

# Reproductive Health & Genitourinary Drugs

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## 1. Hormonal Contraceptives

### Mechanism of Action (MOA) and Classification:

#### Combined Oral Contraceptives (COCs) (e.g., Ethinyl estradiol + Levonorgestrel, Drospirenone)

- **MOA:** Suppress ovulation by inhibiting FSH and LH secretion; thicken cervical mucus; alter endometrial lining to prevent implantation.
- **Indications:** Contraception, PCOS, endometriosis, dysmenorrhea, acne.
- **Common SE:** Nausea, headache, weight gain, venous thromboembolism (VTE), hypertension.
- **Key Notes:** Contraindicated in smokers >35 years, history of VTE, stroke, or estrogen-dependent cancers.

#### Progestin-Only Pills (POPs) (e.g., Norethindrone, Desogestrel)

- **MOA:** Thickens cervical mucus to prevent sperm penetration; suppresses ovulation inconsistently.
- **Indications:** Contraception in breastfeeding women or those with contraindications to estrogen.
- **Common SE:** Irregular bleeding, headache, breast tenderness.
- **Key Notes:** Must be taken at the same time daily for efficacy.

#### Injectable Contraceptives (e.g., Medroxyprogesterone acetate - Depo-Provera)

- **MOA:** Suppresses ovulation by inhibiting gonadotropin release.
- **Indications:** Long-term contraception.
- **Common SE:** Amenorrhea, weight gain, bone density loss.
- **Key Notes:** Risk of osteoporosis with long-term use.

### **Implants (e.g., Etonogestrel - Nexplanon)**

- **MOA:** Suppresses ovulation and thickens cervical mucus.
- **Indications:** Long-term contraception (up to 3 years).
- **Common SE:** Irregular bleeding, weight gain.
- **Key Notes:** High efficacy (>99%).

### **Intrauterine Devices (IUDs) (e.g., Levonorgestrel - Mirena, Skyla; Copper IUD)**

- **MOA:** Prevents fertilization by thickening cervical mucus (hormonal) or creating a hostile uterine environment (copper).
- **Indications:** Long-term contraception, menorrhagia, endometriosis.
- **Common SE:** Irregular bleeding, cramping, risk of uterine perforation.
- **Key Notes:** Copper IUD is non-hormonal and can be used as emergency contraception.

### **Emergency Contraceptives (e.g., Levonorgestrel - Plan B, Ulipristal acetate - Ella)**

- **MOA:** Delays ovulation, prevents implantation.
- **Indications:** Post-coital contraception.
- **Common SE:** Nausea, vomiting, menstrual changes.
- **Key Notes:** Most effective within 72 hours (Levonorgestrel) or 120 hours (Ulipristal).

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## **2. Drugs for Menopause & Hormone Replacement Therapy (HRT)**

### **Estrogen Therapy (e.g., Estradiol, Conjugated estrogens)**

- **MOA:** Replaces declining estrogen levels to relieve menopausal symptoms.
- **Indications:** Menopausal symptoms, osteoporosis prevention.

- **Common SE:** Increased risk of VTE, endometrial hyperplasia (if unopposed estrogen), breast cancer risk.
- **Key Notes:** Must be combined with progestin in women with a uterus to prevent endometrial hyperplasia.

#### **Progestin Therapy (e.g., Medroxyprogesterone acetate)**

- **MOA:** Opposes estrogen effects on the endometrium, reducing hyperplasia risk.
- **Indications:** Used in combination with estrogen in HRT for women with a uterus.
- **Common SE:** Weight gain, mood changes, breast tenderness.

#### **Selective Estrogen Receptor Modulators (SERMs) (e.g., Raloxifene, Tamoxifen)**

- **MOA:** Estrogen agonist in bones, antagonist in breast and uterus.
- **Indications:** Osteoporosis prevention, breast cancer treatment/prevention.
- **Common SE:** Hot flashes, increased risk of VTE.
- **Key Notes:** Tamoxifen increases risk of endometrial cancer; Raloxifene does not.

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### **3. Drugs for Erectile Dysfunction (ED)**

- **Phosphodiesterase-5 (PDE-5) Inhibitors (e.g., Sildenafil, Tadalafil, Vardenafil)**
    - **MOA:** Increases nitric oxide levels, enhancing blood flow to the penis.
    - **Indications:** Erectile dysfunction, pulmonary hypertension.
    - **Common SE:** Hypotension, headache, priapism, flushing.
    - **Key Notes:** Contraindicated with nitrates due to severe hypotension risk.
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## 4. Drugs for Benign Prostatic Hyperplasia (BPH)

**Alpha-1 Adrenergic Antagonists (e.g., Tamsulosin, Alfuzosin, Doxazosin)**

- **MOA:** Relaxes prostate and bladder neck smooth muscle, improving urine flow.
- **Indications:** BPH, urinary retention.
- **Common SE:** Hypotension, dizziness.
- **Key Notes:** Tamsulosin is selective for prostate alpha receptors, reducing blood pressure effects.

**5-Alpha Reductase Inhibitors (e.g., Finasteride, Dutasteride)**

- **MOA:** Inhibits conversion of testosterone to dihydrotestosterone (DHT), reducing prostate size.
- **Indications:** BPH, androgenetic alopecia.
- **Common SE:** Decreased libido, erectile dysfunction.
- **Key Notes:** Takes months to show effect.

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## 5. Drugs for Infertility

- **Ovulation Induction Agents (e.g., Clomiphene citrate, Letrozole)**
  - **MOA:** Induces ovulation by increasing FSH and LH release.
  - **Indications:** Anovulatory infertility, PCOS.
  - **Common SE:** Multiple pregnancies, ovarian hyperstimulation syndrome.

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## 6. Drugs for Sexually Transmitted Infections (STIs)

- **Chlamydia Treatment:** Azithromycin or Doxycycline.
- **Gonorrhea Treatment:** Ceftriaxone + Azithromycin.
- **Syphilis Treatment:** Benzathine penicillin G.
- **Genital Herpes Treatment:** Acyclovir, Valacyclovir.
- **Trichomoniasis Treatment:** Metronidazole.

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## **7. Drugs for Urinary Incontinence & Overactive Bladder**

### **Antimuscarinic Agents (e.g., Oxybutynin, Tolterodine, Solifenacin)**

- **MOA:** Block M3 receptors in the bladder, reducing detrusor muscle contractions.
- **Indications:** Overactive bladder, urinary incontinence.
- **Common SE:** Dry mouth, constipation, blurred vision.

### **Beta-3 Adrenergic Agonists (e.g., Mirabegron)**

- **MOA:** Relaxes detrusor muscle, increasing bladder storage capacity.
  - **Indications:** Overactive bladder.
  - **Common SE:** Hypertension, urinary retention.
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