Postcoital Contraception — An Appraisal —

SUMMARY

Until recently, women who had coitus without contraceptive protection had no way to assure that they would not become pregnant. They could only hope that conception would not take place and wait anxiously for luck and nature to decide their fate. Now, effective postcoital contraceptives have been developed, and research to perfect them is underway.

Theoretically, the reproductive process offers several opportunities for intervention in the course of events leading from insemination to implantation of the fertilized ovum in the uterine wall and, thus, pregnancy. Douching, for example, has been used for thousands of years in the attempt to flush out or kill sperm after insemination. Today its ineffectiveness is recognized: sperm can be out of reach of douches and spermicides within seconds after ejaculation. Developed over the past 12 years, modern postcoital contraceptives—hormonal compounds and intrauterine devices—are quite different. They apparently interfere with implantation of the fertilized ovum, but exactly how they do so is not well understood.

One effective method of postcoital contraception, administration of estrogens, has already been used in Europe, North and South America, India, Australia, and elsewhere. The nonsteroidal estrogen diethylstilbestrol (DES) has been used most often, but steroidal estrogens, especially ethinyl estradiol (EE) and conjugated estrogens, also appear to be effective. Postcoital use of steroidal estrogens is currently under careful study in the USA.

Other methods, too, have been or are about to be studied in major field trials. Progestogens, which, like estrogens, are sex hormones, may be effective postcoital contraceptives. One drug manufacturer plans to market the progestogen d-norgestrel in South America for postcoital use. A combination of estrogen and progestogen, the equivalent of a standard oral contraceptive, may soon be the subject of a major study in Canada. A multicenter trial of postcoital insertion of a copper-bearing intrauterine device (IUD) is about to begin in the USA.

Postcoital contraceptive methods share an inherent drawback: they must be administered soon after coitus. After implantation is established, postcoital methods are ineffective. Administration of the hormonal methods—estrogens, progestogens, and estrogen-progestogen combinations—should begin as soon after coitus as possible and certainly no later than 72 hours after coitus. A copper IUD might prevent pregnancy if inserted as late as five days after coitus, but earlier insertion seems preferable. Each method may have its own specific drawbacks, as well. Most notable are the nausea and vomiting which both steroidal and nonsteroidal estrogens cause in many users.

Much remains to be learned about postcoital contraception. Its effectiveness, side effects, administration, relationship to other birth control methods, and role in family planning programs—all of these need further definition. Much work has already been done, however, and women may soon have a variety of effective postcoital contraceptive methods from which to choose.

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responsible for pregnancy, women probably attempted to remove semen from the vagina after coitus. The postcoital douche is such an attempt, one that has been used since ancient times and remains in use today. Douches and other folk methods of postcoital contraception are usually ineffective because sperm move very rapidly into the cervix, out of reach. Sperm have been found in cervical mucus within 90 seconds after ejaculation (107).

Nevertheless, women have tried a wide variety of methods to remove or destroy sperm. Probably the simplest was wiping out the vagina with the fingers. Women of the twelfth century Persian recipe called for a postcoital pessary concocted of "colocynth pulp, bryony, iron scor­ria, sulphur, scammony, and cabbage seed" (49).

Oral preparations have also been tried for postcoital contraception. A German writer in 1709 recommended a potion made from willow tree sap. He claimed that the effectiveness of the treatment could be enhanced by adding borax. It was reported in the late nineteenth century that Fiji Islanders drank an infusion of the roots and leaves of certain trees (49).

Postcoital Douche

Postcoital douching is probably one of the world's oldest contraceptive methods. As early as 1500 B.C., the Egyptians tried to prevent pregnancy with postcoital douches of wine and garlic with tannel, used in conjunction with precocital fumigation of the vagina. Women licensed by the state were employed specifically to administer douches. Douching or douching implements are mentioned in the Sacred Vedas of India, written about 1500 B.C., and by Leviticus in the Hebrew Old Testament, although in the latter case the purpose of douching was probably hygienic, not contraceptive (32).

Charles Knowlton (1800-1850), an American doctor, restored the practice of contraceptive douching to some popularity with his book Fruits of Philosophy, first published in 1832 and later widely reprinted and distributed. Knowlton considered douching the best contraceptive method then available, but he presented no data to substantiate his claim. He recommended a wide range of agents, including:

- [solutions of] sulphate of zinc, of alum, pearlash, or any salt that acts chemically on the semen, and at the same time produces no unfavorable effect on the female. In all probability, a vegetable astringent would answer—as an infusion of white oak bark, or red rose leaves, of nutgalls, and the like. A lump of either of the above mentioned salts, of the size of a chestnut, may be dissolved in a pint of water. A female syringe, which will be required in the use of this check [contraceptive method], may be had at the shop of an apothecary. (32)

Following Knowlton, many late nineteenth-century writers endorsed postcoital douching, and a wide variety of devices for douching was marketed (see Fig. 1). Although doubts about the effectiveness of postcoital douches appeared in print as early as 1887 (32), the popularity of the method probably reached a peak early in this century. In France, the bidet, a basin-like fixture which facilitates douching, became standard in the homes of the well-to-do and in hotels. In the 1930s, women's magazines in the USA carried advertisements advising postcoital douching and promoting various douching powders and liquids. One set of ads recommended a household disinfectant, Lysol, greatly diluted, as a postcoital douche (32,49).

Besides being ineffective, douching with caustic agents, even with soap suds, may irritate internal tissues. Systemic effects, chronic ill-health, and death have been attributed to douching with high concentrations of household disinfectant and of mercury bichloride (23,32). These were once recommended as douching agents, in addition to dilutions of vinegar, alum, or lemon juice and even plain water. Carbonated soft drinks, notably Coca-Cola, have been popular as postcoital douches, especially in developing countries (23,93).
Few studies have tried to determine the effectiveness of postcoital douching. A 1939 survey of clients of family planning clinics in Cincinnati, Ohio (USA), found a pregnancy rate of 36 per 100 woman-years of use among women who said they relied on douching (111). By comparison, combined estrogen-progestogen oral contraceptives yield pregnancy rates of less than one per 100 woman-years of use. A 1970 survey found that 39 percent of US women using douching for contraception experienced an unwanted pregnancy within a year (99).

