' emergency contraception-related knowledge, attitudes or behaviors in general (unrelated to gender).^{15,17,31-45} Eleven studies used regional samples,^{31,33-39,42-44} and five used national samples.^{15,17,40,41,45} Several focused on medical residents,⁴²⁻⁴⁴ and one on school health providers.⁴⁵ Three studies assessed interventions.³⁷⁻³⁹

In a study published in 1997, a majority of obstetrician-gynecologists (77%) reported having general knowledge of emergency contraception¹⁵; nearly a decade later, in a sample of family physicians, obstetrician-gynecologists and pediatricians, 82% indicated that they understood emergency contraceptive pills' mechanism of action.³¹ However, in most studies, only small proportions of clinicians had detailed knowledge about the time frame within which emergency contraceptive pills can be prescribed (28-63%).^{32,34,35}

Only about one in eight clinicians reported having moral or religious objections to advance provision of emergency contraceptive pills to females^{33,34}; studies of clinicians in training yielded similar results.⁴²⁻⁴⁴ Findings were inconsistent regarding whether clinicians believe that advance provision to females promotes unprotected sex and discourages consistent contraceptive use.^{32-34,41,45} In a national sample of obstetrician-gynecologists, male providers and those reporting greater religiosity were more likely than female and less religious providers to believe that emergency contraception is ineffective and that it displaces use of other contraceptives, promotes earlier onset of sexual behavior and encourages a woman to have a high number of sexual partners.⁴¹ Another national study found that at least half of practitioners at high school health centers believed that students' parents would object to advance provision (56%) and that emergency contraception is a method of abortion (50%).⁴⁵ Substantial minorities of clinicians in this study believed that advance provision encourages sexual risk-taking (37%), undermines

traditional contraceptive use (26%) and puts clinicians at risk for liability (20%).

The proportion of clinicians reporting experience with advance provision of emergency contraceptive pills to females ranged from 20% to 94%,^{15,17,33,35,36,45} and 12-60% reported routinely counseling females about the method.^{33-35,45} Rates of advance provision to females varied by clinicians' characteristics. For example, the likelihood of such provision was elevated among female clinicians,³⁶ older clinicians,³³ obstetrician-gynecologists,^{33,36,44} clinicians with greater knowledge of the timing and mechanism of action of emergency contraceptive pills,³⁵ and clinicians with more positive attitudes and beliefs concerning the method.⁴¹

In a behavioral study that did not focus on advance provision, the odds that school-based clinicians had provided prescriptions for emergency contraceptive pills were reduced among providers who worked in the Northeast and South, whose health centers were sponsored primarily by their school system, who were concerned about liability or who believed that emergency contraception is an abortion method.⁴⁵

In three intervention studies with pretest and posttest assessments, clinicians were more likely to counsel women about the method,^{37,39} had greater knowledge and more positive perceptions regarding emergency contraception³⁸ and were more likely to offer advance provision to females³⁹ after receiving training in emergency contraception than before.

•**Pharmacists.** Eleven studies assessed pharmacists' emergency contraception-related knowledge, attitudes and behaviors; 10 used regional samples,⁴⁶⁻⁵⁵ and one a national sample.⁵⁶ Two focused on pharmacists' provision of emergency contraceptive pills to males.^{52,55}

The majority of pharmacists (85%) reported being somewhat or very familiar with emergency contraceptive pills.⁵⁶ However, the proportions who knew the timing of the first dose of emergency contraceptive pills varied widely, and differed by study region (18-95%).^{46,50,51}

In a study that examined attitudes and beliefs regarding access, 71% of Rhode Island pharmacists believed that males should be allowed to purchase emergency contraceptive pills over the counter.⁵² However, only 46% believed that males should be allowed to purchase them in case of later need, and 65% believed that dispensing pills to males to give to females was not a safe or effective method of pregnancy prevention. Less positive attitudes toward allowing males to obtain emergency contraceptive pills were associated with concerns that males would forgo condom use or force female partners to use the pills.

