
PUBERTY BLOCKERS & PUBERTY INHIBITORS

by *Karin Selva, MD*

Pediatric Endocrinologist

Randall Children's Hospital at Legacy Emanuel, Portland, OR

Let's start by describing what happens during puberty. When the brain determines that it is time to start puberty, usually around age 11 in male bodied persons and 10 in female bodied persons, the pituitary gland releases 2 hormones called LH (luteinizing hormone) and FSH (follicle stimulating hormone). With a rise in these two hormones, they both then affect the sex gland at hand by producing sex hormones: testes produce testosterone, and ovaries produce estrogen. It is these sex hormones that cause the typical changes we see with puberty and they occur in a series of steps called Tanner Stages 1-5. Tanner Stage 1 is, generally speaking, the time from birth to the onset of puberty, at which point the child enters Tanner Stage 2.

In male-bodied persons:

- First, the LH and FSH cause increase in testicular size;
- Which then results in an increase in testosterone production;
- Testosterone causes increase in pubic hair and phallic size;
- There is more acne;
- They get axillary (armpit) hair and facial hair;
- Eventually they get a growth spurt and their voice changes;
- When they are around 18 years of age, puberty is complete and growth stops

In female-bodied persons:

- Estrogen causes breast development first;
- This progresses and the person then gets more curves, and fat deposits in the typical adult female places;
- About 2 years after the start of breast development, menstrual periods start;
- A female-bodied person does get pubic hair, axillary (armpit) hair and acne, but not from estrogen. These changes come from hormones that are produced from the adrenal glands, and happen independently of LH, FSH and estrogen.

WHAT ARE PUBERTY BLOCKERS AND HOW DO THEY WORK?

These are agents (or medicines) that block (or as we say suppress) the release of LH and FSH from the pituitary gland. This then stops testosterone from being released from the testes, and estrogen from being released from the ovaries. Thus, they SUPPRESS PUBERTY. Without exposure to the sex hormones, the body does not undergo the changes associated with them.

These agents (medicines) come in 2 forms:

[Leuprolide](#) or [Depot Lupron](#): This form of the medicine is an injectible that is given on either a monthly or every 3 month basis. It is injected into the muscle. Often the patient or family members are taught how to administer this shot at home.

[Suprellin](#) or [Histrelin](#): This form is an implant. A very small device is implanted under the skin of one's upper arm, and it slowly releases the agent (medicine) over a period of one year. The unit must be replaced on a yearly basis by a surgeon, but this can be done under local anesthesia.

WHY ARE THEY USED AND WHEN ARE THEY PRESCRIBED?

These agents (medicines) are used for many different reasons. In children they are used to treat precocious puberty, when puberty happens too early. They are given to a child until the child is older and mature enough to enter into puberty, and once these agents are stopped, puberty will start on its own.

In adults, they are used for treatment of certain sex hormone sensitive cancers, like prostate cancer, to prevent the patient from being exposed to hormones that can increase cancer growth.

These agents are also used to suppress [endogenous](#) sex hormone production in an adult individual who is undergoing cross-gender transition. By suppressing the individual's production of sex hormones, administering cross hormone therapy for transition is more effective.

In transgender youth, puberty blockers are used to suppress the endogenous pubertal changes that quite often worsen the individual's gender dysphoria. In addition, by not being exposed to one's own sex hormones, cross hormone therapy is even more effective at achieving the desired physical appearance in gender transition.

WHAT DO THEY COST AND ARE THEY COVERED BY INSURANCE?

These agents (medicines) are expensive. Typically, Depot-Lupron costs range from around \$700 (online) to \$800 (Portland area) to \$1,500 dollars a month elsewhere for the monthly preparation. The 3 month preparation is equivalent in price. The histrelin implant is approximately \$15,000 total for the device and the cost of surgically implanting it.

Also, labs need to be monitored while on these agents. A pre-treatment LH, FSH and testosterone or estradiol level is checked, as well as a post treatment level to assess the level of suppression.

Some health insurance will cover them partially in cross gender treatment, and some won't. As a result, the out of pocket cost of these agents can be quite substantial.

Dr. Karin Selva was named a "Top Doctor" by Portland Monthly Magazine in 2011, 2010 and 2009. Her work has appeared in peer reviewed publications such as; Journal of Pediatrics, Hormone Research, Journal of Pediatric Endocrinology, Pediatrics and more.