As effective, easier to use contraceptive methods became available, douching became less popular. A 1965 study in the USA found that 28 percent of the women surveyed had douched at some time in their lives, but only 3.3 percent (5.2 percent of those practicing contraception) were relying on it for contraception at the time of the survey. In 1970, 2.1 percent of the women surveyed (3.2 percent of the contraceptive users) relied on douching for contraception, and most of those using douches were older women (119). Some who used douches probably did so in conjunction with another method (120), even though postcoital douching probably reduces the effectiveness of spermicides and should not be done within six or seven hours after intercourse when diaphragms and spermicides are used (see Population Reports A-2, while use of no contraceptive method at all would result in rates of 65 pregnancies per 100 woman-years or higher (115,116).)

Postcoital administration of an estrogen appears to be an effective means of preventing pregnancy if sufficient dosage of the hormone is taken soon after sexual intercourse. In the past seven years the method has become available in many developed countries, mainly through private physicians and college health services. Used after isolated acts of coitus when other contraceptive means were not used or may have failed, the method has become popularly known as the "morning-after pill."

History

In the 1920s and 1930s researchers discovered that estrogens could prevent implantation and interrupt pregnancy in lower animals (91,92,105), but the first major human trial of estrogens administered postcoitally did not begin until 1963. The trial was conducted by Morris and van Wagenen of Yale University (USA) who, after a systematic study of various chemical agents in monkeys, concluded that estrogens held the most promise as postcoital contraceptives. The first human users were rape victims, who received 50 mg of the nonsteroidal estrogen diethylstilbestrol (DES) for four to six days following exposure (84). In the first 100 cases—and no pregnancies were reported—was conducted by Morris and van Wagenen's study is one of the most rigorous trials of postcoital contraception yet reported. All exposures took place at midcycle, when chances of pregnancy were greatest; many women were examined to determine the presence of sperm in the genital tract; and only those whose basal

ESTROGENS

The ubiquitous use of folk methods testifies to the need for postcoital contraception. However, it was not until the last 12 years of medical research that effective methods were developed. Laboratory studies with nonprimates revealed that a broad range of chemical agents have antifertility effects when administered postcoitally. These include sex hormones (estrogens, progestogens, androgens), corticoids, nonsteroidal estrogens, hormone antagonists, antimetabolites, alkaloids, antimitotics, prostaglandins, and others (29,30,65,87,88,95,102). Unfortunately, in primates most of these agents have proved ineffective, toxic to the user, and/or teratogenic (causing birth defects) if they fail to prevent pregnancy (83,87).

Animal research has narrowed the field of potential postcoital contraceptives to the few which are acceptable for human trials. Interestingly, most attention has focused on estrogens, progestogens, and IUDs, all of which were already in use for fertility regulation. The first modern method tested on humans involved an estrogen, diethylstilbestrol (84).

Postcoital administration of an estrogen appears to be an effective means of preventing pregnancy if sufficient dosage of the hormone is taken soon after sexual inter-
body temperatures suggested that ovulation had occurred were treated. Without contraception, 20 to 30 of these 100 women might have become pregnant (82).

Further studies have led to standardization of the regimen. Estrogen administration should begin as soon as possible after coitus, preferably within 24 hours and definitely within 72 hours. Estrogens are usually given orally for five consecutive days in the following doses: DES—50 mg per day; EE—5 mg per day; conjugated estrogens—30 or 50 mg per day (9,85). Conjugated estrogens (20 to 25 mg per day for three days) and estradiol benzoate (30 mg per day for five days) have been given by injection (40,85).

The US Food and Drug Administration approved 25 mg tablets of DES for postcoital use in February 1975, with the reservation that the drug should be used "for emergencies only and should not be used routinely." The definition of "emergency" is left to the prescribing physician (101). The reservation was included because there are no data on the effectiveness and safety of postcoitally administered DES as a routine method of contraception (8).

Effectiveness

Studies of postcoital administration of estrogen have demonstrated its effectiveness as a contraceptive. Pregnancies have been reported in no more than 2.4 percent of cases, and most pregnancies have involved either other unprotected exposures in the cycle or dosages which were too small or were administered too late (see Table 1). In a study of 1,217 cases in which the regimen was followed and there were no other unprotected exposures in the cycle, no pregnancies occurred (60). Summarizing data from almost 10,500 cases, Morris found a failure rate of 0.4 percent. Of the 42 pregnancies reported, only four appeared to be due to actual method failure (82).

The studies reported in Table 1 all involved isolated, single incidents of coitus. The pregnancy rates shown in Table 1, which are expressed as percentages of the total number of cases, should not be compared or confused with failure rates for contraceptive methods used regularly. Such rates are expressed either as pregnancies per 100 woman-years of use (Pearl method) or as the percentage of the women who became pregnant during a certain time period (life-table method).

Gauging the effectiveness of postcoitally administered estrogens is difficult. In any particular study, it is not possible to determine accurately the percentage of women who would become pregnant had they used no method of contraception. Fecundity varies, according to the time of exposure during the menstrual cycle, from virtually no chance of pregnancy to perhaps as high as 30 percent at midcycle (76,115,125). To assess the risk of pregnancy accurately requires knowing at what point in the cycle each exposure occurred. The largest trials of postcoitally administered estrogens (40,60) involved women who came to clinics or physicians to request postcoital contraception, not women who volunteered for the study in advance. Therefore, time of exposure in the menstrual cycle cannot always be determined accurately. Other factors add to the difficulty of assessing the effectiveness of a postcoital method—unknown fertility of some users and their partners, the possibility of other unprotected acts of intercourse during the same cycle, and inaccurate information about how long the woman waited before seeking treatment.

Large scale studies of EE and conjugated estrogens as postcoitally contraceptives are now being conducted in the USA under the guidance of the National Institute of Child Health and Human Development (24). Additional clinical centers are being added to the program (1) so that data from at least 1,500 cases with each drug can be assembled. Cases are rigorously screened—only about half are being included in the studies. These field trials may yield accurate data on effectiveness and side effects, but significant results cannot be expected for several years (7).

