

## APPENDIX 7

### Hormone Options: Testosterone Therapy

There are several options for administration of testosterone, including injectables, topical gels or patches, and implantable long-acting pellets. Choosing which formulation is best often depends on patient preference, ability to self-inject, risks of medication transfer to others, response to hormone therapy, insurance coverage, and cost.

#### Injectable Testosterone Formulations

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The most common form of testosterone are injectables, due to their low cost and ability to increase testosterone quickly and efficiently. Testosterone can be injected subcutaneously (SC) or intramuscularly (IM).

INJECTABLES	
<b>Medication name</b>	Testosterone cypionate (cottonseed oil) or Testosterone enanthate (sesame seed oil)
<b>Frequency</b>	Injected weekly or every two weeks, IM or SC
<b>Additional comments</b>	SC injections use smaller needles than IM, and tend to be less painful. IM injections may be preferred or necessary for large volumes.  Biweekly dosing reduces the number of injections, but leads to wider fluctuation in testosterone levels which can be uncomfortable. Weekly dosing may be a better choice for those concerned about the impact of fluctuating hormone levels on mood or other medical conditions.

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#### Topical Testosterone Formulations

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Topical testosterone may provide a steadier level that is considered to be more similar to physiologic fluctuations of testosterone since it is dosed daily. Consider starting on topical formulations especially if there are concerns about the effects of significant fluctuations in hormone levels, and/or if more gradual changes are desired.

GELS	
<b>Medication name</b>	AndroGel packets, AndroGel actuated pump, Testim tubes
<b>Frequency</b>	Applied Daily
<b>Additional comments</b>	<p>Patients must use caution in avoiding skin to skin contact at application area(s) with partners, children, or pets until the medication is completely absorbed. Hands should be washed immediately after application. If skin to skin contact is anticipated, the area should be washed with soap and water or covered. The majority of the dose will be absorbed within 4 hours of application.</p> <p><b><i>Recommended application site is at upper arms.</i></b></p>
PATCHES	
<b>Medication name</b>	Androderm patch, 2mg or 4mg
<b>Frequency</b>	New patch(es) applied daily
<b>Additional comments</b>	<p>Patches are known to commonly cause skin irritation. Not recommended for patients known to have sensitive skin.</p>

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#### Long-Acting Testosterone Formulations

Long-acting formulations can be good options for those who find regular injections difficult and who are not candidates for topical formulations. These injections and implantable pellets may provide more consistent levels of testosterone over longer periods of time. They tend to be higher cost and need to be administered by a medical professional in the clinic. Typically, long-acting formulations are recommended only after other methods have been tried.

IMPLANTABLE PELLETS	
<b>Medication name</b>	Testopel
<b>Frequency</b>	Implanted every 3 to 4 months.
<b>Additional comments</b>	<p>Requires minor surgical procedure to implant pellets under the skin, in the upper, outer area of the buttock.</p> <p>It is recommended that individuals have been on another form of testosterone prior to initiating Testopel to ensure testosterone is tolerable.</p> <p>Typically a prior authorization will be required by insurance companies.</p>
LONG ACTING INJECTABLES	
<b>Medication name</b>	Aveed (testosterone undecanoate)
<b>Frequency</b>	Initial injection, injection at 4 weeks, then injections every 10 weeks thereafter..
<b>Additional comments</b>	<p>Due to certain unique risks, the FDA has approved this medication only under a restricted prescribing scheme. Providers and healthcare facilities must be specially certified before they can administer Aveed. Fenway Health is a certified site.</p> <p>It is rare, but there is a risk of pulmonary oil microembolism and/or anaphylaxis following injection, therefore patients must remain in the clinic for 30min following injections for observation.</p> <p>Due to the high cost, typically a prior authorization will be required and this medication must be obtained from a specialty pharmacy. Patients may be responsible for working with their insurance and the pharmacy to obtain the medication.</p>

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#### Oral Testosterone Formulations

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ORAL	
Medication name	testosterone undecanoate capsules (Jatenzo)
Frequency	By mouth twice daily
Additional comments	<p>Jatenzo has a warning for risk of elevated blood pressure while taking this medication. Your provider will want to monitor blood pressure closely in the first several months of use.</p> <p>Based on the recent approval of this medication, no generic alternative, and little information of effectiveness in TGD populations, this medication may be expensive and/or difficult to obtain.</p>