



## Women's International Pharmacy

*Custom Compounded Prescriptions for Men and Women*

# FEMALE HORMONE THERAPY OPTIONS


The following tables have been compiled by Women's International Pharmacy staff pharmacists to represent some of the more frequently prescribed regimens for women in menopause and some alternatives. The Women's International Pharmacy logo is placed throughout the tables to signify the hormones and dosage forms Women's International Pharmacy compounds.

This material is for informational purposes. It is not intended as a substitute for medical advice. Please consult a qualified health care professional for individual health and medical advice.

*Oral Estrogens*





<b>ORAL ESTROGENS</b>			
<b>Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Estradiol</u> (E <sub>2</sub> ) capsules (compounding pharmacies) 	Any	0.25mg - 2mg once daily. Some may require twice daily dosing.	Hargrove J. <i>Infertility &amp; Reproductive Med Clinic North America</i> 1995; 6(4):653-674.
<u>Estriol</u> (E <sub>3</sub> ) capsules (compounding pharmacies) 	Any	1mg - 8mg once daily or in divided doses.	Head K. <i>Alt Med Rev</i> ; 1998; 3(2):101-113. Hudson T. <i>Women's Encyclopedia of Natural Medicine</i> (Lincolnwood, IL: Keats) 1999:170.
<u>Biestrogen</u> (bi-est) capsules 20% estradiol (E <sub>2</sub> ), 80% estriol (E <sub>3</sub> ) (compounding pharmacies) 	Any	1.25mg - 5mg once to twice daily	The 20:80 ratio may be altered to improve therapeutic response. McKenna S. <i>The Phytogetic Hormone Solution</i> (NYC, NY: Villard Books) 2002:189-190.
<u>Triestrogen</u> (tri-est, triple estrogen) capsules 10% estrone (E <sub>1</sub> ), 10% estradiol (E <sub>2</sub> ), 80% estriol (E <sub>3</sub> ) (compounding pharmacies) 	Any	1.25mg - 2.5mg once to twice daily	Although these ratios are commonly used and are based on the research done by Dr. Jonathan Wright, other formulas are available and may accommodate individual needs. (Wright J, Morgenthaler J. <i>Natural Hormone Replacement for Women over 45</i> (Petaluma, CA: Smart Publications) 1997:104-5,127.)
<u>Estrace</u> ® estradiol (E <sub>2</sub> ) tablets (Warner Chilcott)	0.5mg, 1mg, 2mg	0.5mg - 2mg daily	Well absorbed orally. (Thomson Micromedix® 1974-2007.) Generics available.
<u>Gynodiol</u> ® estradiol (E <sub>2</sub> ) tablets (Fielding)	0.5mg, 1mg, 1.5mg, 2mg	0.5mg - 2mg daily	Generics available.

<b>ORAL ESTROGENS</b>			
<b>NON-Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<b>Cenestin®</b> synthetic conjugated estrogens tablets (Barr/Duramed)	0.3mg, 0.45mg, 0.625mg, 0.9mg, 1.25mg	0.3mg - 1.25mg daily	Tablets contain a blend of nine synthetic estrogenic substances. ( <u>Drug Facts And Comparisons</u> ; 2007:223.) Only approved for the treatment of moderate to severe vasomotor symptoms associated with menopause and vulvar/vaginal atrophy (0.3mg only). ( <u>Drug Facts And Comparisons</u> ; 2007:223.)
<b>Enjuvia®</b> synthetic conjugated estrogens tablets (Barr/Duramed)	0.3mg, 0.45mg, 0.625mg, 0.9mg, 1.25mg	0.3mg – 1.25mg daily	Tablets contain a blend of ten synthetic estrogenic substances. ( <u>Drug Facts And Comparisons</u> ; 2006:223.) Only approved for the treatment of moderate to severe vasomotor symptoms associated with menopause and vulvar/vaginal atrophy (0.3mg only). ( <u>Drug Facts And Comparisons</u> ; 2007:224.)
<b>Femtrace®</b> estradiol acetate tablets (Warner Chilcott)	0.45mg, 0.9mg, 1.8mg	0.45mg – 1.8mg daily	This product contains bioidentical estradiol, but is chemically bound to other substances. Only approved in the treatment of moderate to severe vasomotor symptoms associated with menopause. ( <u>Drug Facts and Comparisons</u> ; 2008:220a.)
<b>Menest®</b> esterified estrogens tablets (Monarch)	0.3mg 0.625mg 1.25mg 2.5mg	0.3mg - 2.5mg daily	Tablets contain 75-85% sodium estrone sulfate and 6-15% sodium equilin sulfate, in such proportion that the total of these 2 components is not less than 90% of the total esterified estrogens content. ( <u>Drug Facts And Comparisons</u> ; 2008:221.)
<b>Ortho-Est®</b> estropipate tablets <i>formerly piperazine estrone sulfate</i> (Women First Healthcare)	0.625mg 1.25mg	0.625mg - 1.25mg daily	This product contains bioidentical estrone, but is chemically bound to other substances. Generics available.
<b>Premarin®</b> conjugated equine estrogens tablets (CEE) (Wyeth-Ayerst)	0.3mg, 0.45mg, 0.625mg, 0.9mg, 1.25mg	0.3mg - 1.25mg daily	Most studied estrogen replacement. Tablets contain a mixture of conjugated equine (horse) estrogens. ( <u>Drug Facts And Comparisons</u> ; 2008:220b.)

