Canadian Agency for Drugs and Technologies in Health

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Supporting Greater Efficiency and Effectiveness in the Health System Management of Technetium-99m

CADTH Project in Brief

Issues

The medical isotope technetium-99m (^{99m}Tc) is the most widely used medical isotope in nuclear medicine and its supply is susceptible to shortages.

CADTH has undertaken a multi-step project to support greater efficiency and effectiveness in the health system management of ^{99m}Tc.

With its Isotopes Project, CADTH has evaluated a variety of clinical uses of ^{99m}Tc, and has determined the priority uses by comparing ^{99m}Tc to other medical imaging options using such criteria as the diagnostic accuracy, availability, and cost of ^{99m}Tc versus the alternative medical imaging options.

The goal is to provide a framework that will guide decisions in the Canadian health care system about the allocation of ^{99m}Tc during a period of reduced supply.

Technology

A medical isotope is a safe radioactive substance used primarily to diagnose illness. The energy emitted by the isotope when it is injected into a patient is detected by special cameras while the patient is being scanned. These scans essentially light up the organ within the body and show how it is working rather than what it looks like. The branch of medicine and medical imaging that uses these isotopes is known as nuclear medicine.[1]

Objectives

- To assemble a diverse group of regional experts throughout Canada to address a potential isotopes shortage in ^{99m}Tc: The Medical Isotopes and Imaging Modalities Advisory Committee (MIIMAC) comprised representatives from health professions, institutions, health regions, ministries of health, the public, and experts in scientific research and methodology.
- To develop, taking a national perspective, a priority ranking of the most common clinical uses of ^{99m}Tc for use by decision-makers at various levels of the health system (i.e., institution, health authority, or jurisdiction) during a period of reduced supply of the isotope.
- To design a customizable, web-based prioritization tool that allows decision-makers to create priority lists specific to their institution, health authority, or jurisdiction, which reflects their local context, to be used during a period of reduced supply of the isotope.

Key Messages

During a technetium-99m supply disruption:

- The allocation of technetium-99m should follow an evidence-informed framework, while considering both the available alternatives and the local context.
- It is suggested that adjustments be made to the accessibility and frequency of use of other diagnostic imaging methods.

[1] Health Canada [Internet]. Ottawa: Health Canada; 2012. Medical isotopes: frequently asked questions; 2009 Aug 31 [cited 2012 Feb 24]. Available from: http://www.hc-sc.gc.ca/dhp-mps/brgtherap/activit/fs-fi/isotopes-med-faq-eng.php

Methods

Multi-criteria decision analysis (MCDA) is a transparent and explicit decision-making process in which: relevant criteria are identified; weights are given to each criterion to reflect the relative importance of each criterion from the decision-making body perspective; evidence and information for the criteria are gathered, considered, and scored; and weighted preference scores are derived based on the criteria weights and criteria score.

The MCDA process has four basic steps:

- Development of relevant criteria.
- Identification of the possible courses of action (most common clinical uses of ^{99m}Tc).
- Formal evaluation of each possible course of action.
- Formulation of priorities and recommendations.

The ultimate result of the MCDA process is a prioritized list of the possible courses of action (or of the clinical uses); backed by an explicit and transparent methodology that organizes all relevant information.

The approach to selecting clinical uses and alternatives was comprehensive but not exhaustive. The list of clinical uses accounts for the greater part of the volume of work that is done at most Canadian institutions and includes time-sensitive procedures, based on input from MIIMAC.

Results

In the event of a supply disruption, the allocation of ^{99m}Tc used in medical diagnostic imaging should follow an evidence-informed framework, while considering both the available alternatives and the local context.

Options for diagnostic imaging alternatives and other contextual elements are unique to each setting where ^{99m}Tc use must be prioritized during a supply disruption. It is best to customize the information to each unique circumstance to decide how ^{99m}Tc may be allocated in this kind of situation.

The national guidance final report includes an example of a priority list developed with the MCDA process as informed from a national perspective. The web-based prioritization tool provides the ability for decision-makers to create their own output that may differ from the national perspective because it reflects local context.

For complete reports and intervention tools on this topic, please visit www.cadth.ca .