

Width: 473mm, Height: 299mm
Folded size: 79mm x 51mm

PREVIFEM®
(norgestimate and ethinyl estradiol tablets USP)

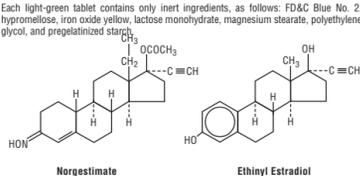
WARNINGS: CARDIOVASCULAR RISK ASSOCIATED WITH SMOKING
Cigarette smoking increases the risk of serious cardiovascular events from combination oral contraceptive use. This risk increases with age, particularly in women over 35 years of age, and with the number of cigarettes smoked. For this reason, combination oral contraceptives, including Previfem® (norgestimate and ethinyl estradiol tablets USP), should not be used by women who are over 35 years of age and smoke.

Patients should be counseled that this product does not protect against HIV infection (AIDS) and other sexually transmitted diseases.

DESCRIPTION
Previfem® (norgestimate and ethinyl estradiol tablets USP) is a combination oral contraceptive containing the progestational compound norgestimate and the estrogenic compound ethinyl estradiol.

Each blue tablet contains 0.25 mg of the progestational compound norgestimate (18,19-dinor-17-preg-4-en-20-yn-3-one-17-(acetoxyl)-13-ethyl-,oxime,(17 α)-(-)-) and 0.035 mg of the estrogenic compound, ethinyl estradiol (19-nor-17 α -pregna-1,3,5(10)-triene-20-yn-3,17-diol). Inactive ingredients include FD&C Blue No. 1 H Aluminate Lake, hydroxytoluene, lactose monohydrate, magnesium stearate, polyethylene glycol, and pregelatinized starch.

Each light-green tablet contains only inert ingredients, as follows: FD&C Blue No. 2, hydroxytoluene, iron oxide yellow, lactose monohydrate, magnesium stearate, polyethylene glycol, and pregelatinized starch.



CLINICAL PHARMACOLOGY
Oral Contraception
Combination oral contraceptives act by suppression of gonadotropins. Although the primary mechanism of this action is inhibition of ovulation, other alterations include changes in the cervical mucus (which increase the difficulty of sperm entry into the uterus) and the endometrium (which reduce the likelihood of implantation).
Receptor binding studies, as well as studies in animals and humans, have shown that norgestimate and 17-deacetyl norgestimate, the major serum metabolite, combine high progesterational activity with minimal intrinsic androgenicity^{96,97}. Norgestimate, in combination with ethinyl estradiol, does not counteract the estrogenic increases in sex hormone binding globulin (SHBG), resulting in lower serum testosterone^{98,99,100}.

Acne
Acne is a skin condition with a multifactorial etiology, including androgen stimulation of sebaceous production. While the combination of ethinyl estradiol and norgestimate increases sex hormone binding globulin (SHBG) and decreases free testosterone, the relationship between these changes and a decrease in the severity of facial acne in otherwise healthy women with this skin condition has not been established.

Pharmacokinetics
Absorption
Norgestimate (NGM) and ethinyl estradiol (EE) are rapidly absorbed following oral administration. Norgestimate is rapidly and completely metabolized by first pass (intestinal and/or hepatic) mechanisms to norgestimate (NGM) and norgestrel (NS), which are the major active metabolites of norgestimate.

Peak serum concentrations of NGM and EE are generally reached 2 hours after administration of Previfem®. Accumulation following multiple dosing of the 250 mcg NGM dose is approximately 2-fold for NGM and EE compared with single dose administration. The pharmacokinetics of NGM is dose proportional following NGM doses of 180 mcg to 250 mcg. Steady-state concentration of EE is achieved by Day 7 of each dosing cycle. Steady-state concentrations of NGM and NG are achieved by Day 21. Non-linear accumulation (approximately 8 fold) of norgestrel is observed as a result of high affinity binding to SHBG (sex hormone-binding globulin), which limits its biological activity.

Table 1: Summary of Norgestimate, Norgestrel and Ethinyl Estradiol Pharmacokinetic Parameters.

Mean (SD) Pharmacokinetic Parameters of Previfem® During a Three Cycle Study	Analyze	Cycle	Day	C _{max}	t _{max} (h)	AUC _{0-24h}	t _{1/2} (h)
NGM	1	1	1.78 (0.397)	1.19 (0.250)	9.90 (3.25)	18.4 (5.91)	
	3	21	2.19 (0.655)	1.43 (0.860)	18.1 (5.53)	24.9 (9.04)	
NG	1	1	0.649 (0.49)	1.42 (0.69)	6.22 (2.46)	37.8 (14.0)	
	3	21	2.65 (1.11)	1.67 (1.32)	48.2 (20.5)	45.0 (20.4)	
EE	1	1	92.2 (24.5)	1.2 (0.26)	639 (138)	10.1 (1.90)	
	3	21	147 (41.5)	1.13 (0.23)	1210 (294)	15.0 (2.36)	

C_{max} = peak serum concentration, t_{max} = time to reach peak serum concentration, AUC_{0-24h} = area under serum concentration-time curve from 0 to 24 hours, t_{1/2} = elimination half-life
NGM and NS: C_{max} = ng/mL, AUC_{0-24h} = h*ng/mL
EE: C_{max} = pg/mL, AUC_{0-24h} = h*pg/mL

Distribution
Norgestimate and norgestrel are highly bound (> 97%) to serum proteins. Norgestrel is bound to albumin and not to SHBG, while norgestrel is bound primarily to SHBG. Ethinyl estradiol is extensively bound (> 97%) to serum albumin and increases as increase in the serum concentrations of SHBG.

Excretion
Norgestimate is extensively metabolized by first-pass mechanisms in the gastrointestinal tract and/or liver. Norgestimate's primary active metabolite is norgestimate. Subsequent hepatic metabolism of norgestimate occurs and metabolites include norgestrel, which is also active and various hydroxylated and conjugated metabolites. Ethinyl estradiol is also metabolized to various hydroxylated products and their glucuronide and sulfate conjugates.

Elimination
The metabolites of norgestimate and ethinyl estradiol are eliminated by renal and fecal pathways. Following administration of ¹⁴C-norgestimate, 47% (45 to 49%) and 37% (16 to 49%) of the administered radioactivity was eliminated in the urine and feces, respectively. Unchanged norgestimate was not detected in the urine. In addition to 17-deacetyl norgestimate, a number of metabolites of norgestimate have been identified in human urine following administration of radiolabeled norgestimate. These include 18-, 19-dinor-17-preg-4-en-20-yn-3-one-17-hydroxy-13-ethyl-, (17 α)-(-)-18,19-dinor-5 α -17-pregnan-20-yn-3 α ,17 β -dihydroxy-13-ethyl-, (17 α)-, various hydroxylated metabolites and conjugates of these metabolites.

Special Populations
The effects of body weight, body surface area or age on the pharmacokinetics of Previfem® have not been studied.

Hepatic Impairment
The effects of hepatic impairment on the pharmacokinetics of Previfem® have not been studied. However, steroid hormones may be poorly metabolized in women with impaired liver function (see PRECAUTIONS).

Renal Impairment
The effects of renal impairment on the pharmacokinetics of Previfem® have not been studied.

Drug-Drug Interactions
No formal drug-drug interaction studies were conducted with Previfem®. Interactions between contraceptive steroids and other drugs have been reported in the literature (see PRECAUTIONS).

Although norgestimate and its metabolites inhibit a variety of P450 enzymes in human liver microsomes, under the recommended dosing regimen, the *in vivo* concentrations of norgestimate and its metabolites, even at the peak serum levels, are relatively low compared to the inhibitory constant (K_i).

INDICATIONS AND USAGE
Previfem® (norgestimate and ethinyl estradiol tablets USP) is indicated for the prevention of pregnancy in women who elect to use oral contraceptives as a method of contraception.

Oral contraceptives are highly effective for pregnancy prevention. Table II lists the typical accidental pregnancy rates for the use of combination oral contraceptives and other methods of contraception. The efficacy of these contraceptive methods, except sterilization, the IUD, and the Norplant System, depends upon the reliability with which they are used. Correct and consistent use of methods can result in lower failure rates.

Table II: Percentage of Women Experiencing an Unintended Pregnancy During the First Year of Typical Use and the First Year of Perfect Use of Contraception and the Percentage Continuing Use at the End of the First Year, United States.

