

5 POINTS TO REMEMBER ABOUT:

## Nuclear Medicine: Transformations and Future Perspectives

*Speaker: Dr. Marc-André Morin, specialist in nuclear medicine*

### 1. Targeted cancer treatment

Nuclear medicine uses radiolabeled molecules that attach directly to prostate cancer cells, allowing for precise cancer targeting while sparing surrounding healthy tissue. For example, Radium-223 specifically targets bone metastases in prostate cancer. Due to its chemical similarity to calcium, radium is drawn to areas of intense bone remodeling, often near bone metastases. Once deposited in these areas, radium emits radiation that kills nearby cancer cells while minimizing effects on surrounding tissues.

### 2. Importance of PSMA receptors for Lutetium PSMA eligibility

PSMA (Prostate-Specific Membrane Antigen) is a protein abundantly present on prostate cancer cells, especially when the cancer is advanced or has metastasized. Lutetium PSMA treatment uses a radioligand (acting like an adhesive) targeting these receptors, directing treatment specifically to cancer cells. If the patient's cancer cells have enough PSMA receptors, they are eligible for this treatment, increasing the chances of effectiveness.

### 3. Eligibility criteria for candidates

This treatment is generally reserved for patients with metastatic prostate cancer for whom conventional treatments, such as hormone therapy and chemotherapy, are no longer effective. Besides PSMA receptor presence, patients should exhibit disease spread, particularly to bones or other organs (liver, lungs). Imaging exams help confirm if patients are suitable candidates for this targeted treatment.

### 4. Side effects of treatment

Like any radiation-based treatment, it may cause side effects, though they are usually milder due to the treatment's targeted nature. The most common side effects include initial fatigue and reduced blood cells, such as red cells, white cells, and platelets (cytopenia). Other effects may include nausea, gastrointestinal issues, and, in some cases, dry mouth that may alter taste. Regular blood tests help monitor and manage these side effects effectively.

## 5. Post-treatment precautions

After each treatment cycle, your body will be slightly radioactive, and precautions are necessary to limit exposure to others, especially close family members. Although the residual radiation dose is low, it is often recommended to keep a distance of two meters from others, sleep alone, and refrain from sexual activity for a period. Part of the radiation will be eliminated through urine in the first few days. Always sit when using the toilet, flush twice, and wash your hands before touching the door handle. Your doctor can answer any questions you may have regarding these precautions.

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