ORAL PROGESTERONE			
Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Progesterone</u> in edible oil capsules (compounding pharmacies) 	Any	Continuous: 50mg twice daily or 100mg once to twice daily.  Cyclic: 200-400mg daily for 12 days.	Optimal absorption includes powder micronization and suspension in oil. (Hargrove J, Maxson W, et al. <i>Am J OB/GYN</i> , 1989; 161(4):948-951.) (Hargrove J. <i>OB/GYN</i> 73(4):606-612.) (Dr. Christiane Northrup, <u>Women's Bodies, Women's Wisdom</u> , (New York: Bantam Books) 2004:475.) Also see Prometrium comments below.
<u>Prometrium®</u> progesterone in peanut oil capsules (Solvay)	100mg 200mg	Continuous: 100mg daily.  Cyclic: 200mg - 300mg last 12-14 days of estrogen treatment each cycle.	Transient dizziness may occur. Contraindication: allergy to peanuts. PEPI Trials showed that Premarin® with Prometrium® is more cardio protective based on lipid profiles than medroxyprogesterone plus Premarin®. (PEPI Trial Writing Group. <i>JAMA</i> , 1995; 273:199-208.)


ORAL PROGESTINS			
NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Amen®</u> medroxyprogesterone acetate tablets (Carnick)	10mg	Cyclic: 10mg daily for 5-10 days	Generics available. See Provera® for further comments.
<u>Aygestin®</u> norethindrone acetate tablets (Duramed)	5mg	Cyclic: 5mg to 10mg daily for 5 to 10 days	For amenorrhea; abnormal uterine bleeding due to hormonal imbalance in the absence of organic pathology. ( <u>Drug Facts And Comparisons</u> ; 2008:231.). Generics available.
<u>Curretab®</u> medroxyprogesterone acetate tablets (Solvay)	10mg	Cyclic: 10mg daily for 5-10 days	Generics available. See Provera® for further comments.
<u>Cycrin®</u> medroxyprogesterone acetate tablets (ESI Lederle)	2.5mg 5mg 10mg	Continuous: 2.5mg daily  Cyclic: 5-10mg daily for 5-10 days	Generics available. See Provera® for further comments.
<u>Provera®</u> medroxyprogesterone acetate tablets (MPA) (Pharmacia Upjohn)	2.5mg 5mg 10mg	Continuous: 2.5mg daily  Cyclic: 5-10mg daily for 5-10 days	Indicated to prevent endometrial hyperplasia with concurrent estrogen use and secondary amenorrhea/abnormal uterine bleeding due to hormonal imbalance in the absence of organic pathology. PMS like side effects: insomnia, depression, nausea, thrombophlebitis and others. ( <u>Drug Facts And Comparisons</u> ; 2008:231.) Generics available.