The Rhode Island study was also one of the few to examine pharmacists' dispensing behaviors to males. It found that 63% of pharmacists had sold emergency contraceptive pills to males in the past year, 60% believed that males rarely purchase the pills and 4% refused to sell the pills to males.⁵² In another study, which conducted site visits of pharmacies in New York, five of the 36 pharmacies visited

by male investigators requested information about the intended user; at two of the five pharmacies, staff would not have allowed the men to purchase emergency contraceptive pills and stated that the woman using them would need to come into the pharmacy and show identification.⁵⁵ In general, we found wide variation in the proportions of pharmacists who reported having ever dispensed the method (8–96%) or feeling comfortable counseling clients about it (24–65%).^{47,49,51,52} In addition, some pharmacists were less willing to dispense emergency contraceptive pills than other drugs (including other forms of contraception),⁵³ in part because of moral or religious beliefs.⁴⁹

we found no studies that examined partner communication about the method. Further work is needed to understand males' emergency contraception–related knowledge, attitudes, communication and access, and to examine whether improvements in these characteristics are associated with increased use of the method and reductions in unintended pregnancy rates.

The findings also reveal substantial gaps in our knowledge of health care providers' perspectives. No studies examined clinicians' knowledge, attitudes or behavior concerning emergency contraception–related counseling or advance provision to males, although a few assessed pharmacists' views and behavior regarding adult males' over-the-counter access. The majority of clinician studies involved pediatricians, family physicians and obstetrician-gynecologists; few involved family planning providers or clinicians in other settings where a high proportion of males get their care (e.g., STD clinics).⁶⁰ Research is needed to determine whether providers would be willing to counsel males about emergency contraception and provide them with pills in advance, and to identify factors that facilitate or hinder their doing so. For example, conscientious objection on moral or religious grounds has been negatively associated with providers' willingness to dispense emergency contraceptive pills to females;^{41,45,49,53} whether such beliefs influence providers' behavior if the recipient is a male remains unknown. Efforts are also needed to dispel providers' false beliefs concerning emergency contraceptive pills' mechanism of action (e.g., that the pills are abortifacients) and the consequences of use (e.g., that they increase rates of STDs and unprotected sex, and discourage use of less reliable contraceptive methods).

Advance provision of emergency contraceptive pills to males may be possible in some states. However, although levonorgestrel-only products are available over the counter to females 17 and older, a number of legal and policy issues would need to be addressed for health care providers to be able to legally provide emergency contraceptive pills in advance to someone who is not the intended recipient. The legal issues that arose during efforts to provide expedited partner therapy for STDs offer insights for state efforts to provide emergency contraceptive pills in advance to males.^{61,62} First, states' approaches to advance provision may vary according to such factors as providers' licensure, scope of practice (i.e., not all types of clinicians may be allowed to offer advance provision), and prescribing and dispensing authority (i.e., whether providers may legally prescribe or dispense in advance emergency contraceptive pills to someone who is not the intended recipient). Local governments may also impose restrictions (e.g., district policies may limit school health clinics' scope of practice).

Second, prescription labeling requirements and medication repackaging standards (e.g., from bulk to single doses), which vary among states, become relevant when clinicians provide instructions for off-label use of emergency contraceptive pills. For example, clinicians may

DISCUSSION

In this review—the first to synthesize the literature on emergency contraception and males from multiple perspectives—we found that although males have positive attitudes about emergency contraception, improvements in their knowledge of, access to and use of the method are needed. In addition, while health care providers report having general knowledge about emergency contraception, they lack detailed knowledge about the timing of prescribing emergency contraceptive pills, and often hold false beliefs about the consequences of use. These findings highlight the need to educate males about emergency contraception and for health professionals at all levels to counsel them about the method. Our findings also suggest the need for future research to examine clinicians' emergency contraception–related behaviors (e.g., counseling and provision) regarding males and for rigorous studies to examine the benefits and harms of involving males in provision of emergency contraceptive pills.

