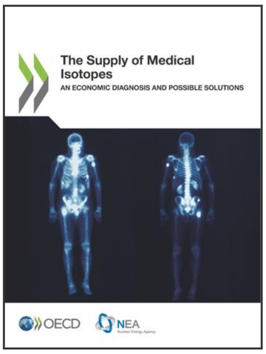
Executive summary

This report explores the use and substitutability of Technetium-99m (Tc-99m) in health care and the main economic reasons behind its unreliable supply. It proposes policy options to help address the supply issue.

Tc-99m is an essential product for health systems that is used in 85% of nuclear medicine diagnostic scans performed worldwide, or around 30 million patient examinations every year, making it the most commonly used medical isotope. Tc-99m-based scans allow diagnoses of a broad range of diseases in many parts of the human body, including cancer, heart disease and neurological disorders such as dementia. Substitution of Tc-99m is difficult. No comparable substitutes are available for diagnoses of various cancers, such breast, melanoma and head/neck cancer, and for a range of diagnostics in children, in particular paediatric bone and renal scans. In some areas, Tc-99m-based scans are the preferred standard of care, such as whole-body bone scans to screen for skeletal metastases. Although substitution of Tc-99m is clinically possible for some of the most common types of diagnostic scans, notably cardiac and bone scans, effective substitution of these would imply cost increases and require significant long-term investments in alternative scanning equipment and human resources.

Medical isotopes are subject to radioactive decay and cannot be stored. For this reason, they have to be delivered just-in-time through a complex supply chain that requires sufficient capacity for ongoing production, plus a reserve in case of unplanned outages. However, ageing production facilities and low prices of Tc-99m have contributed to a lack of production capacity, which has made the supply of Tc-99m unreliable. The current structure of the supply chain leaves some participants unable to increase the prices of their services to levels that would cover all fixed and variable costs of the required production capacity for Tc-99m.

A phased and co-ordinated discontinuation of funding of the commercial production of Tc-99m by governments of producing countries would likely be necessary. This would compel producers to increase prices. Because a policy of withdrawing government funding of the production of medical isotopes could destabilise supply in the short-term, it would need to be accompanied, at least temporarily, by measures to help ensure that price increases are passed on through the supply chain. One way to achieve this would be to increase price transparency, to encourage supply chain participants to comply with commitments to increase prices. A temporary price floor could help ensure that producers are able to make up for the reduction of government funding through additional revenue. The establishment of a commodities trading platform could make prices more responsive to supply and demand and thus help ensure that the appropriate level of production capacity is available. Alternatively, governments could maintain funding of production but have end-user countries bear the costs in proportion to the share of total supply they consume. Governments could also aim to reduce the reliance on the current supply chain, through substituting Tc-99m with alternative isotopes or diagnostic modalities where possible, or by investing in alternative means of producing Mo-99/Tc-99m. However, the latter two options could be costly.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