## ORAL ESTROGEN/PROGESTERONE COMBINATIONS

Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Estradiol (E<sub>2</sub>) with Progesterone</u> in edible oil capsules (compounding pharmacies) 	Any	0.5 - 2mg Estradiol with 50mg Progesterone twice daily or 100mg once to twice daily	See Oral Estrogen - Estradiol and Oral Progesterone comments.
<u>Estriol (E<sub>3</sub>) with Progesterone</u> in edible oil capsules (compounding pharmacies) 	Any	1 - 4mg Estriol with 50mg Progesterone twice daily or 100mg once to twice daily	See Oral Estrogen - Estriol and Oral Progesterone comments.
<u>Biestrogen (E<sub>2</sub>E<sub>3</sub>) with Progesterone</u> in edible oil capsules (compounding pharmacies) 	Any	1.25 - 2.5mg Biestrogen with 50mg Progesterone twice daily or 100mg once to twice daily	See Oral Estrogen - Biestrogen and Oral Progesterone comments.
<u>Triestrogen (E<sub>1</sub>E<sub>2</sub>E<sub>3</sub>) with Progesterone</u> in edible oil capsules (compounding pharmacies) 	Any	1.25 - 2.5mg Triestrogen with 50mg Progesterone twice daily or 100mg once to twice daily	See Oral Estrogen - Triestrogen and Oral Progesterone comments.

## ORAL ESTROGEN/PROGESTIN COMBINATIONS

NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Activella®</u> estradiol and norethindrone acetate tablets (Novo Nordisk)	0.5mg estradiol/ 0.1mg norethindrone acetate  1mg estradiol/ 0.5mg norethindrone acetate	1 tablet daily	Estradiol is bioidentical; progestin is not. Combines estrogen and progestin for continuous administration.  Generic available for higher strength.  ( <u>Drug Facts and Comparisons</u> ; 2011: p232a.)
<u>Mimvey®</u> estradiol and norethindrone acetate tablets (Teva)	1mg estradiol/ 0.5mg norethindrone acetate	1 tablet daily	Estradiol is bioidentical; progestin is not. Combines estrogen and progestin for continuous administration.  ( <u>Drug Facts and Comparisons</u> ; 2011: p232a.)
<u>Angelig®</u> estradiol and drospirenone tablets (Berlex)	1mg estradiol 0.5mg drospirenone	1 tablet daily	Estradiol is bioidentical; progestin is not. Combines estrogen and progestin for continuous administration. The lowest effective dose has not been determined. ( <u>Drug Facts and Comparisons</u> ; 2006: p232.)
<u>Prefest®</u> estradiol and norgestimate tablets (Barr/Duramed)	Biphasic: 1mg estradiol (15 tablets) 1mg estradiol with 0.09mg norgestimate (15 tablets)	1 tablet daily	Estrogen is bioidentical; progestin is not. Combines continuous estrogen with intermittent progestin to increase receptor sensitivity ( <i>J. Soc Gynecol Invest</i> 1996; 3(5).)
<u>Prempro®</u> conjugated equine estrogen (CEE) and medroxyprogesterone acetate tablets (MPA) (Wyeth-Ayerst)	0.3mg (CEE)/ 1.5mg (MPA)  0.45mg (CEE)/ 1.5mg (MPA)  0.625mg (CEE)/ 2.5mg (MPA)  0.625mg (CEE)/ 5mg (MPA)	1 tablet daily	The WHI Study (Women's Health Initiative) indicated that the Prempro® group had a higher than normal incidence of blood clotting, breast cancer, and cardiovascular events. Because of the increased risks, the investigators stopped this portion of the study early. (WHI Writing Group. <i>JAMA</i> 2002; 288:321-333.)  Also see Oral Estrogen - Premarin® and Oral Progestin - Provera® comments.
<u>Premphase®</u> conjugated equine estrogen (CEE) and medroxyprogesterone acetate tablets (MPA) (Wyeth-Ayerst)	Biphasic: 0.625mg (CEE) (14 tablets) 0.625mg (CEE) with 5mg (MPA) (14 tablets) (28 day pack)	1 tablet daily	Also see Oral Estrogen - Premarin® and Oral Progestin - Provera® comments.
<u>FemHRT®</u> ethinyl estradiol (EE) and norethindrone acetate tablets (Warner Chilcott)	2.5mcg (EE)/ 0.5mg norethindrone acetate  5mcg (EE)/ 1mg norethindrone acetate	1 tablet daily	Combines synthetic estrogen and progestin for continuous administration.