Given that males' general knowledge about hormonal contraceptive methods is low,⁵⁷ it is not surprising that males know less than females about emergency contraception,^{19,21–25} and that teenage males are less knowledgeable than their adult counterparts.^{21,22,24,25} Males' relative lack of knowledge and of reports of partner use may be due, in part, to a number of factors: marketing strategies that focus on females; males' poor knowledge of ovulation and fertilization, which may limit their understanding of when and how to use emergency contraceptive pills; the lack of counseling by health care providers about birth control in general and emergency contraceptives in particular;⁵⁸ and the potentially prohibitive cost, especially for young people, of purchasing emergency contraceptive pills over the counter (up to \$60).⁵⁹

However, little is known about the extent of males' knowledge of how emergency contraceptive pills work and when to use them, males' access to the pills over the counter and the barriers they face in obtaining them (including financial barriers). Moreover, many of the studies we identified were done more than a decade ago, underscoring the need for evaluations of more contemporary samples. Although the findings indicate that males support their partners' use of emergency contraceptive pills and that females support males' involvement in the process,^{19,23,25}

[The] findings highlight the need to educate males about emergency contraception.

need to give patients additional instructions when counseling them to use the pills within 120 hours of unprotected sex⁶³ (as opposed to the 72-hour window approved by the Food and Drug Administration) or to take both doses at the same time (rather than 12 hours apart) when providing Plan B or Next Choice. In addition, repackaging of standard oral contraceptives for use as emergency contraception (i.e., the Yuzpe method) would need to be done in accordance with state standards.

Third, state-specific provider liability concerns may arise regarding potential harms to a male patient's partner. Relevant factors include whether emergency contraception falls within the appropriate standard of care, whether a doctor-patient relationship exists with the female partner and whether providers benefit from existing liability protections.

Fourth, financing and reimbursement issues may arise if a male's health insurance coverage does not include emergency contraception-related visits and medication. Determinations of how advance provision to males is financed and reimbursed, including through such programs as Title X, may be needed.

Finally, considerations of privacy, confidentiality (including during billing), minor consent,⁶⁴ and laws and policies governing reporting must be addressed. Given these legal and policy considerations, a 50-state survey is needed to help state policymakers learn about and standardize their laws. In states where advance provision is allowable, health care providers can learn about the practice through continuing medical education, licensure boards or other state-level professional associations.

In one state, pharmacists reported concerns that males provided with emergency contraceptive pills might pressure their partners to use them.⁵² However, this finding may not be generalizable to pharmacists elsewhere. Furthermore, these beliefs may not be well-founded, given that no studies have examined partner communication or related outcomes among couples receiving the method in advance. Future work will need to examine in greater depth the involvement of the male partner in emergency contraception and whether such involvement results in benefits or harms (such as pressure or increased sexual risk-taking) to either partner.

A major strength of this literature synthesis is the use of systematic search strategies to identify relevant studies.⁶⁵ However, our review has several potential limitations. First, the search may have missed pertinent studies; in fact, hand-search methods identified four additional articles. Second, the review may have been affected by publication bias, as our search strategy would not have identified unpublished evaluations; however, the hand-search strategy identified two studies that did not appear in journals.^{19,55} Finally, the outcomes assessed across studies were not consistent; thus, direct comparative analyses and presentation of trends were not possible. (The over-the-counter availability of emergency contraceptive pills beginning in 2006 also precluded these analyses.) Use of

comparable measures across studies examining emergency contraception-related knowledge, attitudes and behaviors will facilitate such comparisons.

This literature synthesis demonstrates that current understanding of males and emergency contraception is limited. Studies are needed to further assess men's role in their partners' use of emergency contraceptive pills, to determine health professionals' ability to counsel males about this method and facilitate their access to it, and to determine the impact of males' access to emergency contraceptive pills (either over the counter or from health care providers) on any relationship issues (e.g., pressure on women to use the pills) and, ultimately, unintended pregnancy.

