The past 20 years have seen an explosion of new contraceptive technologies; women benefit now from a range of effective methods that can satisfy their preferences. Pharmaceutical and biotech companies jumped on board, developing and marketing new hormonal combinations, delivery systems, and inexpensive devices that offer them opportunity for great profit.

Now that many of these newer products have been available for a decade or longer, the combined motivation of women, health-care providers, and industry should have meant better success in preventing undesired pregnancies. Regrettably, we’re moving in the wrong direction: The rate of unintended pregnancy in the United States has increased.

In this Update, we address the sobering reality of the unintended pregnancy rate over 20 years. We then take the opportunity to:

- review new data and guidelines about postpartum and postprocedure insertion of an intrauterine device (IUD)
- explain the latest data and recommendations on venous thrombotic events and combined hormonal methods
- discuss the possibility of an association between depot medroxyprogesterone acetate (DMPA) and acquisition of the human immunodeficiency virus (HIV).

What are the national data on unintended pregnancy?

For decades, we’ve been repeating ourselves about the problem of unintended pregnancy—namely, “about half of all pregnancies in the United States are unintended,” etc. The fact that this rate has not improved in nearly 20 years is, in itself, worrisome; despite a proliferation of methods of contraception (and the hope that added options would cause the high rate of
unintended pregnancy to fall), an overall benefit hasn’t been realized.

A small, but very important, decrease in the percentage of pregnancies that are unintended—from 49.2% to 48%—occurred between 1994 and 2001. New data assembled by Finer and Zolna show, however, that the percentage has crept back up to 49%.

The unintended pregnancy rate is another way to measure this outcome—reflecting the number of unintended pregnancies for every 1,000 women of reproductive age. The lowest rate (44.7) was seen in 1994; by 2006, the rate had increased to 52—just shy of the highest rate of 52.6 that was reported in the early 1980s.

Why haven’t new methods lowered the unintended pregnancy rate?

Both unintended pregnancy and abortion affect poorer and younger women disproportionately. In 1994, the unintended pregnancy rate among women who were below the poverty level was 2.6-fold higher than the rate among women who were above the poverty level. That difference in rate increased to 5.5-fold higher by 2006 (FIGURE). The unintended pregnancy rate has increased significantly among poor women while it has continued to decrease among women who are not poor.

Why has this happened? Perhaps newer contraceptive methods aren’t being used by, or are not available to, women who are most in need. This regrettable trend is a demonstration that unintended pregnancy is a social issue—that there are, without question, “haves” and “have-nots.”

Black women have an unintended pregnancy rate nearly double that of non-Hispanic white women, and are more likely than non-Hispanic white women to opt for an abortion when faced with an unintended pregnancy. New data also show that, from 2005 to 2008, the number of abortions and the abortion rate in the United States have remained approximately the same. While the rate of unintended pregnancy increases, therefore, principally among poor women, more of those pregnancies are being continued.
Intrauterine devices have received a great deal of attention in recent years. Indeed, the utilization rate has increased significantly, with 5.5% of contraceptive users—2.1 million women—now using an IUD. Although most women who use an IUD obtain it at an outpatient office, remote from pregnancy and where the safety profile and risk of expulsion are well documented, many women who desire effective contraception like an IUD may not be seen by a provider until they are pregnant.

A significant body of data has been published recently on the role of postpregnancy IUD placement, adding important information to the existing body of literature. Multicenter randomized trial. A study in the United States by Bednarek and co-workers demonstrated that immediate post-aspiration placement of an IUD resulted in a higher rate (>90%) of IUD utilization at 6 months than did insertion 6 to 8 weeks postpartum (just above 75%). Furthermore, five pregnancies were documented in the group with delayed IUD insertion; none were seen in the immediate-insertion group.

Independent randomized trials. Two studies (by Cremer and colleagues and Hohmann and colleagues) showed that immediate post-dilation and evacuation placement of an IUD also yielded a significantly higher rate of continued usage at 6 months than did delayed placement. (The terms “postaspiration” and “post–dilation and evacuation” are important as they encompass elective termination procedures for miscarriage management and fetal demise among women who may have undesired fertility.) For women having such procedures who do not want another pregnancy in the near future, immediate provision of highly effective contraception can best be performed at the time of the procedure.

New data: Use of IUD after medical abortion. A randomized trial conducted by Shimoni and colleagues showed no significant difference in expulsion after immediate

WHAT THIS EVIDENCE MEANS FOR PRACTICE

The necessity of coming to clinic in the months right after the end of a pregnancy to obtain highly effective contraception is, for women who are in this position, a well-established barrier to ensuring that they receive the protection they want. We now have important data showing that IUD placement after suction aspiration, dilation and evacuation, cesarean delivery, and vaginal delivery is effective and causes minimal side effects.