ORAL TESTOSTERONE			
Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Testosterone</u> In edible oil capsules (compounding pharmacies) 	Any	2mg - 10mg once daily or in divided doses.	Brownstein D. <u>The Miracle of Natural Hormones</u> , 3 <sup>rd</sup> Edn. (W. Bloomfield, MI: Medical Alternatives Press) 2003:128. Testosterone may convert to estrogens in the body.

ORAL TESTOSTERONE			
NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Methyltestosterone (MT)</u> (some compounding pharmacies)	Any	0.25mg - 0.75mg daily	Rako S. <u>The Hormone of Desire</u> (New York: Harmony) 1996:113.

ORAL ESTROGEN/TESTOSTERONE COMBINATION			
NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Covaryx®</u> , <u>Covaryx HS®</u> esterified estrogens (E) with methyltestosterone (MT) tablets (Centrix)	1.25mg (E)/ 2.5mg (MT) ( <u>Covaryx®</u> )  0.625mg (E)/ 1.25mg (MT) ( <u>Covaryx HS®</u> )	1 tablet daily (usually 21 days per month)	Increased risk of hepatotoxicity especially with oral methylated androgens. ( <u>Drug Facts And Comparisons</u> ; 2007:259.) Methyltestosterone is not readily converted to estrogen in the body. (Rako S. <u>The Hormone of Desire</u> (New York: Harmony) 1996:113.)

ORAL SERMS (Selective Estrogen Receptor Modulators)			
Although the selective estrogen receptor modulators are non-steroidal, they do act directly at hormone receptors and are indicated for the treatment and prevention of osteoporosis in postmenopausal women; particularly for women in which the administration of estrogen is contraindicated.			
NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Evista®</u> raloxifene tablets (Eli Lilly)	60mg	1 tablet daily	Raloxifene's biological actions are mediated through estrogen receptor binding, resulting in activation of certain estrogenic pathways and blockade of others. ( <u>Drug Facts And Comparisons</u> ; 2008:225.) Increased risk for DVTs. ( <u>Drug Facts And Comparisons</u> ; 2008:225.) Increased incidence of hot flashes (29%). ( <u>Drug Facts And Comparisons</u> ; 2008:227.)


## TOPICAL CREAMS/GELS – ESTROGEN-ONLY

Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<b>Estradiol (E<sub>2</sub>)</b> cream or gel (compounding pharmacies) 	Any	0.5mg - 2mg once to twice daily	Lorrain et al. found Estradiol 0.75mg is equivalent to Premarin® 0.3mg with a starting dose of 1.5mg daily. (Lorrain et al <i>Menopause Management</i> Jan/Feb 1999: 11-15.)
<b>Estriol (E<sub>3</sub>)</b> cream or gel (compounding pharmacies) 	Any	2 to 5mg once daily or in divided doses.	Conley E. <u>Safe Estrogen</u> (Flint, MI: Vitality Press) 2003:43.
<b>Biestrogen (E<sub>2</sub>E<sub>3</sub>)</b> cream or gel (compounding pharmacies) 	Any	1.25mg - 5mg once daily or in divided doses.	Collins J. <u>What's Your Menopause Type</u> (Roseville, CA: Prima) 2000:293.
<b>Triestrogen (E<sub>1</sub>E<sub>2</sub>E<sub>3</sub>)</b> cream or gel (compounding pharmacies) 	Any	1.25mg - 2.5mg once to twice daily	Laux M, Conrad C. <u>Natural Woman, Natural Menopause</u> (New York: Harper Collins) 1998:116-117.  Brownstein D. <u>The Miracle of Natural Hormones</u> 3 <sup>rd</sup> edn (W. Bloomfield, MI: Medical Alternative Press) 2003:110.  Also see Oral Estrogens - Triestrogen comments.
<b>Divigel®</b> estradiol topical gel (Upsher-Smith)	1mg/gram	Apply daily to thigh	Apply gel to an area on thigh that measures 5 x 7 inches.  Supplied in single-dose foil packets of 0.25, 0.5, and 1 gram, containing 0.25, 0.5, and 1 mg of estradiol, respectively. (Divigel® package insert.)
<b>Estrasorb®</b> estradiol hemihydrate topical emulsion (Graceway)	4.35mg per packet	Apply 2 packets once daily to both legs	Approved dose is 3.48 grams per day. Lowest effective dose not determined. ( <u>Drug Facts And Comparisons</u> ; 2009:224d.)  Each 1.74 gram packet contains 4.35mg estradiol hemihydrate. ( <u>Drug Facts And Comparisons</u> ; 2009:224d.)
<b>EstroGel®</b> estradiol topical gel (Ascend Therapeutics, Inc.)	0.75mg per pump	Apply 1 pump once daily to entire arm	Topical, colorless, alcohol gel. Supplied in a metered pump with a 0.06% concentration. Each 1.25 gram pump contains 0.75mg of estradiol. Pump delivers 64 metered doses. ( <u>Drug Facts And Comparisons</u> ; 2009:224d.)
<b>Elestrin®</b> estradiol topical gel (Kenwood Therapeutics)	0.52mg per pump	Apply 1 pump per day to the upper arm	Topical, colorless, alcohol gel. Supplied in a metered pump with a 0.06% concentration. Each 0.87 gram pump contains 0.52mg of estradiol. Pump delivers 100 metered doses. (Elestrin® package insert.)
<b>Evamist®</b> estradiol transdermal spray (Ther-Rx Co.)	1.53mg per spray	One spray once daily to forearm, may increase to two or three sprays	Transdermal alcohol spray. Supplied in a glass vial fitted with a metered dose pump encased in a plastic housing. Pump delivers 56 sprays of 90mCL after priming. (Evamist® package insert.)