Method (1)	Typical Use ⁽²⁾	Perfect Use ⁽³⁾	(4)
Chance ⁴	85	85	
Spermicide ⁵	26	6	40
Periodic abstinence	25		63
Calendar		9	
Ovulation Method		3	
Sympto-Thermal ⁶		2	
Post-Ovulation		1	
Cap ⁷			
Parous Women	40	26	42
Nulliparous Women	20	9	56
Sponge			
Parous Women	40	20	42
Nulliparous Women	20	9	56
Diaphragm ⁸		6	56
Withdrawal		4	
Condom ⁹			
Female (Reality) ¹⁰	21	5	56
Male	14	3	61
Pill	5		71
Progestin Only		0.5	
Combined		0.1	
IUD			
Progestrone T	2.0	1.5	81
Copper T380A	0.8	0.6	78
LHg 20	0.1	0.1	81
Depo-Provera ¹¹	0.3	0.3	70
Norplant-2	0.05	0.05	88
Female Sterilization	0.5	0.5	100
Male Sterilization	0.15	0.10	100

Hatcher et al., 1998 Ref. #1.
Emergency Contraceptive Pills: Treatment initiated within 72 hours after unprotected intercourse reduces the risk of pregnancy by at least 75%.⁹
Lactational Amenorrhea Method: LAM is a highly effective, temporary method of contraception.
Source: Trussell J. Contraceptive Efficacy. In Hatcher RA, Trussell J, Stewart F, Cates W, Stewart GK, Kowal D, Guest F, Contraceptive Technology, Seventeenth Revised Edition. New York NY: Irvington Publishers, 1998.

¹ Among typical couples who initiate use of a method (not necessarily for the first time) and who use it perfectly (both consistently and correctly), the percentage who experience an accidental pregnancy during the first year if they do not stop use for any other reason.
² Among couples who initiate use of a method (not necessarily for the first time) and who use it perfectly (both consistently and correctly), the percentage who experience an accidental pregnancy during the first year if they do not stop use for any other reason.
³ Among couples attempting to avoid pregnancy, the percentage who continue to use a method for one year.

⁴ The percents becoming pregnant in columns (2) and (3) are based on data from populations where control and perfect use is not used and from women who cease use of a method in order to become pregnant. Among such populations, about 89% become pregnant within one year. This estimate was lowered slightly (to 85%) to account for the percent of women who do not attempt to become pregnant and who rely on reversible methods of contraception if they abandoned contraception altogether.
⁵ Foams, creams, gels, vaginal suppositories, and vaginal film.

⁶ Cervical mucus (ovulation) method supplemented by calendar in the pre-ovulatory and basal body temperature in the post-ovulatory phases.
⁷ With spermicidal cream or jelly.
⁸ Without spermicides.
⁹ The treatment schedule is one dose within 72 hours after unprotected intercourse, and a second dose 12 hours after the first dose. The Food and Drug Administration has declared the following brands of oral contraceptives to be safe and effective for emergency contraception: Ovral® (1 dose is 2 white pills), Alesse® (1 dose is 5 pink pills), Norelde® or Leven® (1 dose is 2 light-orange pills), Lo/Ovral® (1 dose is 4 white pills), Triphasil® or Tri-Leven® (1 dose is 4 yellow pills).

¹⁰ However, to maintain effective protection against pregnancy, another method of contraception must be used as soon as menstruation resumes, the frequency or duration of breastfeeds is reduced, bottle feeds are introduced, or the baby reaches six months of age.

¹¹ Previfem® has not been studied for and is not indicated for use in emergency contraception.

Contraindications
Oral contraceptives should not be used in women who currently have the following conditions:
• Thrombophlebitis or thromboembolic disorders
• A past history of deep vein thrombophlebitis or thromboembolic disorders
• Known thrombotic conditions
• Cerebral vascular or coronary artery disease (current or past history)
• Valvular heart disease with complications
• Persistent blood pressure values of ≥ 160 mm Hg systolic or ≥ 100 mm Hg diastolic¹⁰⁰
• Diabetes with vascular involvement
• Headaches with focal neurological symptoms
• Major surgery with prolonged immobilization
• Known or suspected carcinoma of the breast or personal history of breast cancer
• Carcinoma of the endometrium or other known or suspected estrogen-dependent neoplasia
• Undiagnosed abnormal genital bleeding
• Cholestatic jaundice of pregnancy or jaundice with prior pill use
• Acute or chronic hepatocellular disease with abnormal liver function
• Hepatic adenomas or carcinomas
• Known or suspected pregnancy
• Hypersensitivity to any component of this product

Warnings
Cigarette smoking increases the risk of serious cardiovascular events from combination oral contraceptive use. This risk increases with age, particularly in women over 35 years of age, and with the number of cigarettes smoked. For this reason, combination oral contraceptives, including Previfem® (norgestimate and ethinyl estradiol tablets USP), should not be used by women who are over 35 years of age and smoke.

The use of oral contraceptives is associated with increased risks of several serious conditions including myocardial infarction, thromboembolism, stroke, hepatic neoplasia, and gallbladder disease, although the risk of serious morbidity or mortality is very small in healthy women without underlying risk factors. The risk of morbidity and mortality increases significantly in the presence of other underlying risk factors such as hypertension, hyperlipidemias, obesity and diabetes.

Practitioners prescribing oral contraceptives should be familiar with the following information relating to these risks.
The information contained in this package insert is principally based on studies carried out in patients who used oral contraceptives with higher formulations of estrogens and progestogens than those in common use today. The effect of long-term use of the oral contraceptives with lower formulations of both estrogens and progestogens remains to be determined.

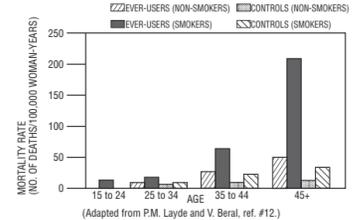
Throughout this labeling, epidemiological studies reported are of two types: retrospective or case control studies and prospective or cohort studies. Case control studies provide a measure of the relative risk of a disease, namely, a ratio of the incidence of a disease among oral contraceptive users to that among nonusers.

The relative risk does not provide information on the actual clinical occurrence of a disease. Cohort studies provide a measure of attributable risk, which is the difference in the incidence of disease between oral contraceptive users and nonusers. The relative risk does not provide information about the actual occurrence of a disease in the population (adapted from refs. 2 and 3 with the author's permission). For further information, the reader is referred to a text on epidemiological methods.

1. Thromboembolic Disorders and Other Vascular Problems
An increased risk of myocardial infarction has been attributed to oral contraceptive use. This risk is primarily in smokers or women with other underlying risk factors for coronary artery disease such as hypertension, hypercholesterolemia, morbid obesity, and diabetes. The relative risk of heart attack for current oral contraceptive users has been estimated to be two to six¹⁰¹⁻¹⁰⁴. The risk is very low under the age of 30.

Smoking in combination with oral contraceptive use has been shown to contribute substantially to the incidence of myocardial infarctions in women in their mid-thirties or older with smoking accounting for the majority of excess cases¹⁰⁵. Mortality rates associated with circulatory disease have been shown to increase substantially in smokers, especially in those 35 years of age and older and in nonsmokers over the age of 40 among women who use oral contraceptives (see Figure 1).

Figure 1. Circulatory Disease Mortality Rates Per 100,000 Women-Years By Age, Smoking Status and Oral Contraceptive Use.



Oral contraceptives may compound the effects of well-known risk factors, such as hypertension, diabetes, hyperlipidemias, age and obesity¹⁰⁶. In particular, some progestogens are known to decrease HDL cholesterol and cause glucose intolerance, and estrogens may create a state of hyperinsulinism¹⁰⁷. Oral contraceptives have been shown to increase blood pressure among users (see Section 9 in WARNINGS). Similar effects on risk factors have been associated with an increased risk of heart disease. Oral contraceptives must be used with caution in women with cardiovascular disease risk factors.