REFERENCES

1. Finer LB and Zolna MR, Unintended pregnancy in the United States: incidence and disparities, 2006, *Contraception*, 2011, 84(5):478–485.
2. Reece M et al., Condom use rates in a national probability sample of males and females ages 14 to 94 in the United States, *Journal of Sexual Medicine*, 2010, 7(Suppl. 5):266–276.
3. Martinez GM et al., Fertility, contraception, and fatherhood: data on men and women from Cycle 6 (2002) of the National Survey of Family Growth, *Vital and Health Statistics*, 2006, Vol. 23, No. 26.
4. Trussell J, Contraceptive failure in the United States, *Contraception*, 2011, 83(5):397–404.
5. Virjo I and Virtala A, Why do university students use hormonal emergency contraception? *European Journal of Contraception & Reproductive Health Care*, 2003, 8(3):139–144.
6. Jones RK, Darroch JE and Henshaw SK, Contraceptive use among U.S. women having abortions in 2000–2001, *Perspectives on Sexual and Reproductive Health*, 2002, 34(6):294–303.
7. Crosby RA et al., Men with broken condoms: who and why? *Sexually Transmitted Infections*, 2007, 83(1):71–75.
8. Polis CB et al., Advance provision of emergency contraception for pregnancy prevention, *Cochrane Database of Systematic Reviews*, 2007, Issue 2, No. CD005497.
9. U.S. Department of Health and Human Services, *Healthy People 2020*, Washington, DC: Government Printing Office, 2011, <<http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=13>>, accessed July 1, 2011.
10. Gold MA et al., Provision of emergency contraception to adolescents, *Journal of Adolescent Health*, 2004, 35(1):67–70.
11. American Academy of Pediatrics Committee on Adolescence, Emergency contraception, *Pediatrics*, 2005, 116(4):1026–1035.
12. Norris Turner A and Ellertson C, How safe is emergency contraception? *Drug Safety*, 2002, 25(10):695–706.
13. Meyer JL, Gold MA and Haggerty CL, Advance provision of emergency contraception among adolescent and young adult women: a systematic review of literature, *Journal of Pediatric and Adolescent Gynecology*, 2011, 24(1):2–9.
14. Harper CC and Ellertson CE, The emergency contraceptive pill: a survey of knowledge and attitudes among students at Princeton University, *American Journal of Obstetrics & Gynecology*, 1995, 173(5):1438–1445.
15. Delbanco SF, Mauldon J and Smith MD, Little knowledge and limited practice: emergency contraceptive pills, the public, and the obstetrician-gynecologist, *Obstetrics & Gynecology*, 1997, 89(6):1006–1011.

