

INTRODUCTION

Prostate tissue, both normal and malignant, relies on the male hormone, testosterone for the control of its function and growth. It is possible to regulate the growth signals to prostate cancerous tissue by altering the hormonal environment in which the cancer cells find themselves.

Reducing the concentration of testosterone in the body reduces the growth signal to prostate tissues and results in the following effects on prostate cancer (which may be present in the prostate gland or outside it):

1. Slowing of growth of the normal and malignant prostate cells.
2. Shrinkage in size of both the entire prostate gland and the prostate cancer itself.
3. Sensitisation of the prostate cancer cells to the effects of Radiation Therapy.

- Blockade of the sites in the target organs, of which the prostate gland is an example, where testosterone binds in order to exert its effect (the receptor). This is achieved using medications known as Peripheral Androgen Blockers (Tablets). The testosterone produced by organs other than the testes would also be blocked by Peripheral Androgen Blockers.

The use of both types of medication, injections and tablets, together, is called combined or total androgen blockade, while the individual medications, injections or tablets can be used alone.

It is common practice to start with oral medications for one to two weeks before the first injection and to continue the tablets for one to three months. The injections can be given monthly, every three months, every

- **Low Risk Patients:** No hormonal therapy is usually required unless there is a need to physically reduce the size of the whole prostate gland, usually to improve flow or allow a particular type of Radiation Therapy called Brachytherapy.
- **Intermediate Risk Patients:** There may or may not be an indication for the use of a three to six-month period of hormonal therapy prior to the delivery of radiation to shrink the gland, slow the growth of the cancer and sensitise the cancer to Radiation Therapy.
- **High Risk Patients:** There is once again a three to six-month course of hormonal therapy prior to radiation, for the same reasons, but the hormonal therapy is then continued for an extended period ranging from nine months to three years.

ADVERSE EFFECTS OF HORMONAL THERAPY

REDUCING TESTOSTERONE

This can be achieved in several ways:

- Removal of the source of testosterone (removal of the testes; also known as orchiectomy or castration). This is rarely performed nowadays.
- Inhibition of the production of testosterone by the testes using medication that affects the function of the pituitary gland which ultimately controls the production of testosterone by the testes. The majority of, but not all, testosterone is produced in the testes. This is achieved using medications known as LHRH agonists or antagonists (injections).

six months or yearly depending upon the preference of the medical practitioner and the patient.

RISK STATUS

In the context of the use of Radiation Therapy for the definitive treatment of Prostate cancer, the use of hormones depends on the risk status of the particular patient and the preferences of the prescribing medical practitioner. In essence, the following broad approach applies:

Testosterone is one of many chemical messengers in the body which has the ability to regulate normal function of many, if not all, the organs in the body including the brain, the musculoskeletal system and the metabolic system, among others.

Blocking the supply of testosterone to these organ systems can result in unwanted adverse effects or side effects. These can occur to a greater or lesser extent in individual patients and are more pronounced the longer the period of hormonal blockade.

Short Term Effects:

The common effects observed in the short term use of androgen blocking methods include:

- Hot flushes and sweating
- Mood swings
- Loss of libido and erectile function
- Fatigue and weakness
- Weight gain
- Breast tenderness and enlargement

These are generally temporary and gradually resolve upon restoration of normal body testosterone levels (this can take several months).

Long Term Effects:

Longer term hormonal blockade can result in more serious and longer lasting effects such as:

- Loss of bone density – leading to osteoporosis
- Alteration of sugar and fat metabolism

HORMONAL THERAPY IN CONJUNCTION WITH RADIATION THERAPY FOR PROSTATE CANCER



USEFUL INFORMATION

Address: UPMC Whitfield Cancer Centre,
Cork Road, Co. Waterford

Telephone: 051337444

Website: UPMCWhitfieldCancerCentre.ie

UPMC |  **WHITFIELD
CANCER CENTRE**

with the development of adult onset diabetes or a rise in blood cholesterol levels and subsequently problems of raised blood pressure and heart disease.

It will be necessary for your Medical Practitioner to monitor these effects in order to minimise the impact they may have on your day to day health. It has certainly been demonstrated that the benefits of the hormonal therapy, more often than not, outweigh the risks, but every patient's individual circumstances need to be taken in to account.