Norgestimate has minimal androgenic activity (see CLINICAL PHARMACOLOGY), and there is some evidence that the risk of myocardial infarction associated with oral contraceptives is lower when the progestogen has minimal androgenic activity than when the activity is greater¹⁰⁸.

b. Thromboembolism
An increased risk of thromboembolic and thrombotic disease associated with the use of oral contraceptives is well established. Case control studies have found the relative risk of users compared to nonusers to be 3 for the first episode of superficial venous thrombosis, 4 to 11 for deep vein thrombosis or pulmonary embolism, and 1.5 to 6 for women with predisposing conditions for venous thromboembolic disease^{23,19,24}. Cohort studies have shown the relative risk to be somewhat lower, about 3 for new cases and about 4.5 for new cases requiring hospitalization²⁵. The risk of thromboembolic disease associated with oral contraceptives is not related to length of use and disappears after pill use is stopped²⁶.

A two- to four-fold increase in relative risk of post-operative thromboembolic complications has been reported with the use of oral contraceptives. The relative risk of venous thrombosis may be minimal²⁷⁻³⁴. The recent findings of minimal risk may be related to the use of oral contraceptive formulations containing lower hormonal doses of estrogens and progestogens.

6. Oral Contraceptive Use Before or During Early Pregnancy
Extensive epidemiological studies have revealed no increased risk of birth defects in women who have used oral contraceptives prior to pregnancy^{35,36}. The results of recent studies also do not indicate a teratogenic effect, particularly in so far as cardiac anomalies and limb reduction defects are concerned^{35,36,38,39} when taken inadvertently during early pregnancy.

The administration of oral contraceptives to induce withdrawal bleeding should not be used as a test for pregnancy. Oral contraceptives should not be used during pregnancy to treat threatened or habitual abortion.

It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. Oral contraceptive use should be discontinued if pregnancy is confirmed.

7. Gallbladder Disease
Earlier studies have reported an increased lifetime relative risk of gallbladder surgery in users of oral contraceptives and estrogens^{40,41}. More recent studies, however, have shown that the relative risk of developing gallbladder disease among oral contraceptive users may be minimal⁴²⁻⁴⁴. The recent findings of minimal risk may be related to the use of oral contraceptive formulations containing lower hormonal doses of estrogens and progestogens.

8. Carbohydrate and Lipid Metabolic Effects
Oral contraceptives have been shown to cause a decrease in glucose tolerance in a significant percentage of users⁴⁵. This effect has been shown to be directly related to estrogen doses⁴⁶. Progestogens increase insulin secretion and create insulin resistance, this effect varying with different progestational agents⁴⁷. In women in the non-diabetic woman, oral contraceptives appear to have no effect on fasting blood glucose⁴⁸. Because of these demonstrated effects, prediabetic and diabetic women should be carefully monitored while taking oral contraceptives.

A small proportion of women will have persistent hypertriglyceridemia while on the pill. As discussed earlier (see WARNINGS 7a and 7d), changes in serum triglycerides and lipoprotein levels have been reported in oral contraceptive users.

In clinical studies with norgestimate and ethinyl estradiol there was no clinically significant changes in fasting blood glucose levels. No statistically significant changes in mean fasting blood glucose levels were observed over 24 cycles of use. Glucose tolerance tests showed minimal, clinically insignificant changes from baseline to cycles 12 and 24.

9. Elevated Blood Pressure
Women with significant hypertension should not be started on hormonal contraceptive⁴⁹. An increase in blood pressure has been reported in women taking oral contraceptives, and this increase is more likely in older women and contraceptive users⁵⁰ and with extended duration of use⁵¹. Data from the Royal College of General Practitioners⁵² and subsequent randomized trials have shown that the incidence of hypertension increases with increasing prostestational actions and the activity of the progestogen used in the contraceptives. The activity and amount of both hormones should be considered in the choice of an oral contraceptive.

Monitoring exposure to estrogen and progestogen is in keeping with good principles of therapeutics. For any particular estrogen/progestogen combination, the dosage regimen prescribed should be one which contains the least amount of estrogen and progestogen that is compatible with a low failure rate and the needs of the individual patient. New acceptors of oral contraceptive agents should be started on preparations containing the lowest estrogen content which is judged appropriate for the individual patient.

a. Persistence of Risk of Vascular Disease
Some studies which have shown persistence of risk of vascular disease for ever-users of oral contraceptives. In a study in the United States, the risk of developing myocardial infarction after discontinuing oral contraceptives persists for at least 9 years for women 40 to 49 years who had used oral contraceptives for five or more years, but this increased risk was not demonstrated in other age groups⁵³. In another study in Great Britain, the risk of developing cerebrovascular disease persisted for at least 6 years after discontinuation of oral contraceptives, although excess risk was small⁵⁴. However, both studies were performed with oral contraceptive formulations containing 50 micrograms or higher of estrogens.

2. Estimates of Mortality From Contraceptive Use
One study gathered data from a variety of sources which have estimated the mortality rate associated with different methods of contraception at different ages (Table II). These estimates include the combined risk of death associated with contraceptive methods plus the risk attributable to pregnancy in the event of method failure. Each method of contraception has its specific benefits and risks. The study concluded that with the exception of oral contraceptive users 35 and older who smoke, and 40 and older who do not smoke, mortality associated with all methods of birth control is low and below that associated with childbirth. The observation of an increase in risk of mortality with age for oral contraceptive users is based on data gathered in the 1970's⁵⁵. Current clinical recommendation involves the use of lower estrogen dose formulations and a careful consideration of risk factors. In the Family Planning Matrix Study, the Committee was asked to review the use of oral contraceptives in women 40 years of age and over. The Committee concluded that although cardiovascular disease risks may be increased with oral contraceptive use after age 40 in healthy non-smoking women (even with the newer low-dose formulations), there are also greater potential health risks associated with pregnancy in older women and with the alternative surgical and medical procedures which may be necessary if such women do not have access to effective and acceptable means of contraception. The Committee recommended that the benefits of low-dose oral contraceptives by healthy non-smoking women over 40 may outweigh their possible risks.

Of course, older women, as all women, who take oral contraceptives, should take an oral contraceptive which contains the least amount of estrogen and progestogen that is compatible with a low failure rate and individual patient needs.

Table III: Annual Number of Birth-Related or Method-Related Deaths Associated With Control of Fertility Per 100,000 Non-Sterile Women, by Fertility Control Method According to Age.

Method of control and outcome	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44
Control Methods- ¹ Condom ²	7.0	7.4	9.1	14.8	25.7	28.2
Oral contraceptives non-smoker ³	0.3	0.5	0.9	1.9	13.8	31.6
Oral contraceptives smoker ⁴	2.2	3.4	6.6	13.5	51.1	117.2
IUD ⁵	0.8	0.8	1.0	1.0	1.4	1.4

(continued)

Table III: Annual Number of Birth-Related or Method-Related Deaths Associated With Control of Fertility Per 100,000 Non-Sterile Women, by Fertility Control Method According to Age.

Method According to Age	1.1	1.6	0.7	0.2	0.3	0.4
Condom ¹	1.1	1.6	0.7	0.2	0.3	0.4
Diaphragm/spermicide ²	1.9	1.2	1.2	1.3	2.2	2.8
Periodic abstinence ³	2.5	1.6	1.6	1.7	2.9	3.6

¹ Deaths are birth-related.
² Deaths are method-related.
Adapted from H.W. Ory, ref. 55.

3. Carcinoma of the Reproductive Organs and Breasts
Numerous epidemiological studies have been performed on the incidence of breast, endometrial, ovarian, and cervical cancer in women using oral contraceptives. The risk of breast cancer diagnosed before age 50 has been reported to be slightly increased among recent users of combination oral contraceptives (COCs). However, this excess risk appears to decrease over time after COC discontinuation and by 10 years after cessation the increased risk disappears. Some studies report an increased risk of breast cancer in women who use oral contraceptives and do not and no consistent relationships have been found with dose or type of steroid. Some studies have found a small increase in risk for women who first use COCs before age 20. Most studies show a similar pattern of risk with COC use regardless of a woman's reproductive history or her family breast cancer history.

Breast cancers diagnosed in current or previous oral contraceptive users tend to be less clinically advanced than in nonusers. Women who currently have or have had breast cancer should not use oral contraceptives because breast cancer is usually a hormonally-sensitive tumor.

Some studies suggest that oral contraceptive use has been associated with an increase in the risk of cervical intraepithelial neoplasia in some populations of women^{56,57}. However, there continues to be controversy about the extent to which such findings may be due to differences in sexual behavior and other factors. In spite of many studies of the relationship between oral contraceptive use and breast and cervical cancers, a cause-and-effect relationship has not been established.

