



## Innovative treatment of prostate cancer

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**Humlegaarden holds one week training courses for prostate cancer patients, where we share with you the latest knowledge about prostate cancer and the newest treatment principles.**

Alongside the teaching, we will write your medical file and begin your treatments.

After one week at Humlegaarden, you will get your own personalized treatment schedule, just as Humlegaarden will continue to stay in contact with you and advise you when needed.

There is currently a very extensive knowledge and research in prostate cancer and there are countless divergent opinions about what to do when you get prostate cancer. As a result, every newly diagnosed prostate cancer patient feels a deep need for further information about his disease and it is this need that Humlegaarden is trying to satisfy. It is obviously not only the newly diagnosed patient who feels that need. At all stages of any progressive illness, you have a need for more knowledge on what to do now.

When the course is completed, you should be able to answer the following questions:

What is my Gleason score, PSA, serum-testosterone and serum-dihydrotestosterone and what does it mean for my disease?

Apart from these tests, what other blood tests are relevant to my disease and how should they be interpreted? These include alkaline phosphatase (as a bone marker) and vitamin D3, CTC (circulating tumor cells in the blood).

You should be able to answer questions about medical and surgical castration, and what you can do when these methods do not work anymore.

You need to understand what is happening inside the prostate cancer cells - the interaction between testosterone, dihydrotestosterone and the androgen receptors, and you should understand the role of the adrenal glands and the cancer cells in the production of male hormones (androgens).

*What to do when PSA rises despite the fact that you have been either surgically or medically castrated?*

The first thing you do is to make sure that you are actually sufficiently castrated, ie. that testosterone levels in the blood is below preferably 20 nanograms / dl. (= <0.69 mmol / l). Earlier it was 50, but today it is preferred to bring testosterone to under 20.

We know that 37.5% of castrated men with prostate cancer do not come under 20, and 12.5% do not come under 50.

Castration has an impact only on the testosterone produced in the testicles, but testosterone is also produced in the adrenal glands and in cancer cells themselves. 90% of circulating testosterone in the blood is bound to a protein substance in the blood SHBG (sex hormone-binding globulin), while the free testosterone enters the prostate cancer cells and is irreversibly converted to DHT (dihydrotestosterone) by the enzyme 5-alpha reductase.

DHT has a much greater affinity (binding capacity) - 2 - 5 times higher – to the so-called androgen receptor (AR) than testosterone itself. DHT also has a least 50 x greater binding capacity to AR than known anti-androgens such as Casodex. DHT also has 10 times higher ability to stimulate androgen receptor signalling to the nucleus to intensify growth.

And now comes the interesting part:

If you measure DHT in castrated men with prostate cancer, in many cases you see that this is not reduced, but remains within normal range despite low testosterone.

This obviously means that you can ask yourself whether it is even worth to castrate, when in many cases this does not bring DHT levels down.

Secondly, it means that such men with normal DHT obviously must be brought down to a lower level with the 5-alpha reductase inhibitor dutasteride (Avodart), which inhibits both of the two isoenzymes, called 5-alpha reductase.

0.5 mg Avodart daily reduces DHT to 4% of the original level.

At Humlegaarden we measure testosterone as well as dihydrotestosterone (DHT), so we can identify the need for dutasteride treatment.

Therefore a so-called ADT-3 treatment with a GnRH agonist like e.g. Zoladex, 5-alpha reductase (Avodart) and an anti-androgen as Casodex has been brought into use, so you try to inhibit at all levels.

However, it is a problem that often an amplification of the androgen receptor gene takes place, so that the androgen receptor develops hypersensitivity to even very small amounts of DHT and testosterone.

This means that the cancer grows almost regardless of how high the concentration of T and DHT are, so now you have reached the so-called

castration-resistant stage.

Another problem is that castration affects only the testosterone produced in the testicles, but not testosterone, which comes from the adrenal glands and the cancer cells themselves.

It is therefore difficult to give a 100% effective treatment of hormone-sensitive prostate cancer, and we must appreciate that there are other ways to treat, namely low-dose metronomic chemotherapy e.g. with the KEES protocol or a modification of this, where the cancer cell's hormone sensitivity does not mean anything.

Other options are angiogenesis inhibitors like Celebrex, herbal treatments with pomegranate, resveratrol, Cool Cayenne (chilli), artemisinin, Lycopene, noscipine, vitamin D3, and mistletoe compounds.

Shortly there will be a more universal testosterone inhibitor on the market, namely Abiraterone, expected to be approved in most countries within the next year.

**The above is meant to give you an impression of the contents of the prostate cancer training at Humlegaarden.**

The training takes place on an ongoing basis all year round, and we look forward to welcoming you to Humlegaarden.