Better data are needed before we can make a universal recommendation about inserting an IUD shortly after medical abortion. Overall, you should consider that the reversibility and known safety profile of an IUD continue to make this device an ideal contraceptive for many women.
Combined hormonal contraception (CHC) increases a woman’s risk of venous thromboembolism (VTE), an effect that has been attributed to the thrombogenic effects of estrogen.\(^7\) The combined risk of VTE from CHC and the known independent risk of VTE postpartum has prompted the CDC to recommend against the use of any combined (i.e., estrogen-containing) method for 21 days postpartum. Although no direct evidence exists of a higher rate of VTE with CHC immediately postpartum, indirect evidence of increased risk should be considered very seriously.

Evidence from retrospective and database studies continues to suggest that one of the newer progestins, drospirenone, may play a larger role in VTE than previously understood, reigniting the debate over the risk of VTE and combined oral contraceptives (OCs). Drospirenone was introduced in 2001 in combination with ethinyl estradiol in an OC that had the added benefits of alleviating acne and controlling premenstrual symptoms.\(^8\) A large (142,475 woman-years) prospective trial examining the role of drospirenone showed no significant difference between this hormone and other forms of progesterone in regard to adverse cardiovascular events.\(^9\) This study had minimal loss to follow-up (2.4%) and is the only cohort to confirm VTE outcomes based on medical records review (rather than insurance claims databases or national registries).\(^{10}\)
A national cohort study in Denmark, published in 2009, found that the risk of VTE was directly related to duration of use and the dosage of estrogen.11 More significantly, those investigators found that specific progestin types, including drospirenone, desogestrel, and gestodene, were also associated with increased VTE risk.

Danish researchers conducted another retrospective study to assess the VTE risk associated with drospirenone in CHC—a review that included other progestins, the levonorgestrel-releasing IUD, and progestin-only pills. The results again suggested that contraceptives that contain drospirenone, desogestrel, or gestodene were associated with more than twice the risk of VTE, compared with OCs that contain levonorgestrel.

For gestodene and desogestrel, increasing the dosage of estrogen increased the risk of VTE; for drospirenone, however, the dosage of estrogen did not affect the rate of VTE. No association was found between the levonorgestrel-releasing IUD or progestin-only pills with VTE. Overall, the absolute number of VTE was small (4,307 VTE among 1.3 million women using hormonal contraception), which is reassuring, considering that this was a large cohort study.

**Does DMPA lead to HIV?**


Much controversy has arisen in recent years over the role of hormonal contraception and HIV acquisition. This led the World Health Organization (WHO) to convene an international meeting of stakeholders earlier this year to address guidelines for hormonal contraception, especially injectables, in women who are living with HIV or are at high risk of acquiring the virus12 (see

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**WHAT THIS EVIDENCE MEANS FOR PRACTICE**

No combination hormonal contraception (CHC) of any type should be prescribed for use during the 3 weeks after delivery, given indirect evidence of increased risk of VTE during this period and the known VTE risk posed by CHC.

For women who are beyond that window and who want CHC, the question becomes: How should you counsel them about progestins in different formulations?

A decade of research has yielded equivocal data on drospirenone and the risk of VTE. The only large prospective study did not show any increase in the risk of VTE; newer studies contain important retrospective data but, by their design, are inherently weaker in regard to their conclusions.

Lastly, database reviews that cannot fully control for confounding and do not include chart review for confirmation of diagnosis do not provide a rationale for avoiding certain CHC formulations, especially if one of those formulations is strongly preferred by your patient.10

 Fifteen years ago, a well-designed cohort study showed that female sex workers in Kenya who used depot medroxyprogesterone acetate (sold in the United States as Depo-Provera) for contraception were twice as likely to acquire HIV than sex workers who used a nonhormonal method.13 Since then, numerous published studies on this topic have yielded equivocal results14: for example, the largest one, of 1,536 DMPA users in Uganda and Zimbabwe, showed no increased risk of HIV acquisition with DMPA use.15

In a report of the most recent study, Heffron and coworkers analyzed data from
No study has clearly demonstrated sufficiently strong evidence of a putative link between DMPA use and an increased rate of HIV transmission in women at high risk of HIV disease for you to discourage its use in any of your patients for whom DMPA is appropriate.

Stakeholders at the WHO’s 2012 meeting on this matter concluded that 1) no change to guidelines is warranted and 2) hormonal contraception should be promoted for all women, regardless of HIV risk. That conclusion takes into account the fact that the results of more than a decade of research on the role of hormonal contraception in HIV acquisition have been equivocal.12

Given the well-known benefits of effective contraception in preventing unintended pregnancy for all women, especially those at risk of transmitting HIV, you should continue to promote DMPA and all other formulations and methods of hormonal contraception to eligible women.

References