4. Hepatic Neoplasia
Benign hepatic adenomas are associated with oral contraceptive use, although the incidence of benign tumors is rare in the United States. Indirect calculations have estimated the attributable risk to be in the range of 3.3 cases/100,000 for users, a risk that increases after four or more years of use especially with oral contraceptives of higher dose⁵⁸. Rupture of benign, hepatic adenomas may cause death through intra-abdominal hemorrhage^{59,61}.

Studies from Britain have shown an increased risk of developing hepatocellular carcinoma in long-term (> 8 years) oral contraceptive users. However, these studies are extremely rare in the U.S. and the attributable risk (the excess incidence of liver cancers in oral contraceptive users) approaches less than one per million users.

5. Ocular Lesions
There have been clinical case reports of retinal thrombosis associated with the use of oral contraceptives. Oral contraceptives should be discontinued if there is unexplained partial or complete loss of vision; onset of protracted or diplopia; papilloedema; or retinal vascular lesions. Appropriate diagnostic and therapeutic measures should be undertaken immediately.

6. Oral Contraceptive Use Before or During Early Pregnancy
Extensive epidemiological studies have revealed no increased risk of birth defects in women who have used oral contraceptives prior to pregnancy^{35,36}. The results of recent studies also do not indicate a teratogenic effect, particularly in so far as cardiac anomalies and limb reduction defects are concerned^{35,36,38,39} when taken inadvertently during early pregnancy.

The administration of oral contraceptives to induce withdrawal bleeding should not be used as a test for pregnancy. Oral contraceptives should not be used during pregnancy to treat threatened or habitual abortion.

It is recommended that for any patient who has missed two consecutive periods, pregnancy should be ruled out. If the patient has not adhered to the prescribed schedule, the possibility of pregnancy should be considered at the time of the first missed period. Oral contraceptive use should be discontinued if pregnancy is confirmed.

7. Gallbladder Disease
Earlier studies have reported an increased lifetime relative risk of gallbladder surgery in users of oral contraceptives and estrogens^{40,41}. More recent studies, however, have shown that the relative risk of developing gallbladder disease among oral contraceptive users may be minimal⁴²⁻⁴⁴. The recent findings of minimal risk may be related to the use of oral contraceptive formulations containing lower hormonal doses of estrogens and progestogens.