Postcoitally administered estrogen was studied as a method of continual contraception by Szontagh and Kovacs in Hungary. Twenty-two women of proved fertility took 2.5 mg dienestrol immediately after intercourse and three times the following day for 196 cycles. There were no pregnancies (112,113).

Ectopic Pregnancy

When postcoital estrogens fail, the resulting pregnancy is ectopic in one out of 10 cases (85). By comparison, in general, only approximately one pregnancy in 200 is expected to be ectopic (84). Morris speculates that postcoital estrogens usually prevent uterine pregnancy but not ectopic implantation. As a result, the total number of ectopic pregnancies observed is roughly the same as would have occurred had women used no contraception at all (89). An alternative explanation is that postcoital estrogens slow the passage of the ovum through the oviducts, making extruterine implantation more likely (106). A high percentage of ectopic pregnancies has also been observed among pregnancies following contraceptive failure with IUDs (64) and with minipills (4).

Mode of Action

To be effective, estrogens must be administered within 72 hours after coitus. This is because estrogens used postcoitally apparently prevent pregnancy by interfering with implantation of the blastocyst in the endometrium (uterine lining). A fertilized ovum generally reaches the uterus in four or five days (19).

Just how estrogens interfere with implantation is not well understood. A number of hypotheses have been proposed. According to some researchers, synchronization of ovum transport and preparation of the endometrium to receive the ovum is controlled by a sequence of changes in the endogenous ratio of estrogen to progesterone (6,22,96). Postcoitally administered estrogens may disturb that balance (6,9), so that endometrial development is altered and the blastocyst cannot implant. In women who have received estrogens postcoitally, endometrial characteristics which usually disappear as the menstrual cycle progresses persist until menstruation takes place. This is evidence of altered endometrial development (80,84).

The endogenous estrogen-progesterone balance may be disturbed because exogenous estrogen may decrease the production of progesterone by the corpus luteum (51), the glandular mass which is formed by the ovarian
<table>
<thead>
<tr>
<th>Author &amp; Date</th>
<th>Ref. No.</th>
<th>Estrogen Used</th>
<th>Regimen</th>
<th>No. of Cases</th>
<th>Treatment Criteria and Patient Characteristics</th>
<th>Failures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coe 1972</td>
<td>15</td>
<td>DES</td>
<td>25 mg twice a day for 4-5 days</td>
<td>96</td>
<td>Group 1: midcycle exposure; began regimen within 72 hours after exposure</td>
<td>2 pregnancies; 2.1 failure rate (%)</td>
</tr>
<tr>
<td>Crist &amp; Farrington 1973</td>
<td>17</td>
<td>CE</td>
<td>four 2.5 mg tablets 3 times a day for 5 days (i.e., 30 mg a day, total 150 mg)</td>
<td>194</td>
<td>Group 2: no definable midcycle or no resumption of menstruation after stopping oral contraception; unprotected coitus at midcycle (±3 days of expected date of ovulation) in 150; not at midcycle in 25</td>
<td>1 pregnancy; 1.8 failure rate (%)</td>
</tr>
<tr>
<td>Döring 1974</td>
<td>25</td>
<td>EE</td>
<td>1 mg a day for 5 days</td>
<td>32</td>
<td>NR</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Hall 1974</td>
<td>38</td>
<td>DES</td>
<td>50 mg daily for 4 days</td>
<td>107</td>
<td>unprotected coitus less than 6 days before beginning treatment</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Hespels &amp; Andriesse 1973</td>
<td>40</td>
<td>DES</td>
<td>at first, 25-50 mg for 5 days, later 50 mg for 5 days at first, 25-50 mg for 5 days, later 5 mg for 5 days</td>
<td>524</td>
<td>treatment began within 48 hours in 91%</td>
<td>4 pregnancies; 0.8 failure rate (%)</td>
</tr>
<tr>
<td>Kuchera 1974</td>
<td>60</td>
<td>DES</td>
<td>25 mg twice a day for 5 days</td>
<td>1,217</td>
<td>one unprotected or inadequately protected intercourse since last menstruation; treatment begun within 72 hours; followed regimen</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Lehfeldt 1973</td>
<td>63</td>
<td>EE</td>
<td>total of 6 to 10 mg over 3 days, later increased to 5 mg daily for 5 days</td>
<td>133</td>
<td>NR</td>
<td>2 pregnancies; 1.5 failure rate (%)</td>
</tr>
<tr>
<td>MacKinnon (in Morris &amp; van Wagenen 1973)</td>
<td>85</td>
<td>DES</td>
<td>NR</td>
<td>1,100</td>
<td>NR</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Massey et al. 1971</td>
<td>77</td>
<td>DES</td>
<td>25 mg twice a day for 5 days</td>
<td>247</td>
<td>victims of sexual assault</td>
<td>4 pregnancies; 1.6 failure rate (%)</td>
</tr>
<tr>
<td>Morris &amp; van Wagenen 1967</td>
<td>86</td>
<td>DES, EE</td>
<td>25-50 mg DES or 0.5-2 mg EE daily for 5 days</td>
<td>100</td>
<td>all midcycle exposures, all with basal body temperatures suggesting that ovulation had occurred. Subjects were volunteers.</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Morris &amp; van Wagenen 1973</td>
<td>85</td>
<td>DES, SD, EE, CE</td>
<td>NR</td>
<td>750</td>
<td>Yale-New Haven series; rigorous screening not possible</td>
<td>8 pregnancies; 1.1 failure rate (%)</td>
</tr>
<tr>
<td>Rosenfeld et al. 1975</td>
<td>97</td>
<td>DES</td>
<td>50 mg daily for 5 days</td>
<td>124</td>
<td>not limited to midcycle exposures</td>
<td>3 pregnancies; 2.4 failure rate (%)</td>
</tr>
<tr>
<td>Schumacher (in Morris &amp; van Wagenen 1973)</td>
<td>85</td>
<td>DES</td>
<td>NR</td>
<td>257</td>
<td>NR</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
<tr>
<td>Sparrow 1974</td>
<td>108</td>
<td>DES</td>
<td>25 mg twice a day for 5 days (injected)</td>
<td>80</td>
<td>ages 17-38; preovulatory or midcycle exposure or history of irregular menses</td>
<td>1 pregnancy; 1.2 failure rate (%)</td>
</tr>
<tr>
<td>Yussman (in By 1973)</td>
<td>9</td>
<td>CE</td>
<td>50 mg daily for 2 days (injected)</td>
<td>200</td>
<td>rape cases; treatment usually begun within 24 hours; follow-up difficult</td>
<td>0 pregnancies; 0 failure rate (%)</td>
</tr>
</tbody>
</table>