## TRANSDERMAL PATCHES – ESTROGEN-ONLY

Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Alora</u> ® estradiol (E <sub>2</sub> ) (Watson)	0.025, 0.05, 0.075 or 0.1mg	One patch changed twice weekly	Patch may be cut to modify dose but is not recommended by the manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.)
<u>Climara</u> ® estradiol (E <sub>2</sub> ) (Berlex)	0.025mg, 0.0375mg, 0.05mg, 0.06mg, 0.075mg, 0.1mg	One patch changed once weekly	Patch may be cut to modify dose but is not recommended by the manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.) Generics available.
<u>Esclim</u> ® estradiol (E <sub>2</sub> ) (Women First Healthcare)	0.025, 0.0375, 0.05, 0.075, 0.1mg	One patch changed twice weekly	Patch may be cut, but is not recommended by the manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.)
<u>Estraderm</u> ® estradiol (E <sub>2</sub> ) (Novartis)	0.05mg, 0.1mg	One patch changed twice weekly	Patch should not be cut. Any alteration of membrane integrity may affect hormone delivery rate. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.) Incidence of skin reactions to adhesive reportedly from 24-40%. ( <i>Drugs</i> 1990; 40(4):561-582.)
<u>Menostar</u> ® estradiol (E <sub>2</sub> ) (Berlex)	0.014mg	One patch changed once weekly	Patch is a clear, dime-sized matrix type patch. Patch may be cut, but is not recommended by the manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.) Approved for prevention of osteoporosis in postmenopausal women.
<u>Vivelle-Dot</u> ® estradiol (E <sub>2</sub> ) (Novartis)	0.025mg, 0.0375mg, 0.05mg, 0.075mg, 0.1mg	One Dot patch changed twice weekly	Approximately 1/3 the size of a regular Vivelle® patch. (Vivelle® patch replaced by Dot system.) Patch may be cut, but is not recommended by the manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.)

## TOPICAL CREAMS/GELS – PROGESTERONE-ONLY

Bioidentical	Dosages Available	Dosing Regimen	Comments/References
<u>Progesterone</u> cream or gel (compounding pharmacies) 	Any Common range: 20 – 100 mg/gram	25mg - 100mg once to twice daily	Laux M, Conrad C. <u>Natural Woman, Natural Menopause</u> (New York: Harper Collins) 1998: 116-117. Brownstein D. <u>The Miracle of Natural Hormones</u> 3 <sup>rd</sup> edn (W. Bloomfield, MI: Medical Alternative Press) 2003:99.