M. Oral contraceptive and myocardial infarction revisited: the effects of new preparations and prescribing patterns. *Br J Obstet Gynaecol* 1981; 88:838-845. 5. Mann J, Janin WH. Oral contraceptives and death from myocardial infarction. *Br Med J* 1975; 2(5960):245-248. 6. Mann J, Vessey MP, Marmot J. Myocardial infarction in young women with oral contraceptives. *Br Med J* 1975; 2(5956):241-245. 7. Royal College of General Practitioners. Oral Contraceptive Study. Effect on oral contraceptive users. *Lancet* 1981; 1:541-546. 8. Slone D, Shapiro S, Kaufman DW, Rosenberg L, Miettinen OS, Stolley PD. Risk of myocardial infarction in relation to current and discontinued use of oral contraceptives. *Am J Epidemiol* 1981; 113:429-434. 9. Vessey MP. Female hormones and vascular disease – an epidemiological overview. *Br J Fam Pract* 1980; 6 (Supplement): 1-12. 10. Russell-Brielle RG, Ezzi T, Fulwood R, Periman JA, Murphy BS. Cardiovascular health of Young Women. *Am J Epidemiol* 1980; 112:33-38. 11. Gouldman GM, Kendrick JS, Hoggelin GC, Gentry EM. The relative impact of smoking and oral contraceptive use on women in the United States. *JAMA* 1987; 258:1539-1542. 12. Layton PM, Beril V. Further analysis of mortality in oral contraceptive users. *Royal College of General Practitioners' Oral Contraception Study*, (Table 5) *Lancet* 1981; 1:541-546. 13. Knopp RH. Arteriosclerosis risk: the roles of oral contraceptives and postmenopausal estrogens. *J Reprod Med* 1986; 31(9)(Supplement): 913-921. 14. Krauss RM, Roy S, Mitchell DR, Casagrande J, Pike MK. Effects of two low-dose oral contraceptives on serum lipids and lipoproteins. Differential changes in high-density lipoprotein subclasses. *J Obstet Gynecol* 1982; 135:449-453. 15. Wain P, Walden C, Knopp R, Hoover J, Wallace R, Hess G, Rifkind B. Effect of estrogen/progestin potency on lipid/protein cholesterol. *N Engl J Med* 1983; 308:982-987. 16. Wynn V, Nithyananthan R. The effect of progestin in combined oral contraceptives on serum lipids with special reference to high-density lipoproteins. *Am J Obstet Gynecol* 1982; 142:766-771. 17. Wynn V, Goddard L. Effects of oral contraceptives on carbohydrate metabolism. *J Reprod Med* 1986; 31(9)(Supplement):892-897. 18. LaRosa JC. Atherosclerotic risk factors in cardiovascular disease. *J Reprod Med* 1986; 31(9)(Supplement): 906-912. 19. Inman WH, Vessey MP. Investigation of deaths from coronary, coronary, and cerebral thrombosis and embolism in women of child-bearing age. *Br Med J* 1968; 2(5599):193-199. 20. Maguire MS, Tonascia J, Sartwell PE, Taylor PO, Tozman MS. Increased risk of oral contraceptives: a further report. *Am J Epidemiol* 1978; 110(2):188-195. 21. Pettit DB, Wingerd J, Pellegrin F, Ranschauser S. Risk of vascular disease in women: smoking, oral contraceptives, nonconceptive estrogens, and other factors. *JAMA* 1978; 242:1150-1154. 22. Vessey MP, Doll R. Investigation of relation between use of oral contraceptives and thromboembolic disease. *Br Med J* 1968; 2(5599):199-205. 23. Vessey MP, Doll R. Investigation of relation between use of oral contraceptives and thromboembolic disease. A further report. *Br Med J* 1969; 2(5655):651-657. 24. Porter JB, Hunter JR, Danielson DA, Jack H, Stergachis A. Oral contraceptives and non-fatal vascular disease – recent experience. *Obstet Gynecol* 1982; 59(3):295-302. 25. Vessey MP, Doll R, Petro R, Johnson B, Wiggins P. An interim follow-up study of women who are taking different methods of contraception: an interim report. *J Biosocial Sci* 1976; 8:375-427. 26. Royal College of General Practitioners. Oral Contraceptives, venous thrombosis, and varicose veins. *J Royal Coll Gen Pract* 1978; 28:393-399. 27. Collaborative Group for the Study of Stroke in Young Women. Oral contraception and increased risk of cerebral ischemia or thrombosis. *N Engl J Med* 1978; 298:871-878. 28. Pettit DB, Wingerd J. Use of oral contraceptives, cigarette smoking, and risk of subarachnoid hemorrhage. *Lancet* 1978; 2:234-236. 29. Inman WH. Oral contraceptives and fatal subarachnoid hemorrhage. *Br Med J* 1979; 2(6203):1468-1470. 30. Collaborative Group for the Study of Stroke in Young Women. Oral Contraceptives and stroke in young women: assigned risk factors. *JAMA* 1975; 231:717-722. 31. Inman WH, Vessey MP, Westminster B, Engstedt A. Thromboembolic disease and the steroidal content of oral contraceptives. A report to the Committee on Safety of Drugs. *Br Med J* 1970; 2:203-209. 32. Meade TW, Greenberg G, Thompson SG. Progestogens and cardiovascular reactions associated with oral contraceptives. *Br Med J* 1970; 2(11):35-39. 33. Royal College of General Practitioners. Oral Contraception Study. Effect on oral contraceptive users. *Lancet* 1981; 1:541-546. 34. Vessey MP, Doll R, Jones L, Roberts M. Early onset of breast cancer. Relation of oral contraceptive use to breast cancer. *Br J Cancer* 1987; 56:553-600. 42. Huggins GR, Zanker PR. Oral contraceptives and neoplasia. 1987 update. *Fertil Steril* 1987; 47:33-761. 43. McPherson K, Dife JO. The pill and breast cancer. *Br Med J* 1980; 283:29-31. 44. Shapiro S. Oral contraceptives – time to take stock. *N Engl J Med* 1987; 315:450-451. 45. Chao Y, Nahn Z, Conger SB, Hatcher RA, Tyler CW. Contraceptive choice and prevalence of cervical dysplasia and cancer. *Am J Obstet Gynecol* 1978; 128:673-677. 46. Vessey MP, Lawless M, McPherson K, Yeates D. Neoplasia of the cervix uteri and contraception: a possible adverse effect of the pill. *Lancet* 1983; 2:930. 47. Brinton LA, Huggins GR, Lehman HF, Malm K, Savitz DA, Trappo E, Rosenthal J, Hoover R. Long term use of oral contraceptives and risk of invasive cervical cancer. *Int J Cancer* 1986; 38:339-344. 48. WHO Collaborative Study of Neoplasia and Steroid Contraceptives: Invasive cervical cancer and combined oral contraceptives. *Br Med J* 1985; 2(91):965-969. 49. Rockwell JB, Orr HW, Ishak KO, Strauss LT, Greenspan JR, Hill AP, Tyler CW. Epidemiology of the reproductive adenomas: the role of oral contraceptive use. *JAMA* 1975; 242:644-650. 50. Liu MH, Goldenrath HS. Recurrent massive hemorrhage from benign hepatic tumors secondary to oral contraceptives. *Br J Surg* 1977; 64:433-435. 51. Katskin G. Hepatic tumors: possible relationship to use of oral contraceptives. *Gastroenterology* 1977; 73:388-394. 52. Henderson BE, Preston-Martin S, Edmondson HA, Peters RL, Pike MK. Hepatocellular carcinoma and oral contraceptives. *Br J Cancer* 1983; 48:347-400. 53. Neuberger J, Forman D, Doll R. Oral contraceptives and hepatocellular carcinoma. *Br Med J* 1986; 292:1355-1357. 54. Forman D, Vincent TJ, Doll R, Lacey G, Saksela E, Saven L. Teratogenic hazards of oral contraceptives. *Am J Epidemiol* 1981; 114:521-524. 57. Janerich DT, Piper JM, Roberts DM. Oral contraceptive use and other risk exposures of children with congenital heart disease. *Am J Epidemiol* 1979; 109:433-439. 60. Boston Collaborative Drug Surveillance Program. Oral contraceptives and venous thromboembolic disease. *Obstet Gynecol* 1982; 59(3):295-302. 61. Royal College of General Practitioners. Oral Contraceptives and health. New York. Pitman Press 1977; 1:824. 62. Fish R, Frank J. Oral contraceptives and blood pressure. *JAMA* 1977; 237:2499-2503. 70. Laragh JH. Oral contraceptive induced hypertension – nine years later. *Am J Obstet Gynecol* 1976; 126:141-147. 71. Ramcharan S, Pariz E, Pellegrin FA, Williams WT. Incidence of hypertension in the Walnut Creek Contraceptive Drug Study cohort. In: *Pharmacology of Steroid Contraceptive Drugs*. Garattini S, Berendes HW. Eds. New York, Raven Press, 1977; pp. 277-289. (Monographs of the Mario Negri Institute for Pharmacological Research Milan). 72. Stockley I. Interactions with oral contraceptives. *J Pharm* 1976; 216:140-143. 73. The Cancer and Steroid Hormone Study of the Centers for Disease Control and the National Institute of Child Health and Human Development. Combination oral contraceptive use and the risk of endometrial cancer. *JAMA* 1987; 257:796-800. 75. Orr HW. Functional ovarian cysts and oral contraceptives: negative association confirmed surgically. *JAMA* 1974; 228:69-76. 76. Orr HW, Cole P, McMahon B, Hovover R. Oral contraceptives and reduced risk of benign breast disease. *N Engl J Med* 1978; 234:419-422. 77. Orr HW. The neuroendocrine health benefits from oral contraceptive use. *Fam Pract* 1980; 2(2):92-142. 182-184. 78. Orr HW, Forrest JD, Lincoln R. Making choices: Evaluating the health risks and benefits of birth control methods. New York, The Alan Guttmacher Institute, 1983; p. 1-79. Schlesselman J, Stadel BV, Murray P. et al. Breast cancer in relation to early use of oral contraceptives. *JAMA* 1988; 259:1829-1833. 80. Hennes CH, Seizer FE, Lipnick RJ, Rosner B, Bain C, Belanger C, Stampfer MJ, Willett W. et al. A case-control study of oral contraceptive use and breast cancer. *JNCI* 1984; 72:29-32. 81. Lallocco C, Decarli A, Fasoli M, Franceschi S, Gentile A, Negri E, Parazzini F, Tognoni G. Oral contraceptives and cancers of the breast and of the female genital tract. Interim results from a case-control study. *Br J Cancer* 1986; 54(3):311-317. 82. Meirik O, Lind E, Adam H, Bergstrom R, Christoffersen T, Berghs P. Oral contraceptive use and breast cancer in young women. A Joint National Case-Control Study in Sweden and Norway. *Lancet* 1986; 11:550-554. 83. Kay CR, Hammaroff PC. Breast cancer and the pill – A further report from the Royal College of General Practitioners' oral contraception study. *Br J Cancer* 1988; 58:675-680. 84. Stadel BV, Lai S, Schlesselman JJ, Murray P. Oral contraceptives and premenopausal breast cancer in multivariate women. *Contraception* 1989; 39:207-209. 85. Miller DR, Rosenberg L, Kaufman DW, Stolley P, Warshauer M, Shapiro S. Breast cancer before age 45 and oral contraceptive use. *New England J Med* 1989; 320:289-290. 86. The UK National Case-Control Study Group. Oral contraceptive use and breast cancer risk in young women. *Lancet* 1989; 1:93-92. 87. Schlesselman JJ. Cancer of the breast and reproductive tract in relation to use of oral contraceptives. *Obstet Gynecol* 1980; 55(3):383-385. 88. Vessey MP, Lawless M, Williams WT, Yeates D. Oral contraceptives and breast cancer: latest findings in a large cohort study. *Br J Cancer* 1989; 59:613-617. 89. Jack SS, Walker AM, Stergachis A, Jack H. Oral contraceptives and breast cancer. *Br Med J* 1989; 59:613-617. 90. Anderson ED. Selectivity and minimal androgenicity of norgestimate in monophasic and triphasic oral contraceptives. *Acta Obstet Gynecol Scand* 1992; 156 (Supplement):15-21. 91. Chapdelaine L, Desmaris JL, Demers L. Clinical evidence of minimal androgenic activity of norgestimate. *Int J Fertil* 1989; 34(5):347-352. 92. Phillips A, Demarest K, Hahn DW, Wong F, McGuire JL. Progestational and androgenic receptor binding affinities and *in vivo* activities of norgestimate and other progestins. *Contraception* 1989; 41(4):399-409. 93. Phillips A,