In addition to being a valued member of the TransActive Advisory Board, Dr. Selva currently serves on the Portland Public Schools Wellness Advisory Committee, is a voting member of the board of STAND for Children and is a leading Portland and Northwest advocate for the medical rights of transgender adolescents to experience puberty in a way that is hormonally congruent with their gender identity.

WHAT IF THE CHILD HAS ALREADY BEGUN PUBERTY?

Even better. :) Actually one has to be in the second stage of puberty to demonstrate that there is puberty to suppress. LH and FSH need to be elevated in order to prescribe these agents. Then the levels are checked again after treatment to make sure they have decreased.

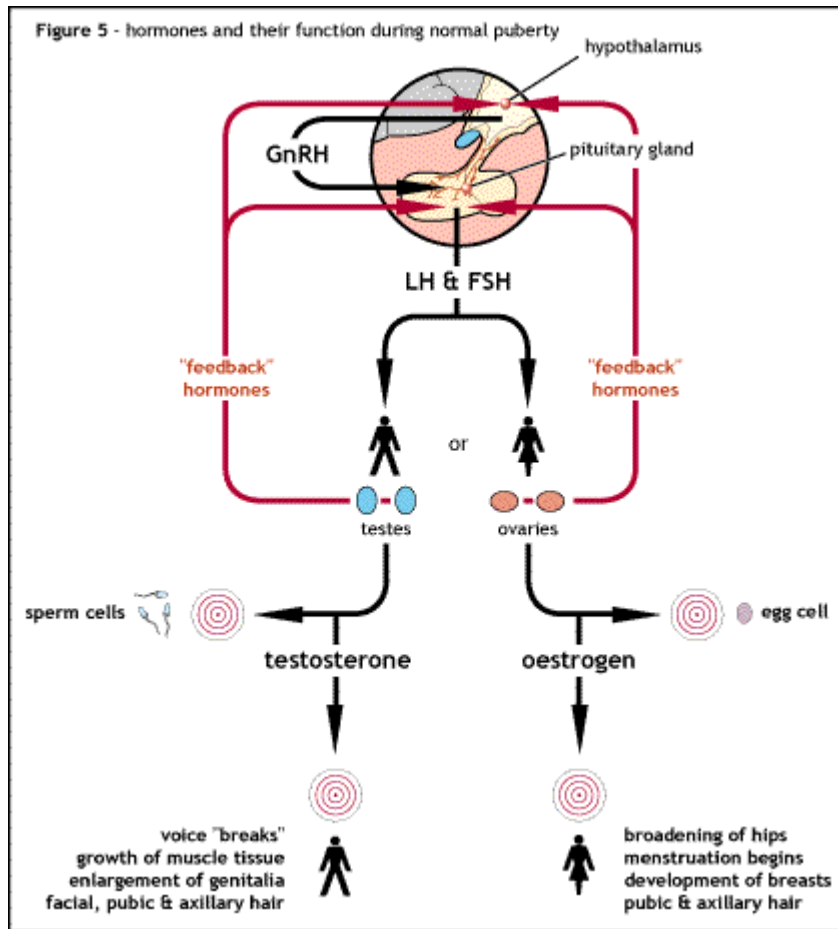
Being on these medications will cause breast reduction in female bodied persons. They will not reduce or stop the growth of pubic hair, axillary hair or acne. In male bodied persons, testicular size will decrease, phallic growth will stop, but not regress. The frequency of spontaneous erections and wet dreams goes down significantly. Still, the person will have pubic hair, axillary hair and acne from the adrenal glands.

WHO IS QUALIFIED TO PRESCRIBE AND MONITOR THEIR EFFECTIVENESS?

Pediatric or adult endocrinologists. In adults, urologists also prescribe these medications.

Dr. Karin Selva was named a "Top Doctor" by Portland Monthly Magazine in 2011, 2010 and 2009. Her work has appeared in peer reviewed publications such as; Journal of Pediatrics, Hormone Research, Journal of Pediatric Endocrinology, Pediatrics and more.

In addition to being a valued member of the TransActive Advisory Board, Dr. Selva currently serves on the Portland Public Schools Wellness Advisory Committee, is a voting member of the board of STAND for Children and is a leading Portland and Northwest advocate for the medical rights of transgender adolescents to experience puberty in a way that is hormonally congruent with their gender identity.



Tanner Stages in Female Bodied Persons				Tanner Stages in Male Bodied Persons			
I				I		3	<2.5
II				II		4	2.5-3.2
III				III		10	3.6
IV				IV		16	4.1-4.5
V				V		25	>4.5