NR = Not Reported
DES = Diethylstilbestrol EE = Ethinyl Estradiol CE = Conjugated Equine Estrogens SD = Stilbestrol Diphosphate

aThree method failures (3 mg EE for 5 days, starting less than 36 hours after exposure—2 cases; 30 mg DES for 5 days starting less than 36 hours after exposure—1 case); 5 failures involved smaller doses; 1 involved treatment begun more than 36 hours after exposure; unprotected coitus later in the cycle known to have occurred in 2 other cases. Also, late treatment and small dose—2 cases, late treatment and other unprotected coitus—1 case

bOne pregnancy in a woman who started treatment 8 days after exposure; 1 possible ectopic pregnancy
cTwo failures attributed to improper timing; 5, to incorrect dosage; 1, to method failure
dOther exposures during same cycle in all 3 cases

eEctopic
follicle after ovulation. Postcoital administration of estrogens has been found to reduce levels of circulating progesterone. Also, it often prevents the rise in basal body temperature which is associated with the usual post-ovulatory rise in progesterone level (11,35,51,80).

Hormone changes probably act on the endometrium through a series of intermediate biochemical and morphological changes (94). An intermediate change, possibly important to implantation, may be the rise in the level of endometrial carbonic anhydrase (CAH). This action may help prepare the implantation site in the endometrium, may make the blastocyst more “sticky” (12), or may be necessary to the metabolism of the blastocyst (80). If so, the drop in CAH levels observed after postcoital administration of estrogens (10) may help prevent implantation (10,11,80).

An alternative hypothesis is that estrogens administered postcoitally speed or slow transport of the ovum through the oviducts, so that the ovum arrives in the uterus before or after the appropriate time for implantation. Under experimental conditions, estrogens have been observed to alter ovum transport rates in some animals. Ovum transport may be accelerated, slowed, or accelerated at one dosage and slowed at another (37). However, it is not known whether estrogens affect egg transport rates in women (9). Some women in whom the ovary was implanted in the uterus after removal of diseased oviducts have conceived. This suggests that, even if estrogens do alter ovum transport rates in women, accelerated transport would not necessarily prevent pregnancy in humans (80).

There is no evidence that estrogens directly destroy the mammalian blastocyst (8,9,50,80). Nor is there evidence that estrogens interrupt human pregnancy once gonadotropin levels have risen to a certain point, a point reached soon after implantation (3,9,52,53,82).

Genital Cancer?
There is virtually no likelihood that DES or other estrogens. when administered postcoitally, will lead to genital cancer in female offspring conceived if the treatment fails. This statement represents the preponderance of current medical and scientific opinion, and no evidence exists to contradict it. There is evidence, however, that, if a female embryo in utero is exposed to DES during the sixth week of gestation or later, she may face a higher than usual risk of developing a rare form of genital cancer later in life. The critical difference between postcoital administration and administration during the sixth week of pregnancy or later is the stage of development of the fertilized ovum at the time of exposure. Because most scientific and popular reports on DES and cancer in offspring have not emphasized the importance of the time of exposure, the public has been left to generalize about the dangers of DES. As a result, not only are many women who face the possibility of unwanted pregnancy refusing to request the “morning-after pill,” but also there are some attempts to restrict by law the use of DES. In the USA, pending legislation would require DES labeling to warn that “this drug may cause cancer” and that its contraceptive use should be limited to treatment of victims of “rape or incest or a comparable medical emergency” (118).

The cancer linked with use of DES during pregnancy is a rare form of the disease, clear-cell adenocarcinoma of the vagina or cervix. It has developed not in users of DES, but in a few of the daughters of women who took DES to prevent spontaneous abortion (45,47,48). The cancer usually has appeared during or after the daughter’s adolescence. Over 220 cases of adenocarcinoma of the vagina or cervix have been reported, most of them in the USA. Some 117 involve known exposure to DES or related stilbene derivatives hexestrol and dienestrol (45). During the late 1940s and the 1950s “hundreds of thousands and possibly millions” of US women took DES during pregnancy (45), but fewer than 200 cases have been reported; thus, the chances that an exposed daughter will develop adenocarcinoma appear to be slight—certainly “no greater than 4 in 1,000” (62) and probably far less than that (45). Concerning male offspring, a recent study found an increased incidence of various genital abnormalities, primarily cysts in the epididymis (ducts where sperm are stored), in 42 males exposed to DES in utero compared to 57 unexposed controls (5). Although no published case reports yet link steroidal estrogens, such as EE and conjugated estrogens, to adenocarcinoma, animal studies suggest that, if administered at the critical time, they could affect the genital tract like DES (33,34).

Time of in utero exposure is crucial to the possible association between DES and cancer in offspring because the sixth week of pregnancy begins the period of organogenesis, when the genital tract is forming in the embryo (18,57) and is extremely sensitive to teratogens (agents which cause birth defects) (121,122). At the time when it was used for pregnancy maintenance, DES was administered beginning during the sixth week of pregnancy or later (43), since pregnancy tests are not reliable before then. If, however, an agent is administered postcoitally and fertilization has taken place, it is the blastocyst (a fluid-filled ball of cells) that is exposed.