Hahn DW, Klinek S, McGuire JL. A comparison of the potencies and activities of progestogens used in contraceptives. *Contraception* 1987; 36(2):181-192. 94. Janovic A, Roubly J, Ognalski D, Dain M-P. A comparison study of lipid and androgen metabolism with triphasic oral contraceptives containing norgestimate and ethinyl estradiol. *Acta Obstet Gynecol Scand* 1992; 156 (Supplement):34-38. 95. Collaborative Group for the Study of Stroke in Young Women. Oral Contraception Study. Effect on oral contraceptive users. *Lancet* 1981; 1:541-546. 96. Slone D, Shapiro S, Kaufman DW, Rosenberg L, Miettinen OS, Stolley PD. Risk of myocardial infarction in relation to current and discontinued use of oral contraceptives. *Am J Epidemiol* 1981; 113:429-434. 97. Vessey MP. Female hormones and vascular disease – an epidemiological overview. *Br J Fam Pract* 1980; 6 (Supplement): 1-12. 98. Russell-Brielle RG, Ezzi T, Fulwood R, Periman JA, Murphy BS. Cardiovascular health of Young Women. *Am J Epidemiol* 1980; 112:33-38. 99. Gouldman GM, Kendrick JS, Hoggelin GC, Gentry EM. The relative impact of smoking and oral contraceptive use on women in the United States. *JAMA* 1987; 258:1539-1542. 100. Layton PM, Beril V. Further analysis of mortality in oral contraceptive users. *Royal College of General Practitioners' Oral Contraception Study*, (Table 5) *Lancet* 1981; 1:541-546. 101. Knopp RH. Arteriosclerosis risk: the roles of oral contraceptives and postmenopausal estrogens. *J Reprod Med* 1986; 31(9)(Supplement): 913-921. 102. Krauss RM, Roy S, Mitchell DR, Casagrande J, Pike MK. Effects of two low-dose oral contraceptives on serum lipids and lipoproteins. Differential changes in high-density lipoprotein subclasses. *J Obstet Gynecol* 1982; 135:449-453. 103. Wain P, Walden C, Knopp R, Hoover J, Wallace R, Hess G, Rifkind B. Effect of estrogen/progestin potency on lipid/protein cholesterol. *N Engl J Med* 1983; 308:982-987. 104. Wynn V, Nithyananthan R. The effect of progestin in combined oral contraceptives on serum lipids with special reference to high-density lipoproteins. *Am J Obstet Gynecol* 1982; 142:766-771. 105. Wynn V, Goddard L. Effects of oral contraceptives on carbohydrate metabolism. *J Reprod Med* 1986; 31(9)(Supplement):892-897. 106. LaRosa JC. Atherosclerotic risk factors in cardiovascular disease. *J Reprod Med* 1986; 31(9)(Supplement): 906-912. 107. Inman WH, Vessey MP. Investigation of deaths from coronary, coronary, and cerebral thrombosis and embolism in women of child-bearing age. *Br Med J* 1968; 2(5599):193-199. 108. Maguire MS, Tonascia J, Sartwell PE, Taylor PO, Tozman MS. Increased risk of oral contraceptives: a further report. *Am J Epidemiol* 1978; 110(2):188-195. 21. Pettit DB, Wingerd J, Pellegrin F, Ranschauser S. Risk of vascular disease in women: smoking, oral contraceptives, nonconceptive estrogens, and other factors. *JAMA* 1978; 242:1150-1154. 22. Vessey MP, Doll R. Investigation of relation between use of oral contraceptives and thromboembolic disease. *Br Med J* 1968; 2(5599):199-205. 23. Vessey MP, Doll R. Investigation of relation between use of oral contraceptives and thromboembolic disease. A further report. *Br Med J* 1969; 2(5655):651-657. 24. Porter JB, Hunter JR, Danielson DA, Jack H, Stergachis A. Oral contraceptives and non-fatal vascular disease – recent experience. *Obstet Gynecol* 1982; 59(3):295-302. 25. Vessey MP, Doll R, Petro R, Johnson B, Wiggins P. An interim follow-up study of women who are taking different methods of contraception: an interim report. *J Biosocial Sci* 1976; 8:375-427. 26. Royal College of General Practitioners. Oral Contraceptives, venous thrombosis, and varicose veins. *J Royal Coll Gen Pract* 1978; 28:393-399. 27. Collaborative Group for the Study of Stroke in Young Women. Oral contraception and increased risk of cerebral ischemia or thrombosis. *N Engl J Med* 1978; 298:871-878. 28. Pettit DB, Wingerd J. Use of oral contraceptives, cigarette smoking, and risk of subarachnoid hemorrhage. *Lancet* 1978; 2:234-236. 29. Inman WH. Oral contraceptives and fatal subarachnoid hemorrhage. *Br Med J* 1979; 2(6203):1468-1470. 30. Collaborative Group for the Study of Stroke in Young Women. Oral Contraceptives and stroke in young women: assigned risk factors. *JAMA* 1975; 231:717-722. 31. Inman WH, Vessey MP, Westminster B, Engstedt A. Thromboembolic disease and the steroidal content of oral contraceptives. A report to the Committee on Safety of Drugs. *Br Med J* 1970; 2:203-209. 32. Meade TW, Greenberg G, Thompson SG. Progestogens and cardiovascular reactions associated with oral contraceptives. *Br Med J* 1970; 2(11):35-39. 33. Royal College of General Practitioners. Oral Contraception Study. Effect on oral contraceptive users. *Lancet* 1981; 1:541-546. 34. Vessey MP, Doll R, Jones L, Roberts M. Early onset of breast cancer. Relation of oral contraceptive use to breast cancer. *Br J Cancer* 1987; 56:553-600. 42. Huggins GR, Zanker PR. Oral contraceptives and neoplasia. 1987 update. *Fertil Steril* 1987; 47:33-761. 43. McPherson K, Dife JO. The pill and breast cancer. *Br Med J* 1980; 283:29-31. 44. Shapiro S. Oral contraceptives – time to take stock. *N Engl J Med* 1987; 315:450-451. 45. Chao Y, Nahn Z, Conger SB, Hatcher RA, Tyler CW. Contraceptive choice and prevalence of cervical dysplasia and cancer. *Am J Obstet Gynecol* 1978; 128:673-677. 46. Vessey MP, Lawless M, McPherson K, Yeates D. Neoplasia of the cervix uteri and contraception: a possible adverse effect of the pill. *Lancet* 1983; 2:930. 47. Brinton LA, Huggins GR, Lehman HF, Malm K, Savitz DA, Trappo E, Rosenthal J, Hoover R. Long term use of oral contraceptives and risk of invasive cervical cancer. *Int J Cancer* 1986; 38:339-344. 48. WHO Collaborative Study of Neoplasia and Steroid Contraceptives: Invasive cervical cancer and combined oral contraceptives. *Br Med J* 1985; 2(91):965-969. 49. Rockwell JB, Orr HW, Ishak KO, Strauss LT, Greenspan JR, Hill AP, Tyler CW. Epidemiology of the reproductive adenomas: the role of oral contraceptive use. *JAMA* 1975; 242:644-650. 50. Liu MH, Goldenrath HS. Recurrent massive hemorrhage from benign hepatic tumors secondary to oral contraceptives. *Br J Surg* 1977; 64:433-435. 51. Katskin G. Hepatic tumors: possible relationship to use of oral contraceptives. *Gastroenterology* 1977; 73:388-394. 52. Henderson BE, Preston-Martin S, Edmondson HA, Peters RL, Pike MK. Hepatocellular carcinoma and oral contraceptives. *Br J Cancer* 1983; 48:347-400. 53. Neuberger J, Forman D, Doll R. Oral contraceptives and hepatocellular carcinoma. *Br Med J* 1986; 292:1355-1357. 54. Forman D, Vincent TJ, Doll R, Lacey G, Saksela E, Saven L. Teratogenic hazards of oral contraceptives. *Am J Epidemiol* 1981; 114:521-524. 57. Janerich DT, Piper JM, Roberts DM. Oral contraceptive use and other risk exposures of children with congenital heart disease. *Am J Epidemiol* 1979; 109:433-439. 60. Boston Collaborative Drug Surveillance Program. Oral contraceptives and venous thromboembolic disease. *Obstet Gynecol* 1982; 59(3):295-302. 61. Royal College of General Practitioners. Oral Contraceptives and health. New York. Pitman Press 1977; 1:824. 62. Fish R, Frank J. Oral contraceptives and blood pressure. *JAMA* 1977; 237:2499-2503. 70. Laragh JH. Oral contraceptive induced hypertension – nine years later. *Am J Obstet Gynecol* 1976; 126:141-147. 71. Ramcharan S, Pariz E, Pellegrin FA, Williams WT. Incidence of hypertension in the Walnut Creek Contraceptive Drug Study cohort. In: *Pharmacology of Steroid Contraceptive Drugs*. Garattini S, Berendes HW. Eds. New York, Raven Press, 1977; pp. 277-289. (Monographs of the Mario Negri Institute for Pharmacological Research Milan). 72. Stockley I. Interactions with oral contraceptives. *J Pharm* 1976; 216:140-143. 73. The Cancer and Steroid Hormone Study of the Centers for Disease Control and the National Institute of Child Health and Human Development. Combination oral contraceptive use and the risk of endometrial cancer. *JAMA* 1987; 257:796-800. 75. Orr HW. Functional ovarian cysts and oral contraceptives: negative association confirmed surgically. *JAMA* 1974; 228:69-76. 76. Orr HW, Cole P, McMahon B, Hovover R. Oral contraceptives and reduced risk of benign breast disease. *N Engl J Med* 1978; 234:419-422. 77. Orr HW. The neuroendocrine health benefits from oral contraceptive use. *Fam Pract* 1980; 2(2):92-142. 182-184. 78. Orr HW, Forrest JD, Lincoln R. Making choices: Evaluating the health risks and benefits of birth control methods. New York, The Alan Guttmacher Institute, 1983; p. 1-79. Schlesselman J, Stadel BV, Murray P. et al. Breast cancer in relation to early use of oral contraceptives. *JAMA* 1988; 259:1829-1833. 80. Hennes CH, Seizer FE, Lipnick RJ, Rosner B, Bain C, Belanger C, Stampfer MJ, Willett W. et al. A case-control study of oral contraceptive use and breast cancer. *JNCI* 1984; 72:29-32. 81. Lallocco C, Decarli A, Fasoli M, Franceschi S, Gentile A, Negri E, Parazzini F, Tognoni G. Oral contraceptives and cancers of the breast and of the female genital tract. Interim results from a case-control study. *Br J Cancer* 1986; 54(3):311-317. 82. Meirik O, Lind E, Adam H, Bergstrom R, Christoffersen T, Berghs P. Oral contraceptive use and breast cancer in young women. A Joint National Case-Control Study in Sweden and Norway. *Lancet* 1986; 11:550-554. 83. Kay CR, Hammaroff PC. Breast cancer and the pill – A further report from the Royal College of General Practitioners' oral contraception study. *Br J Cancer* 1988; 58:675-680. 84. Stadel BV, Lai S, Schlesselman JJ, Murray P. Oral contraceptives and premenopausal breast cancer in multivariate women. *Contraception* 1989; 39:207-209. 85. Miller DR, Rosenberg L, Kaufman DW, Stolley P, Warshauer M, Shapiro S. Breast cancer before age 45 and oral contraceptive use. *New England J Med* 1989; 320:289-290. 86. The UK National Case-Control Study Group. Oral contraceptive use and breast cancer risk in young women. *Lancet* 1989; 1:93-92. 87. Schlesselman JJ. Cancer of the breast and reproductive tract in relation to use of oral contraceptives. *Obstet Gynecol* 1980; 55(3):383-385. 88. Vessey MP, Lawless M, Williams WT, Yeates D. Oral contraceptives and breast cancer: latest findings in a large cohort study. *Br J Cancer* 1989; 59:613-617. 89. Jack SS, Walker AM, Stergachis A, Jack H. Oral contraceptives and breast cancer. *Br Med J* 1989; 59:613-617. 90. Anderson ED. Selectivity and minimal androgenicity of norgestimate in monophasic and triphasic oral contraceptives. *Acta Obstet Gynecol Scand* 1992; 156 (Supplement):15-21. 91. Chapdelaine L, Desmaris JL, Demers L. Clinical evidence of minimal androgenic activity of norgestimate. *Int J Fertil* 1989; 34(5):347-352. 92. Phillips A, Demarest K, Hahn DW, Wong F, McGuire JL. Progestational and androgenic receptor binding affinities and *in vivo* activities of norgestimate and other progestins. *Contraception* 1989; 41(4):399-409. 93. Phillips A,

