NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Interventional procedures consultation document

Microwave ablation for primary or metastatic cancer in the lung

Cancer can start in the lung (primary) or spread to it from another part of the body (metastatic). In this procedure, a probe is inserted into the lung, directly through the skin of the chest, to send microwaves into the cancer cells. This produces heat, aiming to destroy the cancer (ablation).

This is a review of NICE's interventional procedures guidance on microwave ablation for treating primary lung cancer and metastases in the lung.

NICE's interventional procedures advisory committee met to consider the evidence and the opinions of professional experts, who are consultants with knowledge of the procedure.

This document contains the draft guidance for consultation. Your views are welcome, particularly:

- comments on the draft recommendations
- information about factual inaccuracies
- additional relevant evidence, with references if possible.

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others.

This is not NICE's final guidance on this procedure. The draft guidance may change after this consultation.

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After consultation ends, the committee will:

- meet again to consider the consultation comments, review the evidence and make appropriate changes to the draft guidance
- prepare a second draft, which will go through a resolution process before the final guidance is agreed.

Please note that we reserve the right to summarise and edit comments received during consultation or not to publish them at all if, in the reasonable opinion of NICE, there are a lot of comments or if publishing the comments would be unlawful or otherwise inappropriate.

Closing date for comments: 18 October 2021

Target date for publication of guidance: January 2022

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1 Draft recommendations

1.1 Evidence on the safety of microwave ablation for treating primary lung cancer and metastases in the lung is adequate but shows it can cause serious complications. Evidence on its efficacy shows it reduces tumour size. But the evidence on improvement in survival, long-term outcomes and quality of life is limited in quantity and quality. Therefore, this procedure should only be used with special arrangements for clinical governance, consent, and audit or research. Find out what special arrangements mean on the NICE interventional procedures guidance page.

1.2 Further research should be randomised controlled trials or disease registry studies. It should report patient selection, disease progression and quality of life and take account of the effectiveness of managing oligometastatic disease in patients.

1.3 Clinicians who want to use microwave ablation to treat primary lung cancer and metastases in the lung should:

- Inform the clinical governance leads in their healthcare organisation.
- Give patients (and their families and carers as appropriate) clear written information to support shared decision making, including NICE's information for the public.
- Make sure that patients (and their families and carers as appropriate) understand the procedure's safety and efficacy, and any uncertainties about these.
- Audit and review clinical outcomes of all patients having the procedure. The main efficacy and safety outcomes identified in this guidance can be entered into NICE's interventional procedure outcomes audit tool (for use at local discretion).
- Discuss the outcomes of the procedure during their annual appraisal to reflect, learn and improve.

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1.4 Healthcare organisations should:

- Make sure systems are in place that support clinicians to collect and report data on outcomes and safety for everyone having this procedure.
- Regularly review data on outcomes and safety for this procedure.

1.5 People with primary or metastatic lung cancer should be referred to a multidisciplinary team.

1.6 The procedure should only be done in specialist centres by clinicians with specific training in this procedure.

2 The condition, current treatments and procedure

The condition

2.1 Lung cancer is one of the most common types of cancer. The symptoms often do not appear until the disease is at an advanced stage, and the prognosis is generally poor. Cancer that begins in the lungs is called primary lung cancer. There are 2 main types of primary lung cancer: small-cell lung cancer (which is fast growing and can spread quickly) and non-small-cell lung cancer (which usually grows and spreads slowly; this includes squamous cell carcinoma, adenocarcinoma and large-cell carcinoma).

2.2 Cancer that starts in one part of the body and spreads via the blood stream to the lungs is known as secondary lung cancer (also called metastatic lung cancer or lung metastasis). Common tumours that metastasise to the lungs include breast cancer, colon cancer, prostate cancer, sarcoma, bladder cancer, neuroblastoma and Wilm's tumour.

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Current treatments

2.3 NICE's guideline on lung cancer describes the treatment of non-small-cell and small-cell lung cancer. The choice of treatment for primary or metastatic cancer in the lung depends on the type, size, position and stage of the cancer, and the patient's overall health. Common treatments for primary or metastatic cancer in the lung include surgery, chemotherapy, radiotherapy, or a combination of these. Other treatments include photodynamic therapy, thermal ablation, immunotherapy and biological therapy.

The procedure

2.4 The procedure is usually done using general anaesthesia, and occasionally using local anaesthesia and sedation. Under imaging guidance, a probe is advanced through the chest wall and into each targeted lesion. It delivers high-frequency microwave energy to rapidly agitate water molecules in the tissues. This converts energy into heat, which causes tumour necrosis. Patients with larger tumours or multiple lesions may have multiple pulses of energy delivered within a treatment session.

2.5 This procedure aims to destroy tumour cells and create localised areas of tissue necrosis with minimal damage to surrounding normal tissues.

3 Committee considerations

The evidence

3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 10 sources, which was discussed by the committee. The evidence included 3 systematic reviews and/or meta-analyses, 4 non-randomised comparative studies, 2 case series and 1 review of

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lung microwave ablation database. It is presented in the summary of key evidence section in the interventional procedures overview. Other relevant literature is in the appendix of the overview.

3.2 The professional experts and the committee considered the key efficacy outcomes to be: disease progression, survival, reduction in tumour size and quality of life.

3.3 The professional experts and the committee considered the key safety outcomes to be: pneumothorax, pleural effusion, air embolism and bleeding.

3.4 Patient commentary was sought but none was received.

Committee comments

3.5 Clinical experts explained that microwave ablation is quicker and may be better tolerated than other ablation techniques.

3.6 Evidence on the efficacy of microwave ablation for primary and metastatic lung cancer is similar to other ablation procedures in terms of tumour size reduction.

3.7 Clinical experts explained that microwave ablation is not used to treat small-cell lung cancer.

3.8 This procedure may have a role for patients with primary or metastatic lung cancer who are unable to have surgery or whose tumour is not resectable.

3.9 There is more than one device available for this procedure.

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Chair, interventional procedures advisory committee
September 2021

ISBN:

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