# Hormone Therapy for Gender Transitioning





## Estrogen and anti-androgen preparations for use in male to female gender reassignment therapy

| | | HIV drugs with no predicted effect | HIV drugs predicted to inhibit metabolism | HIV drugs predicted to induce metabolism |
|---|---|---|---|---|
| **Estrogens** | | DOR, RPV, MVC, BIC, DTG, RAL ABC, ddI, FTC, 3TC, d4T, TAF, TDF, ZDV | ATV alone, ATV/cobi, DRV/cobi, EVG/cobi | ATV/r, DRV/r, FPV/r, IDV/r, LPV/r, SQV/r, TPV/r, EFV, ETV, NVP |
| Estradiol oral | *Starting dose* | 2 mg/day | 1 mg/day | Increase estradiol dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 4 mg/day | 2 mg/day | |
| | *Maximum dose* | 8 mg/day | 4 mg/day | |
| Estradiol gel (preferred for >40 y and/or smokers) | *Starting dose* | 0.75 mg twice daily | 0.5 mg twice daily | Increase estradiol dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 0.75 mg three times daily | 0.5 mg three times daily | |
| | *Maximum dose* | 1.5 mg three times daily | 1 mg three times daily | |
| Estradiol patch (preferred for >40 y and/or smokers) | *Starting dose* | 25 µg/day | 25 µg/day* | Increase estradiol dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 50-100 µg/day | 37.5-75 µg/day | |
| | *Maximum dose* | 150 µg/day | 100 µg/day | |
| Conjugated estrogen† | *Starting dose* | 1.25-2.5 mg/day | 0.625-1.25 mg/day | Increase estradiol dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 5 mg/day | 2.5 mg/day | |
| | *Maximum dose* | 10 mg/day | 5 mg/day | |
| Ethinylestradiol | *Starting dose* | No interaction expected, but not recommended due to thrombotic risks | Not recommended | Not recommended |
| | *Average dose* | | | |
| | *Maximum dose* | | | |
| **Androgen Blockers** | | DOR, RPV, MVC, BIC, DTG, RAL ABC, ddI, FTC, 3TC, d4T, TAF, TDF, ZDV | ATV alone, ATV/cobi, ATV/r, DRV/cobi, DRV/r, EVG/cobi, FPV/r, IDV/r, LPV/r, SQV/r, TPV/r | EFV, ETV, NVP |
| Spironolactone | *Starting dose* | 50 mg/day | No interaction expected. No dose adjustment required. | No interaction expected. No dose adjustment required. |
| | *Average dose* | 150 mg/day | | |
| | *Maximum dose* | 400 mg/day | | |
| Finasteride | *Starting dose* | 2.5 mg/day | Finasteride has a large safety margin. No dose adjustment required. | Increase finasteride dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 2.5 mg/day | | |
| | *Maximum dose* | 5 mg day | | |
| Cyproterone acetate | *Starting dose* | 50 mg/day | 25 mg/day | Increase cyproterone dosage as needed based on clinical effects and monitored hormone levels. |
| | *Average dose* | 150 mg/day | 75 mg/day | |
| | *Maximum dose* | 150 mg/day | 75 mg/day | |
| Goserelin | *Starting dose* | 3.6 mg/month | No interaction expected. No dose adjustment required. | No interaction expected. No dose adjustment required. |
| | *Average dose* | 3.6 mg/month | | |
| | *Maximum dose* | 3.6 mg/month | | |
| Leuprorelin acetate | *Starting dose* | 3.75 mg/month | No interaction expected. No dose adjustment required. | No interaction expected. No dose adjustment required. |
| | *Average dose* | 3.75 mg/month | | |
| | *Maximum dose* | 3.75 mg/month | | |
| Triptorelin | *Starting dose* | 3.75 mg/month | No interaction expected. No dose adjustment required. | No interaction expected. No dose adjustment required. |
| | *Average dose* | 3.75 mg/month | | |
| | *Maximum dose* | 3.75 mg/month | | |

† Conjugated estrogen is associated with high thromboembolic risk and therefore should be avoided.

* Matrix type transdermal patch can be cut in order to reduce the amount of hormone delivered/day.

## Colour Legend

No clinically significant interaction expected.

Potential interaction which may require dosage adjustment and/or close monitoring.

Coadministration is not recommended.

## Recommendations for dose changes:

- All recommendations for dose changes are empirical and based on doses/formulations available in the UK (additional doses/formulations may be available in other countries).
- Recommendations for dose changes in presence of **inhibitors of estrogen metabolism** are based on the assumption that the magnitude of the drug-drug interaction is expected to be less pronounced for transdermal or topical applications than for oral drug administration as the first-pass metabolism is avoided.
- Recommendations for dose changes in presence of **inhibitors of testosterone metabolism** are based on the assumption that the magnitude of the drug-drug interaction is expected to be less pronounced for topical and intramuscular applications than for oral drug administration as the first-pass metabolism is avoided.
- *Note:* androgen deprivation treatment may prolong the QT interval. Caution should be taken when using with antiretroviral drugs that can potentially prolong the QT interval (i.e., ATV alone, ATV/r, ATV/cobi, LPV/r, SQV/r, EFV, RPV).