The pill pack has 21 blue "active" pills (with hormones) to take for 3 weeks. This is followed by 1 week of "reminder" light-green pills (without hormones). There are 21 blue "active" pills, and 7 light-green "reminder" pills. 3. ALSO FIND: 1) where on the pack to start taking pills. 2) when to order to take the pills. 4. BE SURE YOU HAVE READY AT ALL TIMES: ANOTHER KIND OF BIRTH CONTROL (such as a condom or spermicide) to use as a back-up method in case you miss pills. ALWAYS EXTRA, FULL PILL PACK. WHEN TO START THE FIRST PACK OF PILLS You have a choice of which day to start taking your first pack of pills. Previfem® is available in a blister pack tablet dispenser which is preset for a Sunday Start. Day 1 Start is also provided. Decide with your healthcare professional which is the best day for you. Pick a time of day that will be easy to remember. Sunday Start: Take the first blue "active" pill of the first pack on the Sunday after your period starts, even if you are still bleeding. If your period begins on Sunday, start the pack that same day. Use another method of birth control such as a condom or spermicide as a back-up method if you do not have sex anytime from the Sunday you start your first pack until the next Sunday (7 days). Day 1 Start: Take the first blue "active" pill of the first pack during the first 24 hours of your period. You will not need to use a back-up method of birth control, since you are starting the pill at the beginning of your period. WHAT TO DO DURING THE MONTH 1. TAKE ONE PILL AT THE SAME TIME EVERY DAY UNTIL THE PACK IS EMPTY. Do not skip pills even if you are spotting or bleeding between monthly periods or feel sick to your stomach (nausea). Do not skip pills even if you do not have sex very often. 2. WHEN YOU FINISH A PACK OR SWITCH YOUR BRAND OF PILLS: Start the next pack on the day after your last "reminder" pill. Do not wait any days between packs. WHAT TO DO IF YOU MISS PILLS If you MISS 1 blue "active" pill: 1. Take it as soon as you remember. Take the next pill at your regular time. This means you may take 2 pills in 1 day. 2. You do not need to use a back-up birth control method if you have sex. If you MISS 2 blue "active" pills in a row in WEEK 1 OR WEEK 2 of your pack: 1. Take 2 pills on the day you remember and 2 pills the next day. 2. Then take 1 pill a day until you finish the pack. 3. You COULD BECOME PREGNANT if you have sex in the 7 days after you miss pills. You MUST use another birth control method (such as a condom or spermicide) as a back-up method for those 7 days. If you MISS 3 blue "active" pills in a row in THE 3RD WEEK: 1. If you are a Sunday Starter: Keep taking 1 pill every day until Sunday. On Sunday, THROW OUT the rest of the pack and start a new pack of pills that same day. If you are a Day 1 Starter: THROW OUT the rest of the pill pack and start a new pack that same day. 2. You may not have your period this month but this is expected. However, if you miss your period 2 months in a row, call your healthcare professional because you might be pregnant. 3. You COULD BECOME PREGNANT if you have sex in the 7 days after you miss pills. You MUST use another birth control method (such as a condom or spermicide) as a back-up method for those 7 days. If you MISS 3 or MORE blue "active" pills in a row (during the first 3 weeks): 1. If you are a Sunday Starter: Keep taking 1 pill every day until Sunday. On Sunday, THROW OUT the rest of the pack and start a new pack of pills that same day. If you are a Day 1 Starter: THROW OUT the rest of the pill pack and start a new pack that same day. 2. You may not have your period this month but this is expected. However, if you miss your period 2 months in a row, call your healthcare professional because you might be pregnant. 3. You COULD BECOME PREGNANT if you have sex in the 7 days after you miss pills. You MUST use another birth control method (such as a condom or spermicide) as a back-up method for those 7 days. A REMINDER: If you forget any of the light-green "reminder" pills in WEEK 4: THROW AWAY the pills you missed. Keep taking 1 pill each day until the pack is empty. You do not need a back-up method. FINALLY, IF YOU ARE STILL NOT SURE WHAT TO DO ABOUT THE PILLS YOU SICK TO YOUR STOMACH: USE A BACK-UP METHOD anytime you have sex. KEEP TAKING ONE "ACTIVE" PILL EACH DAY until you can reach your healthcare professional. DAY 1 STARTERS: If your period begins on a day other than Sunday, start taking your first blue "active" pill on the first day of your period here. START HERE FOR BOTH SUNDAY STARTERS AND DAY 1 STARTERS: Start, Sun Mon Tue Wed Thu Fri Sat Week 1 Week 2 Week 3 Week 4 TAKE PILLS IN THIS DIRECTION FROM LEFT TO RIGHT EACH WEEK Manufactured in Canada By: Pathone Inc. Ontario, Canada L5N 7K9 Manufactured For: QUALITEST PHARMACEUTICALS USA Huntsville, AL 35811 DETAILED PATIENT LABELING Ix only PLEASE NOTE: This labeling is revised from time to time as important new medical information becomes available. Therefore, please review this labeling carefully. This product (like all oral contraceptives) does not protect against HIV infection (AIDS) and other sexually transmitted diseases. Previfem® (Rigone) Each blue tablet contains 0.25 mg norgestimate and 0.035 mg ethinyl estradiol. Each light-green tablet contains inert ingredients. INTRODUCTION Any woman who considers using oral contraceptives (the birth control pill or the pill) should understand the benefits and risks of using this form of birth control. This patient labeling will give you much of the information you will need to make this decision and will also help you determine if you are at risk of developing any of the serious side effects of the pill. It will tell you how to use the pill properly so that it will be as effective as possible. However, this labeling is not a replacement for a careful discussion between you and your healthcare professional. You should discuss the information contained in this labeling with him or her, both when you first start taking the pill and during your revisits. You should also follow your healthcare professional's advice with regard to regular check-ups while you are on the pill. EFFECTIVENESS OF ORAL CONTRACEPTIVES FOR CONCEPTION Oral contraceptives (the birth control pill or "birth control pill") are used to prevent pregnancy and are more effective than most other non-surgical methods of birth control. When they are taken correctly without missing any pills, the chance of becoming pregnant is approximately 1% per year of use. Typical failure rates, including women who do not always take the pill correctly, are approximately 5% per year (5 pregnancies per 100 women per year of use). The chance of becoming pregnant increases with each missed pill during a menstrual cycle.

