Hormones and medications

**FERTILITY TREATMENT** makes a lot more sense if you have a basic understanding of the hormones that control female reproduction and of the medications that are used in treatment. Most of the medications are versions of the body’s own hormones.

Let’s start with the hormones. In the natural menstrual cycle, the brain controls the pituitary gland, and the pituitary gland controls the ovaries. The hormones made by the follicles in the ovaries feed back to the brain and pituitary to keep the whole system in control. You can think of it as a bit like driving a car. To get started you push down hard on the accelerator. Once you reach the desired speed you ease off on the accelerator.

The body does the same. The brain releases a hormone called Gonadotrophin Releasing Hormone (GnRH). GnRH makes the pituitary release a hormone called Follicle Stimulating Hormone (FSH). FSH makes the follicles grow and the follicles release Estradiol (often abbreviated to E2). When the brain and pituitary sense increasing levels of E2 they ease off the release of FSH.

Using this analogy, fertility treatments like clomiphene, IUI with ovarian stimulation and IVF are rather like driving the car faster. How it is done is quite sophisticated. The doctors and scientists who design the ovarian stimulation methods are like the engineers who soup-up the car engine. The clinic staff monitor the ovary during the course of treatment using blood tests and ultrasound scans; their job is similar to driving the car at high speed. The table on page 16 summarises the hormones involved, what they do, the main medications we use, and how they work.

More information

- [www.medsafe.govt.nz](http://www.medsafe.govt.nz) – use the ‘search’ box to find the data sheet for any medication.
- [www.fertilitylifelines.com](http://www.fertilitylifelines.com) – good index for Serono products.
- [www.puregon.com](http://www.puregon.com)
Hormones and medications

<table>
<thead>
<tr>
<th>The hormones</th>
<th>What the hormones do</th>
<th>The medications</th>
<th>Medication trade names</th>
<th>What the medications do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonadotrophin Releasing Hormone (GnRH)</td>
<td>Release FSH and LH from the pituitary gland.</td>
<td>GnRH agonists</td>
<td>Buserelin, Lupron, Leuproline, Lucrin, Zoladex, Synarel</td>
<td>Modified version of the body’s own hormone. They initially stimulate the release of FSH just like GnRH, but then the body adapts and stops secreting its own GnRH. This is called ‘down regulation’. By doing this, they prevent the LH surge.</td>
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<td></td>
<td></td>
<td>GnRH antagonists</td>
<td>Cetrotide, Orgalutran</td>
<td>Modified version of the body’s own hormone. They block the body’s GnRH and therefore prevent the LH surge.</td>
</tr>
<tr>
<td>Follicle stimulating hormone (FSH)</td>
<td>Stimulates follicles in the ovary to grow.</td>
<td>Follicle stimulating hormone (FSH)</td>
<td>Gonal F, Puregon, Elonva, Menopur</td>
<td>Copy or modified version of the body’s own hormone, so they do the same thing.</td>
</tr>
<tr>
<td>Luteinising hormone (LH)</td>
<td>A surge of LH in the middle of the cycle triggers the final maturation of the egg and ovulation of the follicle(s) containing mature eggs. After ovulation it helps maintain progesterone secretion.</td>
<td>Luteinising hormone (LH)</td>
<td>Luveris</td>
<td>Copy of the body’s own hormone. Not used much because it is so expensive.</td>
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<tr>
<td>human Chorionic Gonadotrophin (hCG)</td>
<td>hCG is the main hormone made by the early embryo once it implants. It has a similar biological effect to LH. hCG is the hormone detected by pregnancy tests.</td>
<td>human Chorionic Gonadotrophin (hCG)</td>
<td>Ovidrel, Pregnyl</td>
<td>Ovidrel is a copy of the body’s own hormone; Pregnyl is purified from the urine of pregnant women. Mainly used instead of LH to trigger ovulation because it is more convenient and cost effective.</td>
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<tr>
<td>Estradiol (E2)</td>
<td>E2 is the main estrogen hormone made by developing follicles. It has many actions, including growing the lining of the uterus (called the endometrium).</td>
<td>Estradiol (E2)</td>
<td>Progynova, Estrofem, Climara</td>
<td>Copy of the body’s own hormone. Used in manufactured cycles.</td>
</tr>
<tr>
<td>Progesterone (P4)</td>
<td>P4 is the main hormone secreted by the follicle once it has released its egg. Its major action is to maintain the lining of the uterus so an embryo can implant and cause a pregnancy.</td>
<td>Progesterone (P4)</td>
<td>Utrogestan, Crinone, Gestone</td>
<td>Copy of the body’s own hormone. Used in manufactured cycle, and to support the uterus in IVF cycles.</td>
</tr>
<tr>
<td>Clomiphene citrate (CC)</td>
<td></td>
<td>Serophene</td>
<td>Blocks feedback by estradiol so the pituitary gland releases more FSH.</td>
<td></td>
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<tr>
<td>The contraceptive pill</td>
<td></td>
<td>Leven ED, Microgynon, Ava</td>
<td>Low dose estrogen in the pill stops the release of FSH and LH and helps make IVF more reliable.</td>
<td></td>
</tr>
</tbody>
</table>
the hormones

What the hormones do

What the medications do

Gonadotrophin Releasing hormone (GnRh)
Release FSh and LH from the pituitary gland.

GnRh agonists
Buserelin, lupron, leuprolide, lucrin, Zoladex, Synarel
Modified version of the body's own hormone. they initially stimulate the release of FSh just like GnRh, but then the body adapts and stops secreting its own GnRh. this is called 'down regulation'. By doing this, they prevent the LH surge.

GnRh antagonists
cetrotide, orgalutran
Modified version of the body's own hormone. they block the body's GnRh and therefore prevent the LH surge.

Follicle stimulating hormone (FSh)
Stimulates follicles in the ovary to grow.

Follicle stimulating hormone (FSh)
Gonal F, puregon, Elonva, Menopur
Copy or modified version of the body's own hormone, so they do the same thing.

Luteinising hormone (LH)
a surge of LH in the middle of the cycle triggers the final maturation of the egg and ovulation of the follicle(s) containing mature eggs. after ovulation it helps maintain progesterone secretion.

Luteinising hormone (LH)
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Human chorionic Gonadotrophin (hCG)
hCG is the main hormone made by the early embryo once it implants. it has a similar biological effect to LH. hCG is the hormone detected by pregnancy tests.

Human chorionic Gonadotrophin (hCG)
ovidrel, pregnyl
ovidrel is a copy of the body's own hormone; pregnyl is purified from the urine of pregnant women.

Mainly used instead of LH to trigger ovulation because it is more convenient and cost effective.

Estradiol (E2)
E2 is the main estrogen hormone made by developing follicles. it has many actions, including growing the lining of the uterus (called the endometrium).

Estradiol (E2)
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Copy of the body's own hormone. Used in manufactured cycles.

Progesterone (P4)
p4 is the main hormone secreted by the follicle once it has released its egg. its major action is to maintain the lining of the uterus so an embryo can implant and cause a pregnancy.

Progesterone (P4)
Utrogestan, crinone, Gestone
Copy of the body's own hormone. Used in manufactured cycle, and to support the uterus in iVF cycles.

Clomiphene citrate (CC)
Serophene Blocks feedback by estradiol so the pituitary gland releases more FSh.

The contraceptive pill
levlen Ed, Microgynon, ava
Low dose estrogen in the pill stops the release of FSh and LH and helps make iVF more reliable.