

# Nuclear Medicine

The Canadian Nuclear Safety Commission licenses the use of more than 50 radioisotopes that have transformed medicine.

$^{67}\text{Ga}$   
Gallium-67

## For infection detection

Gallium-67 is taken up and concentrated by tumours and inflammation, so it can be used to diagnose even chronic infections. It is also useful for imaging in cases of osteomyelitis of the spine.

$^{111}\text{In}$   
Indium-111

## For targeted diagnosis

Indium-111 is used to detect blood clots and locate abscesses and inflammation. It is also useful for diagnosing certain rare cancers.

$^{201}\text{Tl}$   
Thallium-201

## For heart health

Thallium-201 is used to diagnose coronary artery disease and to determine the extent of that disease. It is also useful for locating low-grade lymphomas.

$^{90}\text{Y}$   
Yttrium-90

## Hope for liver cancer patients

Yttrium-90 is an increasingly significant factor in liver cancer therapy, and it is also used to relieve pain and swelling associated with some types of arthritis.

$^{131}\text{I}$   
Iodine-131

## Versatile iodine

Iodine-131 is an effective treatment for thyroid disorders, such as Graves' Disease. It is also used in imaging scans to detect certain tumours of the nervous system.

$^{99\text{m}}\text{Tc}$   
Technetium-99m

## The most widely used isotope in the world

Technetium-99m is used to study disease processes and observe organ function in many parts of the body, including the heart, thyroid, liver, kidneys, gall bladder, lungs, gastric system and skeleton. Every year, Tc-99m is used to diagnose over 40 million people worldwide.

$^{133}\text{Xe}$   
Xenon-133

## Breathing easier

Xenon-133 gas is used to create functional images of pulmonary ventilation, which can advance the treatment of asthma and other respiratory disorders. It also helps diagnose certain lung diseases early.

$^{153}\text{Sm}$   
Samarium-153

## For cancer therapy and pain relief

Samarium-153 is used to relieve pain caused by bone cancers, and it is an effective treatment for prostate and breast cancer.