16. Delbanco SF et al., Missed opportunities: teenagers and emergency contraception, *Archives of Pediatrics & Adolescent Medicine*, 1998, 152(8):727–733.
17. Delbanco SF et al., Are we making progress with emergency contraception? Recent findings on American adults and health professionals, *Journal of the American Medical Women's Association*, 1998, 53(5, Suppl. 2):242–246.
18. Harper CC, Minnis AM and Padian NS, Sexual partners and use of emergency contraception, *American Journal of Obstetrics & Gynecology*, 2003, 189(4):1093–1099.
19. Salganicoff A, Wentworth B and Ranji U, *Emergency Contraception in California: Findings from a 2003 Kaiser Family Foundation Survey*, Menlo Park, CA: Henry J. Kaiser Family Foundation, 2004.
20. Sawyer RG and Thompson E, Knowledge and attitudes about emergency contraception in university students, *College Student Journal*, 2003, 37(4):523–531.
21. Corbett PO et al., Emergency contraception: knowledge and perceptions in a university population, *Journal of the American Academy of Nurse Practitioners*, 2006, 18(4):161–168.
22. Urena E and Yen S, Emergency contraception knowledge among teens, *Ethnicity & Disease*, 2009, 19(2):25–27.
23. Vahratian A et al., College students' perceptions of emergency contraception provision, *Journal of Women's Health*, 2008, 17(1):103–111.
24. Miller LM, College student knowledge and attitudes toward emergency contraception, *Contraception*, 2011, 83(1):68–73.
25. Nguyen BT and Zaller N, Male access to over-the-counter emergency contraception: a survey of acceptability and barriers in Providence, Rhode Island, *Women's Health Issues*, 2009, 19(6):365–372.
26. Harper C and Ellertson C, Knowledge and perceptions of emergency contraceptive pills among a college-age population: a qualitative approach, *Family Planning Perspectives*, 1995, 27(4):149–154.
27. Johnson R et al., There's always Plan B: adolescent knowledge, attitudes and intention to use emergency contraception, *Contraception*, 2010, 81(2):128–132.
28. Merkh RD et al., Young unmarried men's understanding of female hormonal contraception, *Contraception*, 2009, 79(3):228–235.
29. Cohall AT et al., Inner-city adolescents' awareness of emergency contraception, *Journal of the American Medical Women's Association*, 1998, 53(5, Suppl. 2):258–261.
30. Armstrong BJ et al., Creating teachable moments: a clinic-based intervention to improve young men's sexual health, *American Journal of Men's Health*, 2010, 4(2):135–144.
31. Sable MR et al., Using the theory of reasoned action to explain physician intention to prescribe emergency contraception, *Perspectives on Sexual and Reproductive Health*, 2006, 38(1):20–27.
32. Kelly PJ et al., Physicians' intention to educate about emergency contraception, *Family Medicine*, 2008, 40(1):40–45.
33. Xu X et al., Emergency contraception provision: a survey of Michigan physicians from five medical specialties, *Journal of Women's Health*, 2007, 16(4):489–498.
34. Golden NH et al., Emergency contraception: pediatricians' knowledge, attitudes, and opinions, *Pediatrics*, 2001, 107(2):287–292.
35. Sills MR, Chamberlain JM and Teach SJ, The associations among pediatricians' knowledge, attitudes, and practices regarding emergency contraception, *Pediatrics*, 2000, 105(4 Pt. 2):954–956.
36. Chuang CH et al., Emergency contraception: prescribing practices of general internists compared with other primary care physicians, *Contraception*, 2004, 69(1):43–45.
37. Sobota M et al., An intervention to improve advance emergency contraceptive prescribing practices among academic primary care physicians, *Contraception*, 2008, 78(2):131–135.
38. Beckman LJ et al., Changes in providers' views and practices about emergency contraception with education, *Obstetrics & Gynecology*, 2001, 97(6):942–946.
39. Chuang CH and Freund KM, Emergency contraception: an intervention on primary care providers, *Contraception*, 2005, 72(3):182–186.
40. Gold MA, Schein A and Coupey SM, Emergency contraception: a national survey of adolescent health experts, *Family Planning Perspectives*, 1997, 29(1):15–19 & 24.
41. Lawrence RE et al., Obstetrician-gynecologist physicians' beliefs about emergency contraception: a national survey, *Contraception*, 2010, 82(4):324–330.
42. Upadhyia KK, Trent ME and Ellen JM, Impact of individual values on adherence to emergency contraception practice guidelines among pediatric residents: implications for training, *Archives of Pediatrics & Adolescent Medicine*, 2009, 163(10):944–948.
43. Lim SW et al., Emergency contraception: Are pediatric residents counseling and prescribing to teens? *Journal of Pediatric and Adolescent Gynecology*, 2008, 21(3):129–134.
44. Veloudis GM Jr and Murray SC, Emergency contraception knowledge and prescribing practices: a comparison of primary care residents at a teaching hospital, *Journal of Pediatric and Adolescent Gynecology*, 2000, 13(3):125–128.
45. McCarthy SK et al., Availability of services for emergency contraceptive pills at high school-based health centers, *Perspectives on Sexual and Reproductive Health*, 2005, 37(2):70–77.
46. Bennett W et al., Pharmacists' knowledge and the difficulty of obtaining emergency contraception, *Contraception*, 2003, 68(4):261–267.
47. Van Riper KK and Hellerstedt WL, Emergency contraceptive pills: dispensing practices, knowledge and attitudes of South Dakota pharmacists, *Perspectives on Sexual and Reproductive Health*, 2005, 37(1):19–24.
48. Borrego ME et al., New Mexico pharmacists' knowledge, attitudes, and beliefs toward prescribing oral emergency contraception, *Journal of the American Pharmaceutical Association*, 2006, 46(1):33–43.
49. Orr KK and Kachur SG, Community pharmacists' opinions regarding emergency contraception: a survey in Rhode Island, *Journal of the American Pharmaceutical Association*, 2007, 47(4):504–507.
50. El-Ibiary SY et al., Pharmacy access to emergency contraception: perspectives of pharmacists at a chain pharmacy in San Francisco, *Journal of the American Pharmaceutical Association*, 2007, 47(6):702–710.
51. Fuentes EC and Azize-Vargas Y, Knowledge, attitudes and practices in a group of pharmacists in Puerto Rico regarding emergency contraception, *Puerto Rico Health Sciences Journal*, 2007, 26(3):191–197.
52. Nguyen BT and Zaller N, Pharmacy provision of emergency contraception to men: a survey of pharmacist attitudes in Rhode Island, *Journal of the American Pharmaceutical Association*, 2010, 50(1):17–23.
53. Davidson LA et al., Religion and conscientious objection: a survey of pharmacists' willingness to dispense medications, *Social Science & Medicine*, 2010, 71(1):161–165.
54. Sommers SD et al., The emergency contraception collaborative prescribing experience in Washington State, *Journal of the American Pharmaceutical Association*, 2001, 41(1):60–66.