**TOPICAL CREAMS/GELS – ESTROGEN/PROGESTERONE COMBINATIONS**

<b>Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Estradiol (E<sub>2</sub>) with Progesterone</u> cream (compounding pharmacies) 	Any	0.5mg - 2mg estradiol with 25mg - 100mg progesterone once to twice daily	See Topical Estrogen – Estradiol and Topical Progesterone comments.
<u>Estriol (E<sub>3</sub>) with Progesterone</u> cream (compounding pharmacies) 	Any	1mg - 3mg estriol with 25mg - 100mg progesterone once to twice daily.	See Topical Estrogen – Estriol and Topical Progesterone comments.
<u>Biestrogen (E<sub>2</sub>E<sub>3</sub>) with Progesterone</u> cream (compounding pharmacies) 	Any	1.25mg - 2.5mg Biestrogen with 25mg - 100mg progesterone once to twice daily	See Topical Estrogen – Biestrogen and Topical Progesterone comments.
<u>Triestrogen (E<sub>1</sub>E<sub>2</sub>E<sub>3</sub>) with Progesterone</u> cream (compounding pharmacies) 	Any	1.25mg - 2.5mg Triestrogen with 25mg - 100mg progesterone once to twice daily	See Topical Estrogen – Triestrogen and Topical Progesterone comments.

**TRANSDERMAL PATCHES – ESTROGEN/PROGESTIN COMBINATIONS**



<b>NON-Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Climara Pro®</u> estradiol (E <sub>2</sub> ) and levonorgestrel (Berlex)	0.045mg (E <sub>2</sub> )/ 0.015mg levonorgestrel	One patch changed once weekly	Estradiol is bioidentical; progestin is not. Patch not recommended to be cut by manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.)
<u>Combi Patch®</u> estradiol (E <sub>2</sub> ) and norethindrone acetate (Novartis)	0.05mg (E <sub>2</sub> )/0.14mg norethindrone 0.05mg (E <sub>2</sub> )/ 0.25mg norethindrone	One patch changed twice weekly	Estradiol is bioidentical; progestin is not. Patch may be cut but not recommended by manufacturer. ( <i>Pharmacist Letter</i> 1998; 14(7):140712.)

**TOPICAL CREAMS/GELS - TESTOSTERONE-ONLY**

<b>Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Testosterone</u> cream or gel (compounding pharmacies) 	Any	1mg - 20mg once daily or in divided doses.	2.5 to 5mg daily. (Laux M, Conrad C. <u>Natural Woman, Natural Menopause</u> (New York: Harper Collins) 1998:118.) 2 to 10mg daily. (Brownstein D. <u>The Miracle of Natural Hormones</u> 3 <sup>rd</sup> edn (W. Bloomfield, MI: Medical Alternative Press) 2003:128.)

## VAGINAL ESTROGENS


Vaginal pH is normally alkaline before menarche and after menopause and normally acidic during childbearing years. The vaginal pH ranges from 3-6.1, and averages 3.5-4.2.







Bioidentical	Dosages Available	Dosing Regimen	Comments/References
Estradiol (E <sub>2</sub> ) cream, non-alcohol gel, suppository, or clear capsule (compounding pharmacies) 	Any	Insert 1 gram vaginally every night for 2 wks then 2-3 times weekly	Dispensed with vaginal applicator calibrated in 1 gram increments up to 4 grams.
Estriol (E <sub>3</sub> ) cream, non-alcohol gel, suppository, or clear capsule (compounding pharmacies) 	Any	0.5mg vaginally for 2 weeks then 0.5mg every 2-3 days	Gerbaldo D et al. <i>Maturitas</i> 1991; 13(4):269-274. Raz P, Stamm WE. <i>NEJM</i> 1993; 329(11): 753-756.
Estrace® estradiol vaginal cream (Warner-Chilcott)	0.1mg/gm	Insert 2-4 grams every night for 2 wks then 1-2 grams for 1-2 wks then 1gram 3 times weekly	pH between 3.5-6.5. The 42.5 gram tube comes with a calibrated applicator in 1 gram increments up to 4 grams. ( <u>Drug Facts And Comparisons</u> ; 2009:224a.)
Estring® estradiol vaginal silicone ring (Pharmacia)	2mg	Place 1 ring vaginally continuously for 3 months	Releases estradiol at a mean rate of 7.5mcg/24 hours for up to 90 days. ( <u>Drug Facts And Comparisons</u> ; 2009:224a.)
Vagifem® estradiol hemihydrate vaginal tablet (Novo Nordisk)	10.3mcg estradiol hemihydrate (equivalent to 10mcg estradiol)  25.8mcg estradiol hemihydrate (equivalent to 25mcg estradiol)	Insert 1 tablet vaginally once daily for 2 weeks, then 1 tablet vaginally twice weekly	Approved only for atrophic virginites. Each tablet is contained in a disposable, single-use applicator. ( <u>Drug Facts And Comparisons</u> ; 2006:224.)
Femring® estradiol acetate vaginal ring (Galen)	0.05mg/day, 0.1mg/day	Place 1 ring vaginally continuously for 3 months	Contains 12.4mg Estradiol acetate that releases 0.05mg per day for 3 months. Contains 24.8mg Estradiol acetate that releases 0.1mg per day for 3 months. ( <u>Drug Facts And Comparisons</u> ; 2009:224a.)