In comparison, typical failure rates for other non-surgical methods of birth control during the first year of use are as follows: Implant: < 1% Injection: < 1% IUD: 1 to 2% Diaphragm with spermicides: 20% Spermicides alone: 26% Natural family planning: 20 to 40% Female sterilization: < 1% Male sterilization: < 1% Cervical cap with spermicides: 20 to 40% Condom alone (male): 14% Condom alone (female): 25% Periodic abstinence: 25% Withdrawal: 19% No methods: 85% WHO SHOULD NOT TAKE ORAL CONTRACEPTIVES Do not use Previfem® (norgestimate and ethinyl estradiol tablets USP) if you smoke cigarettes and are over 35 years old. Smoking increases your risk of serious cardiovascular side effects (heart and blood vessel problems) from combination oral contraceptives, including death from heart attack, blood clots or stroke. This risk increases with age and the number of cigarettes you smoke. Some women should not use the pill. For example, you should not take the pill if you have any of the following conditions: • A history of heart attack or stroke • Blood clots in the legs (thrombophlebitis), lungs (pulmonary embolism), or eyes • A history of blood clots in the deep veins of your legs • An inherited problem that makes your blood clot more than normal • Chest pain (angina pectoris) • Stroke or suspected breast cancer or cancer of the lining of the uterus, cervix or vagina • Unexplained vaginal bleeding (until a diagnosis is reached by your healthcare professional) • Yellowing of the whites of the eyes or of the skin (jaundice) during pregnancy or during previous use of the pill • Liver tumor (benign or cancerous) or active liver disease • High blood pressure • Valvular heart disease with complications • Severe hypertension • Diabetes with vascular involvement • Difficulty in seeing (cataracts or glaucoma) • Major surgery with prolonged immobilization • Hypersensitivity to any component of this product Tell your healthcare professional if you have had any of these conditions. Your healthcare professional should recommend a safer method of birth control. OTHER CONSIDERATIONS BEFORE TAKING ORAL CONTRACEPTIVES Tell your healthcare professional if you have or have had: • Breast nodules, fibrocystic disease of the breast, an abnormal breast x-ray or breast lump • Diabetes • Elevated cholesterol or triglycerides • High blood pressure • Migraine or other headaches or epilepsy • Mental depression • Gallbladder, liver, heart or kidney disease • History of scanty or irregular menstrual periods Women with any of these conditions should be checked often by their healthcare professional if they choose to use oral contraceptives. ALSO, be sure to inform your healthcare professional if you smoke or are on any medications. RISKS OF TAKING ORAL CONTRACEPTIVES 1. Risk of Developing Blood Clots Blood clots and blockage of blood vessels are one of the most serious side effects of taking oral contraceptives and can cause death or serious disability. A blood clot in the legs can cause thrombophlebitis and a clot that travels to the lungs can cause a sudden blockage of the vessel carrying blood to the lungs. Rarely, clots can block the blood vessels of the eye and may cause blindness, double vision, or impaired vision. If you take oral contraceptives and need elective surgery, should stay in bed for a prolonged illness or injury or have recently delivered a baby, you may be at risk of developing blood clots. You should consult your healthcare professional about stopping oral contraceptives 4-6 weeks before surgery and not taking oral contraceptives for two weeks after surgery or during bed rest. You should also not take oral contraceptives soon after delivery of a baby. If it is advisable to take pills after delivery of your baby, you are not breast feeding. If you are breast feeding, you should wait until you have weaned your child before using the pill (see GENERAL PRECAUTIONS, While Breast Feeding). The risk of circulatory disease in oral contraceptive users may be higher in users of high-dose pills and may be greater with longer duration of oral contraceptive use. In addition, some of these increased risks may continue for a number of years after stopping oral contraceptives. The risk of abnormal blood clotting increases with age in both users and nonusers of oral contraceptives, but the increased risk from the contraceptive appears to be present at all ages. For women aged 20 to 44 it is estimated that about 1 in 2,000 using oral contraceptives will be hospitalized each year because of abnormal clots in the brain and about 1 in 20,000 women will be hospitalized because of abnormal clots in the brain). For oral contraceptive users in general, it has been estimated that in women between the ages of 15 and 34 the risk of death due to a circulatory disorder is about 1 in 12,000 per year, whereas for nonusers the rate is about 1 in 50,000 per year. In the age group 35 to 44, the risk is estimated to be about 1 in 2,500 per year for oral contraceptive users and about 1 in 10,000 per year for nonusers. 2. Heart Attacks and Strokes Oral contraceptives may increase the tendency to develop strokes (stoppage or rupture of blood vessels in the brain) and angina pectoris and heart attacks (blockage of blood vessels in the heart). Any of these conditions can cause death or serious disability. Smoking greatly increases the possibility of suffering heart attacks and strokes. Furthermore, smoking and the use of oral contraceptives greatly increase the chances of developing and dying of heart disease. 3. Gallbladder Disease Oral contraceptive users probably have a greater risk than nonusers of having gallbladder disease, although this risk may be related to pills containing high doses of estrogen. 4. Liver Tumors In rare cases, oral contraceptives can cause benign but dangerous liver tumors. These benign liver tumors can rupture and cause fatal internal bleeding. In addition, some studies report an increased risk of developing liver cancer. However, liver cancers are rare. 5. Cancer of the Reproductive Organs and Breasts Various studies give conflicting reports on the relationship between breast cancer and oral contraceptive use. Oral contraceptive use may slightly increase your chance of having breast cancer diagnosed, particularly after using hormonal contraceptives at a younger age. After you stop using hormonal contraceptives, the chances of having breast cancer diagnosed begin to go back down. You should have regular breast examinations by a healthcare professional and examine your own breasts monthly. Tell your healthcare professional if you have a family history of breast cancer or if you have had breast nodules or an abnormal mammogram. Women who currently have or have had breast cancer should not use oral contraceptives because breast cancer is usually a hormone-sensitive tumor. Some studies have found an increase in the incidence of cancer of the cervix in women who use oral contraceptives. However, this finding may be related to factors other than the use of oral contraceptives. There is insufficient evidence to rule out the possibility that the pill may cause such cancers. Taking the combination pill provides some important non-contraceptive benefits. These include less painful menstruation, less menstrual blood loss and anemia, fewer pelvic infections, and fewer cancers of the ovary and the lining of the uterus. Be sure to discuss any medical condition you may have with your healthcare professional. Your healthcare professional will take a medical and family history before prescribing oral contraceptives and will examine you. The physical examination may be delayed to another time if you request it and the healthcare professional believes that it is a good medical practice to postpone it. You should be reexamined at least once a year while taking oral contraceptives. Your pharmacist should have given you the detailed patient information labeling which gives you further information which you should read and discuss with your healthcare professional. HOW TO TAKE THE PILL IMPORTANT POINTS TO REMEMBER BEFORE YOU START TAKING YOUR PILLS: 1. BE SURE TO READ THESE DIRECTIONS: Before you start taking your pills. Before you are not sure what to do. 2. THE RIGHT WAY TO TAKE THE PILL IS TO TAKE ONE PILL EVERY DAY AT THE SAME TIME. 3. YOU MISS PILLS you could get pregnant. This includes starting the pack late. The more pills you miss, the more likely you are to get pregnant. 4. MANY WOMEN HAVE SPOTTING OR LIGHT BLEEDING, OR MAY FEEL SICK TO THEIR STOMACH DURING THE FIRST 1 TO 3 PACKS OF PILLS. You may feel sick to your stomach or have spotting or light bleeding, do not stop taking the pill. The problem will usually go away. If it doesn't go away, check with your healthcare professional. 5. MISSING PILLS CAN ALSO CAUSE SPOTTING OR LIGHT BLEEDING, even when you make up these missed pills. On the days you take