

Understanding Prostate Cancer: Key Facts and Insights

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Abstract

Prostate cancer is a significant health concern for men worldwide, typically developing slowly within the prostate gland, though aggressive variants can progress rapidly and pose greater treatment challenges. Early detection remains crucial for improving survival and quality of life. Recent research underscores the complexity of prostate cancer risk, highlighting established factors such as age, race, family history, genetic mutations, diet, and obesity, as well as emerging considerations including chemical exposures and chronic inflammation. Treatment options are diverse and tailored to disease stage, ranging from active surveillance for indolent cases to surgery, radiation, hormone therapy, chemotherapy, and advanced modalities like targeted therapy and immunotherapy. Prevention strategies focus on modifiable lifestyle factors, including a nutritious diet, regular exercise, weight management, and avoidance of smoking, while the role of medications and screening is individualized based on risk. Ongoing advances in understanding risk and therapeutic options are improving outcomes for men affected by prostate cancer.

Key words: prostate cancer, PSA, Androgen Deprivation Therapy

Introductions

Prostate cancer is a significant contributor to both morbidity and mortality rates in developing and underdeveloped countries. Limited access to early detection, diagnostic facilities, and effective treatment options often leads to advanced-stage diagnoses and poorer outcomes in these regions.¹ The most frequent non-skin cancer causes the second largest number of deaths in men, as compared to other cancers² Prostate cancer begins in the prostate gland, which is part of the male reproductive system. In most cases, prostate cancer develops slowly, and immediate

treatment may not be necessary. However, certain forms can grow and spread rapidly, making treatment more challenging. Detecting prostate cancer early significantly increases the likelihood of successful long-term outcomes.³

If prostate cancer extends beyond the prostate gland or metastasizes to other areas of the body, a variety of treatment approaches remain available. Although advanced prostate cancer can be more challenging to cure, many therapies can slow its growth and prolong survival. Even when curing the cancer is not possible, ongoing treatments

can help control symptoms, improve comfort, and support a better quality of life.⁴

Defining Prostate Cancer

Prostate cancer is a malignancy that originates in the prostate gland. It most commonly affects men aged 50 and older. While prostate cancer often progresses slowly and may not cause significant symptoms for years, some cases are aggressive and can spread (metastasize) to other parts of the body.⁵

Risk Factors

Several Risk Factors (2026 Update)

Recent research highlights several established and emerging risk factors for prostate cancer:

- **Age over 50:** Most cases occur in men older than 50, with risk increasing as men age.
- **Race and ethnicity:** Black men, especially those of African descent, have a higher risk and often develop more aggressive disease. Asian-American and Hispanic men have lower rates.
- **Family history:** Having a first-degree relative (father, brother, or son) with prostate cancer significantly increases risk, especially if multiple relatives are affected or if cases occurred at a younger age.
- **Genetic mutations:** Inherited mutations in genes such as BRCA1, BRCA2, HOXB13, ATM, and those linked to Lynch syndrome are associated with a higher risk.
- **Geography:** Higher rates are observed in North America, Northern Europe, Australia, and the Caribbean, likely due to environmental and lifestyle factors as well as screening practices.
- **Diet:** Diets high in red or processed meats and saturated fats may increase risk; diets rich in fruits, vegetables, and healthy fats may offer some protection.
- **Obesity:** Obesity is linked to a greater risk of aggressive or recurrent prostate cancer.
- **Smoking:** Smoking may contribute to prostate cancer progression and recurrence, though evidence is mixed.
- **Chemical exposure:** Exposure to agents such as Agent Orange, pesticides, or cadmium may increase risk.

- **Chronic prostate inflammation (prostatitis):** Ongoing inflammation may play a role in the development of prostate cancer.
- **Sexually transmitted infections:** Some studies suggest infections like gonorrhea or chlamydia may increase risk, but evidence remains inconclusive.
- **Vasectomy:** Recent studies suggest a possible slight increase⁶

Treatment of Prostate Cancer:

1. Active Surveillance:

For low-risk or slow-growing prostate cancers, doctors may recommend close monitoring through regular PSA tests, digital rectal exams, and biopsies, rather than immediate treatment.

2. Surgery:

- **Radical Prostatectomy:**
Removal of the prostate gland and some surrounding tissue.
- Suitable for localized cancers.

3. Radiation Therapy:

- **External Beam Radiation:**
High-energy rays target cancer cells.

- **Brachytherapy:** Radioactive seeds implanted in the prostate.

4. Hormone Therapy (Androgen Deprivation Therapy):

- Reduces levels of male hormones (androgens) that can stimulate cancer growth.
- Used alone or combined with other treatments, especially for advanced cancer.

5. Chemotherapy:

- Uses drugs to kill rapidly dividing cancer cells.
- More common in advanced or hormone-resistant prostate cancer.

6. Targeted Therapy and Immunotherapy:

- Newer approaches that target specific cancer cell mechanisms (e.g., PARP inhibitors) or the use of a vaccine called [sipuleucel-T \(Provenge\)](#) is approved for men with few or no symptoms from metastatic CRPC.

7. Other Treatments:

- **Cryotherapy:** Freezing cancer cells.

- **High-Intensity Focused Ultrasound (HIFU):** Uses sound waves to destroy tissue.^{7,8,9}

Prevention of Prostate Cancer:

1. Healthy Diet:

A diet rich in fruits, vegetables, whole grains, and healthy fats (such as omega-3 fatty acids) may help reduce risk.

2. Regular Physical Activity:

Exercise can improve overall health and may lower the risk.

3. Maintain Healthy Weight:

Obesity is linked to a higher risk of aggressive prostate cancer.

4. Avoid Smoking:

Smoking may increase the risk of prostate cancer progression.

5. Limit Red Meat and Dairy:

Some studies suggest that high consumption of red meat and high-fat dairy products may increase risk, but evidence is not conclusive.

6. Screening and Regular Checkups:

Discuss with a healthcare provider about the risks and benefits of PSA screening, especially if you have risk factors such as age, family history, or African ancestry.

7. Medications:

Some medications, like 5-alpha reductase inhibitors (finasteride, dutasteride), may lower risk in some men, but are not routinely recommended for prevention due to side effects¹⁰

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