55. Gordon L, *Emergency Contraception: Available at Your Pharmacy Now*, New York: Policy and Investigations Division, Council of the City of New York, 2007.
56. Landau S et al., Pharmacist interest in and attitudes toward direct pharmacy access to hormonal contraception in the United States, *Journal of the American Pharmaceutical Association*, 2009, 49(1):43–50.
57. Henry J, Kaiser Family Foundation and Seventeen Magazine, *SexSmarts: A Series of National Surveys of Teens About Sex: Birth Control and Protection*, Menlo Park, CA: Henry J. Kaiser Family Foundation and Seventeen Magazine, 2004.
58. Marcell AV et al., Prevalence of sexually transmitted infection/human immunodeficiency virus counseling services received by teen males, 1995–2002, *Journal of Adolescent Health*, 2010, 46(6):553–559.
59. Office of Population Research, Princeton University, and Association of Reproductive Health Professionals, How much do emergency contraceptive pills cost? <<http://ec.princeton.edu/locator/concerned-about-cost.html>>, accessed June 12, 2012.
60. Brackbill RM, Sternberg MR and Fishbein M, Where do people go for treatment of sexually transmitted diseases? *Family Planning Perspectives*, 1999, 31(1):10–15.
61. Arizona State University and Centers for Disease Control and Prevention (CDC), *Legal/Policy Toolkit for Adoption and Implementation of Expedited Partner Therapy*, Tempe, AZ: Arizona State University, 2011, <<http://www.cdc.gov/std/ept/legal/EPT-toolkit-complete.pdf>>, accessed July 1, 2011.
62. CDC, Legal status of expedited partner therapy (EPT), 2010, <<http://www.cdc.gov/std/ept/legal/default.htm>>, accessed May 1, 2011.
63. Rodrigues I, Grou F and Joly J, Effectiveness of emergency contraceptive pills between 72 and 120 hours after unprotected sexual intercourse, *American Journal of Obstetrics & Gynecology*, 2001, 184(4):531–537.
64. Guttmacher Institute, An overview of minors' consent law, *State Policies in Brief (as of July 2011)*, 2011, <http://www.guttmacher.org/statecenter/spibs/spib_OMCL.pdf>, accessed July 1, 2011.
65. Suri H and Clarke D, Advancements in research synthesis methods: from a methodologically inclusive perspective, *Review of Educational Research*, 2009, 79(1):395–430.

Acknowledgments

The authors thank Nora Smith and Claire Twose for library assistance, Krystilyn Washington and Reni Bello for technical assistance, and Susan L. Rosenthal for comments on an early version of this article. This study was supported through the Male Training Center's cooperative agreement with the Office of Family Planning, Office of Population Affairs, Department of Health and Human Services (cooperative agreement FPTPA006011).

Author contact: amarcell@jhsph.edu