## VAGINAL ESTROGENS



Vaginal pH is normally alkaline before menarche and after menopause and normally acidic during childbearing years. The vaginal pH ranges from 3-6.1, and averages 3.5-4.2.

NON-Bioidentical	Dosages Available	Dosing Regimen	Comments/References
Premarin® cream conjugated equine estrogens (CEE) (Wyeth-Ayerst)	0.625mg/gm	0.5-2 grams daily for 3 weeks with 1 week off	pH between 7.1 and 7.9; contains mineral oil. The 42.5 gram tube comes with or without an applicator. Can use 0.5gm twice weekly to treat painful intercourse. ( <u>Drug Facts And Comparisons</u> ; 2009:224b.)

<b>VAGINAL PROGESTERONE</b>			
<b>Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Progesterone</u> Cream, non-alcohol gel, suppository, or clear capsule (compounding pharmacies) 	Any Common range: 20 – 100 mg/gram	25mg - 100mg vaginally once to twice daily	50mg vaginal suppository twice daily. ( <u>The Merck Manual of Diagnosis and Therapy</u> Sec. 18, Ch. 245.)
<u>Crinone®</u> progesterone vaginal gel (Serono)	45mg per applicator, 90mg per applicator	Contents of 1 applicator vaginally once to twice daily	Gel contains mineral oil. Gel coats the vaginal mucosa to provide long-lasting release of progesterone. Supplied in a 4 or 8% concentration in disposable, single-use applicators. Each 1.125 grams of gel delivers either 45mg or 90mg of progesterone. ( <u>Drug Facts And Comparisons</u> ; 2008:230.)
<u>Prochieve®</u> progesterone vaginal gel (Columbia Lab)	45mg per applicator, 90mg per applicator	Contents of 1 applicator vaginally once to twice daily	Gel contains mineral oil. Gel coats the vaginal mucosa to provide long lasting release of progesterone, Supplied in a 4 or 8% concentration in disposable, single-use applicators. Each 1.125 grams of gel delivers either 45mg or 90mg of progesterone. ( <u>Drug Facts And Comparisons</u> ; 2006:230.)
<u>Endometrin®</u> Progesterone vaginal insert (Ferring Pharmaceuticals)	100mg	Insert 1 vaginally two or three times daily	Indicated to support embryo implantation and early pregnancy. Each insert is packed individually in a sealed foil pouch and supplied with disposable applicators. (Endometrin® package insert.)