In general, if a blastocyst survives injury, it shows remarkable powers of recovery. Before the first chemical changes leading to cell differentiation take place, the injured blastocyst usually will continue to develop apparently in a normal manner (72,121). Furthermore, in the preimplantation period, because cells are not yet forming specific organs or tissues, teratogens could not ordinarily cause malformations in a specific organ or organ system, such as the reproductive system (121,122). A very few exceptions—cases of apparent survival of an irreparably damaged blastocyst and subsequent abnormal development—are known through studies on laboratory animals (42,121). There is no evidence that exposure of the blastocyst to estrogens affects later development of the individual. Minor changes in the growth patterns of the rabbit blastocyst itself have been observed after exposure to some estrogens (74), but whether these changes have any significance for later development is unknown. On the basis of her research with rabbits (69,72-75), Lutwak-Mann postulates that estrogens administered postcoitally affect the uterus primarily, and that any effect on the blastocyst results from changes in the uterus (70). This argues against the possibility of a teratogenic effect, especially one so specific as to result in vaginal abnormalities.
No empirical data involving humans exist either to confirm or to disprove a link between exposure of the blastocyst to DES (or any other estrogen) and the development of adenocarcinoma or of its possible precursor, adenosis (the presence of uterine-like tissue in the vagina), which has been observed in a high percentage of DES-exposed daughters (5,44,103,109,110) and in almost all adenocarcinoma patients (44). There are few reported instances of a human pregnancy being carried to term following failure of postcoital estrogens, since most women who seek postcoital contraception obtain induced abortion if contraception fails. Thus, there are not enough cases involving humans on which to base a conclusion. In rhesus monkeys, no fetal malformations were found in 50 offspring whose mothers had received subeffective doses of estrogens or related substances. No vaginal abnormalities were noted in the females (85). Further studies of nonhuman primates seem warranted. Findings in nonprimates might not be relevant because lower animals respond differently than do primates to estrogen administration during early pregnancy (71).

A few recent retrospective studies suggest that women who take conjugated estrogens for treatment of symptoms of the climacteric are more likely to develop endometrial cancer than those who do not (104,127). The conclusions reached by these studies have been challenged (38). Treatment involves taking conjugated estrogens for a long period of time, sometimes daily for several years, so total dosage is far higher than that used for postcoital contraception. Risk appeared to increase with duration of use (127).

**Other Serious Side Effects?**

Only one instance of a major side effect has been associated with postcoital use of estrogen: a woman who had a history of fluid retention before menstruation developed symptoms of acute pulmonary edema after three doses of DES. Administration of the drug was stopped and, with oxygen and supportive therapy, she recovered quickly (85).

Because the possibility of an association between increased incidence of thromboembolic disorders and use of DES to suppress lactation has been observed (20), clinicians have been watching for such disorders among women taking estrogens postcoitally. No thromboembolic incidents have been reported, however.

**Minor Side Effects**

The side effects of postcoital estrogens are those commonly associated with estrogens (see Table 2). The most frequent is nausea, sometimes accompanied by vomiting. Such gastric upset, if it occurs, usually develops six to eight hours after ingestion of a tablet (60) and is most severe during the first day or two of treatment (61,108).

Nausea and vomiting can usually be controlled by an antiemetic (40,60,86). Taking the estrogen tablets at mealtime may also help (63,85). Morris reports no gastric side effects in several hundred cases when DES tablets were “enteric-coated,” so that they did not dissolve in the stomach (81).

Vomiting may cause the woman to lose a tablet she has just taken. If this happens, she can take an antiemetic and then, after waiting 30 minutes, take another estrogen tablet (40). Haspels and Andriessen reported that a few women vomited all tablets on the first day of treatment. Rather than continuing to take tablets, they received injections of estradiol benzoate, 30 mg a day for five days (40).

Despite side effects, most women take all the tablets as required. The highest rate of failure to complete treatment was reported in a group of 396 rape victims: just over 10 percent did not take all the DES tablets they received. Of the four pregnancies in this group, two occurred in women who stopped taking the tablets due to side effects (77). In another study, only four of 124 women failed to take all their DES tablets; two, because of side effects (97).

Postcoital estrogens occasionally alter menstrual patterns. Spotting during or shortly after treatment occurs in a few women (60,77). Among Kuchera’s 1,217 DES patients, 13 percent found their menses occurred later than expected, while 5.5 percent found it occurred earlier than expected (60). On the other hand, in a large European study utilizing DES and EE, the percentage of shorter than expected cycles approximately equaled that of longer than expected cycles (40). Since cycle length can vary from one cycle to the next (14), changes may not always be due to estrogen treatment. However, because a woman may worry if she assumes delayed menses to be a sign of pregnancy, warning her of the possibility of delayed menses may avoid anxiety (60).

**PROGESTOSTEGOGENS**

South American trials of d-norgestrel and quingestanol acetate have shown that these progestogens may be effective postcoital contraceptives if used in proper doses. Both d-norgestrel and quingestanol acetate are also used as components of standard oral contraceptives. Results with postcoitally administered d-norgestrel have encouraged its manufacturer, Schering A. G. of Berlin, to plan marketing of a 0.6 mg dose. Under the brand name Postuna, 10-tablet packs of the new product will be sold first in Colombia. Postuna will be intended for women who have coitus infrequently. Women who have intercourse more than twice a week will be advised to use standard oral contraceptives (100).

In studies of postcoital use of d-norgestrel and of quingestanol acetate, women took the progestogens not after isolated acts of intercourse, as in most studies of estrogens, but continually, after each coitus, as a regular part of contraception. Field trials were designed this way to avoid religious or political controversy which might have arisen had the compounds been administered after isolated exposures (27). Because of the study design, failure rates for postcoital use of progestogens can be compared to those for other methods of contraception like IUDs and standard oral contraceptives.