## References for hormone therapy dosage recommendations in absence of antiretroviral drugs:


1. Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Royal College of Psychiatrists, London, 2013, Document CR181.*
2. Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *Hembree WC et al. J Clin Endocrinol Metab, 2009, 94(9):3132-54.*
3. Guidelines for the primary and gender-affirming care of transgender and gender nonbinary people. Department of Family & Community Medicine, University of California, 2016.
4. Endocrine care of transpeople part I. A review of cross-sex hormonal treatments, outcomes and adverse effects in transmen. Meriggiola MC, Gava G. Clin Endocrinol (Oxf). 2015, 83(5):597-606.


Abbreviations: ATV atazanavir, DOR doravirine, ABC abacavir, DRV darunavir, EFV efavirenz, ddI didanosine, EVG Elvitegravir, ETV etravirine, FTC emtricitabine, FPV fosamprenavir, NVP nevirapine, 3TC lamivudine, IDV indinavir, RPV rilpivirine, d4T stavudine, LPV lopinavir, MVC maraviroc, TAF tenofovir alafenamide, SQV saquinavir, BIC bictegravir, TDF tenofovir-DF, TPV tipranavir, DTG dolutegravir, ZDV zidovudine, /cobi cobicistat, RAL raltegravir, /r ritonavir

## Androgen preparations for use in female to male gender reassignment therapy

| | | HIV drugs with no predicted effect | HIV drugs predicted to inhibit metabolism | HIV drugs predicted to induce metabolism |
|---|---|---|---|---|
| **Androgens** | | DOR, RPV, MVC, BIC, DTG, RAL ABC, ddI, FTC, 3TC, d4T, TAF, TDF, ZDV | ATV alone, ATV/cobi, ATV/r, DRV/cobi, DRV/r, EVG/cobi, FPV/r, IDV/r, LPV/r, SQV/r, TPV/r | EFV, ETV, NVP |
| Testosterone topical gel 1% | *Initial low dose* | 12.5-25 mg in the morning | 12.5-25 mg in the morning | Increase testosterone dosage as needed based on clinical effects and monitored hormone levels. |
| | *Initial average dose* | 50 mg in the morning | 25-50 mg in the morning | |
| | *Maximum dose* | 100 mg in the morning | 50-100 mg in the morning | |
| Testostereone enanthate or cypionate | *Initial low dose* | Not applicable | Not applicable | Increase testosterone dosage as needed based on clinical effects and monitored hormone levels. |
| | *Initial average dose* | 50-100 mg/week | 25-50 mg/week | |
| | *Maximum dose* | Not applicable | Not applicable | |
| Testosterone undecanoate | *Initial low dose* | Not applicable | Not applicable | Increase testosterone dosage as needed based on clinical effects and monitored hormone levels. |
| | *Initial average dose* | 750 mg IM, repeat after 4 weeks and then every 10 weeks | 375-500 mg IM, repeat after 4 weeks and then every 10 weeks | |
| | *Maximum dose* | Not applicable | Not applicable | |
| Mixed Testosterone Esters | *Initial low dose* | Not applicable | Not applicable | Increase testosterone dosage as needed based on clinical effects and monitored hormone levels. |
| | *Initial average dose* | 250 mg/2-3 weeks | 125 mg/2-3 weeks | |
| | *Maximum dose* | Not applicable | Not applicable | |

### Colour Legend

No clinically significant interaction expected.

Potential interaction which may require dosage adjustment and/or close monitoring.

Coadministration is not recommended.

### Recommendations for dose changes:

- All recommendations for dose changes are empirical and based on doses/formulations available in the UK (additional doses/formulations may be available in other countries).
- Recommendations for dose changes in presence of **inhibitors of estrogen metabolism** are based on the assumption that the magnitude of the drug-drug interaction is expected to be less pronounced for transdermal or topical applications than for oral drug administration as the first-pass metabolism is avoided.
- Recommendations for dose changes in presence of **inhibitors of testosterone metabolism** are based on the assumption that the magnitude of the drug-drug interaction is expected to be less pronounced for topical and intramuscular applications than for oral drug administration as the first-pass metabolism is avoided.
- *Note:* androgen deprivation treatment may prolong the QT interval. Caution should be taken when using with antiretroviral drugs that can potentially prolong the QT interval (i.e., ATV alone, ATV/r, ATV/cobi, LPV/r, SQV/r, EFV, RPV).

### References for hormone therapy dosage recommendations in absence of antiretroviral drugs:

1. Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Royal College of Psychiatrists, London, 2013, Document CR181.*
2. Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *Hembree WC et al. J Clin Endocrinol Metab, 2009, 94(9):3132-54.*
3. Guidelines for the primary and gender-affirming care of transgender and gender nonbinary people. Department of Family & Community Medicine, University of California, 2016.
4. Endocrine care of transpeople part I. A review of cross-sex hormonal treatments, outcomes and adverse effects in transmen. Meriggiola MC, Gava G. Clin Endocrinol (Oxf). 2015, 83(5):597-606.

Abbreviations: ATV atazanavir, DOR doravirine, ABC abacavir, DRV darunavir, EFV efavirenz, ddI didanosine, EVG Elvitegravir, ETV etravirine, FTC emtricitabine, FPV fosamprenavir, NVP nevirapine, 3TC lamivudine, IDV indinavir, RPV rilpivirine, d4T stavudine, LPV lopinavir, MVC maraviroc, TAF tenofovir alafenamide, SQV saquinavir, BIC bictegravir, TDF tenofovir-DF, TPV tipranavir, DTG dolutegravir, ZDV zidovudine, /cobi cobicistat, RAL raltegravir, /r ritonavir