<b>INJECTABLES</b>			
<b>Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
Estrone aqueous suspension (compounding pharmacies) 	2 mg/ml 5 mg/ml	Injected intramuscularly individualize dosage	Short acting injection (anecdotal)
Progesterone in oil (compounding pharmacies) 	Various	5 to 10 mg intramuscularly daily for 6 to 8 days	Has been used for amenorrhea or abnormal uterine bleeding. ( <a href="#">Drug Facts and Comparisons</a> ; 2008:230.)
Progesterone in sesame oil (various, e.g., APP, Watson)	50 mg/ml	5 to 10 mg intramuscularly daily for 6 to 8 days	Has been used for amenorrhea or abnormal uterine bleeding. ( <a href="#">Drug Facts and Comparisons</a> ; 2008:230.)
Hydroxyprogesterone Caproate in oil (compounding pharmacies) 	250 mg/ml	Injected intramuscularly Individualize dosage	Weekly injections significantly reduce preterm labor and delivery for high-risk women with a history of spontaneous preterm delivery. (Meils PJ, et al. <i>New England Journal of Medicine</i> 2003; 348; 2379-2385.)
Testosterone aqueous (compounding pharmacies) 	Various	Injected intramuscularly individualize dosage	Can cause local irritation and absorption is not always uniform. ( <a href="#">Drug Facts and Comparisons</a> ; 2007:259.)
Testosterone pellets (compounding pharmacies)	Various	Pellets implanted subcutaneously	Testosterone blood levels peak at 1 month then sustained in normal range for 4 to 6 months. Requires surgical incision for insertions; pellets may extrude spontaneously. (Bhasin S, et al. <i>Journal of Clinical Endocrinology &amp; Metabolism</i> Vol 91, issue 6; 1995-2010.)
<b>NON-Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
Premarin IV® conjugated equine estrogens (CEE) (Wyeth-Ayerst)	25 mg	25 mg intravenously or intramuscularly repeat in 6 to 12 hours if necessary	Used for abnormal uterine bleeding. ( <a href="#">Drug Facts and Comparisons</a> ; 2008:220b.)
Estradiol Cypionate * in oil (compounding pharmacies) 	Various	1 to 5 mg intramuscularly every 3 to 4 weeks	Short-term cyclical use for moderate to severe vasomotor symptoms and vulva/vaginal atrophy. Taper or discontinue medication at 3 to 6 month intervals. ( <a href="#">Drug Facts and Comparisons</a> ; 2009:224a.)
Depo-Estradiol® estradiol cypionate* in cottonseed oil (Pharmacia)	5 mg/ml	1 to 5 mg intramuscularly every 3 to 4 weeks	Short-term cyclical use for moderate to severe vasomotor symptoms and vulva/vaginal atrophy. Taper or discontinue medication at 3 to 6 month intervals. ( <a href="#">Drug Facts and Comparisons</a> ; 2009:224a.)
Estradiol Valerate* in oil (compounding pharmacies) 	Various	10 to 20 mg intramuscularly every 4 weeks	For moderate to severe vasomotor symptoms and vulva/vaginal atrophy associated with menopause. Attempts to discontinue medication at 3 to 6 month intervals. ( <a href="#">Drug Facts and Comparisons</a> ; 2008:220a.)

\*Bioidentical hormones may be bound to various esters to increase the length of activity. Only when the ester is removed from the hormone by the body does the hormone become bioidentical.

<b>INJECTABLES</b>			
<b>NON-Bioidentical</b>	<b>Dosages Available</b>	<b>Dosing Regimen</b>	<b>Comments/References</b>
<u>Delestrogen®</u> estradiol valerate* in sesame oil (JHP)	10 mg/ml	10 to 20 mg intramuscularly every 4 weeks	For moderate to severe vasomotor symptoms and vulva/vaginal atrophy associated with menopause. Attempts to discontinue medication at 3 to 6 month intervals. ( <u>Drug Facts and Comparisons</u> ; 2008:220a.) Generics available.
<u>Testosterone Propionate*</u> in oil (compounding pharmacies) 	Various	Injected intramuscularly individualize dosage	Short acting testosterone ester.
<u>Estradiol Cypionate* /Testosterone Cypionate*</u> in oil (compounding pharmacies) 	Various	Injected intramuscularly every 2 to 4 weeks	Long acting estradiol and testosterone derivative. ( <u>Drug Facts and Comparisons</u> ; 2007:224, 260a.)
<u>Makena®</u> hydroxyprogesterone Caproate* in castor oil (Ther-Rx)	250mg/ml	250mg intramuscularly once weekly	To reduce preterm birth in a single pregnancy for women who have a history of preterm birth in a single pregnancy. Begin between week 16, 0 days and week 20, 6 days gestation. Continue until week 37, 0 days gestation or delivery.  ( <u>Drug Facts and Comparisons</u> ; 2011: 231.)

\*Bioidentical hormones may be bound to various esters to increase the length of activity. Only when the ester is removed from the hormone by the body does the hormone become bioidentical.