Field trials show d-norgestrel to be effective over a range of doses. Quingestanol acetate appears effective in doses of 1.5 or 2.0 mg (see Table 3). While not so effective as combined estrogen-progestogen oral contraceptives used according to the standard regimen, postcoitally administered progestogens in the proper doses proved about as effective as IUDs or minipills (daily oral microdose progestogens), both theoretically and in practice.
Table 2—Side Effects of Estrogens Administered Post-coitally in Selected Studies, 1967-1975

<table>
<thead>
<tr>
<th>Author &amp; Date</th>
<th>Ref. No.</th>
<th>Number of Women</th>
<th>None</th>
<th>Nausea</th>
<th>Vomiting</th>
<th>Headache</th>
<th>Dizziness</th>
<th>Breast Soreness</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIETHYLSTILBESTROL (DES)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crist &amp; Farrington 1973</td>
<td>17</td>
<td>194</td>
<td>NR</td>
<td>6</td>
<td>4</td>
<td>NR</td>
<td>7</td>
<td>NR</td>
<td>4 (vaginal bleeding)</td>
</tr>
<tr>
<td>Hall 1974</td>
<td>38</td>
<td>75</td>
<td>NR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Haspels &amp; Andriesse 1973</td>
<td>40</td>
<td>524</td>
<td>NR</td>
<td>53</td>
<td>21</td>
<td>NR</td>
<td>NR</td>
<td>14</td>
<td>2 (menorrhagia)</td>
</tr>
<tr>
<td>Kuchera 1974</td>
<td>60</td>
<td>1,217</td>
<td>44</td>
<td>32</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>NR</td>
<td>1 (spotting)</td>
</tr>
<tr>
<td>Massey et al. 1971</td>
<td>77</td>
<td>396</td>
<td>NR</td>
<td>45</td>
<td>31</td>
<td>28</td>
<td>23</td>
<td>17</td>
<td>37 (sleepiness)</td>
</tr>
<tr>
<td>Morris &amp; van Wagene 1967</td>
<td>86</td>
<td>100</td>
<td>54</td>
<td>40</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>12</td>
<td>6 (prolonged menses)</td>
</tr>
<tr>
<td>Rosenfeld et al. 1975</td>
<td>97</td>
<td>124</td>
<td>25</td>
<td>27</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td><strong>ETHINYL ESTRADIOL (EE)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haspels &amp; Andriesse 1973</td>
<td>40</td>
<td>1,418</td>
<td>NR</td>
<td>53</td>
<td>23</td>
<td>NR</td>
<td>NR</td>
<td>21</td>
<td>13 (menorrhagia)</td>
</tr>
<tr>
<td>Lefeldt 1973</td>
<td>63</td>
<td>133</td>
<td>NR</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

*Response to inquiry about itching served as a "crude internal control," since itching is not considered a side effect of estrogens.

NR = Not Reported

While effective at doses of 1.5 or 2.0 mg, the efficacy of quingestanol acetate at doses of 0.5 to 0.8 mg varied greatly, apparently depending on how many tablets were taken during the cycle (78). For women who had intercourse frequently, and therefore were taking many tablets, the method was effective. For those who had intercourse less often, and therefore were taking fewer tablets, failure rates were high (see Table 3). Perhaps, at doses of 0.8 mg or less, the effectiveness of quingestanol acetate depended on the previous dose. The effectiveness both of quingestanol acetate and of d-norgestrel after a single, isolated act of intercourse needs further study. (Quingestanol acetate and norgestrel should not be compared by weight because the two differ in progestational effect per milligram.)

Postcoital progestogens may act by altering the endometrium, making it unsuitable for implantation (79). Minipills are thought to have a similar effect (see Population Reports A-3). In addition, Kesserü and his colleagues observed that, in women who had taken 0.4 mg d-norgestrel post-coitally, the number of motile sperm in uterine fluid decreased over a 10-hour period. They speculated that increased intrauterine pH, which they also observed, may immobilize sperm. This effect may contribute to the contraceptive action of an isolated postcoital dose of norgestrel (54). Action on pituitary-ovarian function probably is not the major mode of action of a single or a few doses of post-coital norgestrel taken in the pre-ovulatory phase of the menstrual cycle. With more doses, however, ovulation and subsequent menstruation may be delayed (16).

Study of progestogens as postcoital contraceptives started with the hope that a method without the side effects of estrogens could be developed (27). The attempt appears to have been successful. Systemic side effects such as nausea and vomiting were seldom reported in the South American field trials. In one study of d-norgestrel, nonmenstrual side effects occurred in less than 10 percent of users. Most were subjectively determined complaints like headaches, nervousness, and abdominal pain (55). However, progestogens, when administered without estrogen, sometimes alter menstrual patterns, whether taken by injection (see Population Reports K-1), orally as minipills (see Population Reports A-3), or post-coitally. Post-coital doses of 0.15 to 0.4 mg of d-norgestrel caused intermenstrual bleeding in 10 to 30 percent of cycles, with half the users experiencing at least one episode (55,79). However, with a 1.0 mg dose no spotting occurred in 557 cycles (28). At doses of 0.8 mg or less, quingestanol acetate produced spotting or breakthrough bleeding in 10 percent of cycles, a percentage similar to that associated with the 0.3 mg quingestanol acetate minipill (78,79). At doses of 1.5 and 2.0 mg, intermenstrual bleeding took place in 25 to 30 percent of cycles. The researchers considered this incidence so high as to make the method unacceptable for continual use (78). A single, isolated dose of progestogen can be expected to alter the menstrual pattern less than continual use will, but the effect of isolated doses on the menstrual pattern has not yet been reported.

**COMBINED ESTROGENS AND PROGESTOGENS**

Limited studies with estrogen-progestogen combinations suggest that these, too, may be effective as postcoital contraceptives. One study used the combination after isolated exposures; another, as a routine contraceptive method.
<table>
<thead>
<tr>
<th>Author and Date</th>
<th>Ref. No.</th>
<th>Regimen</th>
<th>No. of Women</th>
<th>No. of Cycles/ Months</th>
<th>Patient Characteristics</th>
<th>Doses per Cycle/ Month</th>
<th>No. of Pregnancies1</th>
<th>Failure Rate2</th>
</tr>
</thead>
<tbody>
<tr>
<td>d-NORGESTREL</td>
<td>28</td>
<td>1 mg within 8 hours after each coitus</td>
<td>NR</td>
<td>1,185 cycles</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Echeverry &amp; Sarria 1974</td>
<td>55</td>
<td>0.4 mg within 3 hours after each coitus</td>
<td>2,801</td>
<td>25,558 months</td>
<td>all of proved fertility</td>
<td>8.02 per month</td>
<td>75(35)</td>
<td>3.5(1.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.35 mg within 3 hours after each coitus</td>
<td>559</td>
<td>3,188 months</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>13(8)</td>
<td>4.8(3.0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.30 mg within 3 hours after each coitus</td>
<td>544</td>
<td>4,085 months</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>23(13)</td>
<td>6.7(3.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25 mg within 3 hours after each coitus</td>
<td>699</td>
<td>8,762 months</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>45(28)</td>
<td>6.2(3.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15 mg within 3 hours after each coitus</td>
<td>28</td>
<td>239 months</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>9(6)</td>
<td>45.2(3.0)</td>
</tr>
<tr>
<td>Kesseru et al. 1973</td>
<td>79</td>
<td>0.35 mg within one hour after each coitus</td>
<td>314</td>
<td>4,282 cycles</td>
<td>most enrolled post-partum</td>
<td>NR</td>
<td>8(3)</td>
<td>2.2(0.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 mg within 3 hours after each coitus</td>
<td>427</td>
<td>3,528 months</td>
<td>South American</td>
<td>NR</td>
<td>10(2)</td>
<td>3.4(0.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.8 mg within 3 hours after each coitus</td>
<td>700</td>
<td>6,647 months</td>
<td>women of proved fertility</td>
<td>NR</td>
<td>26(12)</td>
<td>4.7(2.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.7 mg within 3 hours after each coitus</td>
<td>420</td>
<td>3,688 months</td>
<td></td>
<td>NR</td>
<td>18(5)</td>
<td>5.8(1.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6 mg within 3 hours after each coitus</td>
<td>504</td>
<td>5,574 months</td>
<td></td>
<td>NR</td>
<td>28(10)</td>
<td>6.0(2.1)</td>
</tr>
<tr>
<td>Moggia et al. 1974</td>
<td>78</td>
<td>2.0 mg within 24 hours after each coitus</td>
<td>201</td>
<td>861 cycles</td>
<td>Peruvian women of proved fertility</td>
<td>7.8 per cycle</td>
<td>NR</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 mg as above</td>
<td>439</td>
<td>3,355 cycles</td>
<td>Peruvian women of proved fertility</td>
<td>7.8 per cycle</td>
<td>NR</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 mg as above</td>
<td>485</td>
<td>1,532 cycles</td>
<td>Argentine women of proved fertility</td>
<td>8.0 per cycle</td>
<td>NR</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.8 mg as above or at least 3 or 4 doses in the first two weeks of each cycle</td>
<td>300</td>
<td>6,525 cycles</td>
<td>Mexican women of proved fertility</td>
<td>12.7 per cycle</td>
<td>NR</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.75 mg within 24 hours after each coitus</td>
<td>447</td>
<td>2,388 cycles</td>
<td>Peruvian women of proved fertility</td>
<td>8.1 per cycle</td>
<td>NR</td>
<td>23.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6 mg as above</td>
<td>350</td>
<td>1,424 cycles</td>
<td>Chilean women of proved fertility</td>
<td>NR</td>
<td>NR</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mg as above</td>
<td>127</td>
<td>410 cycles</td>
<td>Mexican women of proved fertility</td>
<td>8.7 per cycle</td>
<td>NR</td>
<td>38.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mg as above</td>
<td>117</td>
<td>514 cycles</td>
<td>Mexican women of proved fertility</td>
<td>11.7 per cycle</td>
<td>NR</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mg as above</td>
<td>126</td>
<td>518 cycles</td>
<td>Mexican women of proved fertility</td>
<td>8.9 per cycle</td>
<td>NR</td>
<td>36.0</td>
</tr>
<tr>
<td>Schering A.G. 1976</td>
<td>100</td>
<td>0.5 mg within 1 hour after each coitus</td>
<td>585</td>
<td>4,732 cycles</td>
<td>most enrolled post-partum</td>
<td>8 per month</td>
<td>117(7)</td>
<td>2.8(1.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mg within 1 hour after each coitus</td>
<td>221</td>
<td>927 cycles</td>
<td>all of proved fertility</td>
<td>NR</td>
<td>5</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 mg within 24 hours after each coitus</td>
<td>200</td>
<td>1,004 cycles</td>
<td>selected for expected coital frequency of 2-4 per week</td>
<td>10.6 per cycle</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Yuzpe and colleagues gave 0.1 mg EE and 1.0 mg di­norgestrel to 143 Canadian college students who sought “morning after” contraception. The dose is the equivalent of two tablets of a standard oral contraceptive. Fifty-three percent of the women had had other sexual exposures during coitus, followed by twice the initial dose on the following day (112). Some women reported moderate nausea and/or breast discomfort (113). The mode of action of combined estrogen and progestogen when administered postcoitally is not known. Yuzpe and colleagues suggest that, when given early in the cycle, the steroids may produce endometrial changes that prevent implantation. When given late in the cycle, their effect may be to interrupt development of the implanted blastocyst (125).

Use of estrogen-progestogen combinations for postcoital contraception deserves further investigation. Since, apparently, women are already using standard oral contraceptives postcoitally on their own initiative, often in large dosages (21), research to determine the minimum effective dose and optimum regimen may be past due.

The copper IUD is the latest contraceptive method to be employed postcoitally. Such use was first publicly proposed by Tatum in January 1972 (114), and the first data were presented by Lippes, Malik, and Tatum in April 1975. No pregnancies occurred following 97 postcoital insertions of the copper T. Some 64 percent of the exposures had taken place between the tenth and twentieth days of the menstrual cycle, and the researchers estimated that pregnancy would have been likely in at least 10 to 20 percent of the women had they used no method of contraception (68). Since their first report, the researchers have inserted about 40 more copper Ts postcoitally, and still no pregnancies have occurred (66). As a result of the report by Lippes and colleagues, more and more US gynecologists are performing postcoital insertions of copper IUDs (67). Tatum and Lippes are planning a multicenter collaborative study to evaluate the method further (114).
The hypothesis behind postcoital insertion of a copper IUD is that the device prevents pregnancy by interfering with implantation of the blastocyst (see Population Reports B-1). Because implantation takes place six or more days after ovulation, an IUD can be inserted into the uterus after coitus but before the time of implantation. Lippes and colleagues chose a copper IUD because the contraceptive effect of the metal begins almost immediately upon insertion. So-called inert IUDs, on the other hand, may take several days or weeks to reach maximum effectiveness (114) and might be less effective when inserted postcoitally. Also, a copper IUD is easier than an inert IUD to insert into a nulliparous uterus (68).

An obvious advantage of the copper IUD over oral postcoital methods is that, once the device is inserted, the woman is protected during future exposures. Of the first 44 postcoital copper T patients followed up, 34 still had the IUD in place after six months; 30, even after one year. Another advantage of the IUD is that the side effects of insertion are less frequent and less severe than those associated with estrogens. The investigators point out that possible immediate side effects of IUD insertion—nausea and vagal reflex with slowing of the pulse—occur in few patients and usually last only three to 10 minutes. Lippes routinely uses paracervical anesthesia to reduce pain and vagal reflexes (68). For family planning programs, postcoital IUD insertion is advantageous because the same supplies and basic procedures can be used whether the insertion is performed postcoitally or not.

Postcoital insertion of the copper IUD is not completely without risk, however. The usual contraindications to IUD insertion should of course be observed. Insertion in a woman with undetected pregnancy, pelvic inflammatory disease, or venereal disease could result in serious complications. Lippes, noting that careful screening and follow-up will minimize such problems (2), reports that no complications have been observed among his patients (67). Nevertheless, because gonorrhea tests require several days to yield results, populations which have high VD rates and are also difficult to follow up would face particular risks. Postcoital insertion of the copper IUD deserves further evaluation.

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7. BŁYS, R. P. Personal communication, October 1, 1975. 1 p.

**PROGRAM ISSUES**

A variety of effective methods of postcoital contraception may soon be at hand for the woman who has had unprotected coitus. But with each new method, clinicians and family planning officials face many questions:

- What are the indications for treatment? Should all who request postcoital contraception receive it? Should only those exposed at midcycle receive it? Should only rape victims receive it?
- Can the program try to determine risk of pregnancy to help decide whether postcoital treatment is necessary or can be avoided? Should tests for sperm in the woman's genital tract be conducted? Should basal body temperature be measured to help decide whether ovulation has taken place?
- Which method is best for which woman?
- Should postcoital methods be used in preference to menstrual regulation, an early abortion procedure which can be performed between the date of a missed menstrual period and the sixth week of pregnancy, the earliest time at which current pregnancy tests are reliable (see Population Reports F-2 and F-4)?
- Should postcoital contraceptive methods be made available only where legal induced abortion provides a back-up in case of failure? Or, in countries where abortion is illegal, can postcoital methods obviate illicit abortions and attempts at self-induced abortion, which are so often unsafe?

More experience and further research will help answer these questions. The established contraceptive methods—oral contraceptives, condoms, IUDs, sterilization, and others—are likely to continue as the mainstays of family planning programs. However, the new postcoital methods fill an important gap in the array of fertility control services.
27. ECHEVERRY, G. Personal communication, December 2, 1975. 3 p.
43. HERBST, A. L. Personal communication, December 5, 1975. 1 p.


123. YUZPE, A. A. Personal communication, November 11, 1975. 1 p.


GWU-SCD-76-1P
ANNOUNCEMENT

Leon Tabah, Director of the United Nations Population Division, announced recently that a study to determine the feasibility of establishing an international population information network is now underway.

Three meetings on this subject are scheduled for 1976: the Technical Task Force will meet in Honolulu March 31-April 23, and again August 30-September 18 in Princeton, New Jersey. The final-report meeting to be held in Washington, D.C. Sept. 20-25 will be hosted by the Population Information Program of the George Washington University Medical Center.

Technical Task Force objectives include:

- a review of what now exists in terms of population information and which needs are being met by existing systems;
- an assessment of the needs of the population community which are not now being met;
- recommendations on satisfying unmet needs either by improvements to existing agencies or centers or through new services or centers.
- recommendations regarding the establishment of a co-operative network or system; these will deal with cost of alternative systems and their financing; training and education; methods and procedures; products; collaboration of existing population information systems in the network; definition of the scope of the system; the content of the system (e.g., bibliographic, statistical data, "project" data); languages and translation; the role of the U.N. in the system; technical assistance to countries; updating and maintenance of the system.

CICRED (International Committee to Co-ordinate National Research in Demography) is the co-ordinating body for the study.

Interim Steering Committee Members

- L. Tabah, Chairman, Director, U.N. Population Division
- J. Bourgeois-Pichat, Director, CICRED
- S. Baum, U.S. Census Bureau
- J. Bonnariage, International Union for Scientific Study of Population (IUSSP)
- M. Brandreth, International Development Research Centre Ottawa
- A. F. M. Burhanuddin, UNFPA
- A. Conning, CELADE, Santiago, Chile
- R. Hankinson, Population Index, Princeton
- H. K. Kolbe, Population Information Program, The George Washington University Medical Center
- J. Meyriat, International Committee for Social Science Information and Documentation
- C. Okonjo, U.N., Regional Institute for Population Studies, Accra

- L. Olson, ESCAP, Population Division, Bangkok
- J. v. d. Boomen, UN Population Division
- Bui-Dang-Ha, CICRED Consultant

Technical Task Force Members

- D. Radel, Administrative Organizer, East-West Communication Institute (EWCI)
- P. Amonoo, U.N. Regional Demographic Centre, Accra, Ghana
- H. Chiang, U.N. Economic and Social Commission for Asia and the Pacific (ESCAP)
- F. Delaney, International Development Research Centre (IDRC)

A U.N. Centro Latinoamericano de Demografia (CELADE) representative and a chairman will be named soon.