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Title Criteria for appropriate use of Fludeoxyglucose Positron Emission Tomography (FDG-PET) in lung cancer

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Aim
To define criteria for appropriate use of FDG-PET for patients with lung cancer. The criteria reported in this document are to be intended as guidance for programs of clinical governance aimed at: supporting clinicians on the use of FDG-PET; post hoc analyses of appropriate use of FDG-PET; contributing to the planning of the regional health service.

Conclusions and results
The panel examined and assessed the role of FDG-PET for 11 clinical indications. One hundred and fourteen studies were included. All retrieved studies evaluated diagnostic accuracy of FDG-PET, and no studies evaluating the impact of FDG-PET on clinical outcomes were found.

Recommendations
Criteria for appropriate use of FDG-PET lung cancer:

Appropriate (level of evidence: moderate)
- characterization of solitary pulmonary nodules ≥1 cm
- staging of patients with non-small cell lung cancer (NSCLC)

Inappropriate for lack of diagnostic role of FDG-PET
- during-treatment evaluation of early response to neo-adjuvant therapy in patients treated for NSCLC
- during-treatment evaluation of early response to neo-adjuvant therapy in patients treated for small cell lung cancer

(SCLC)
- staging of patients with bronchioloalveolar cancer (BAC)
- end of treatment evaluation of response to systemic therapy in patients treated for SCLC
- follow up of patients treated for NSCLC with no suspicion of recurrence

Uncertain (level of evidence: very low) ;
- target volume definition of radiation treatment with curative intent in patients treated for lung cancer
- end of treatment evaluation of response to neo-adjuvant therapy in patients treated for NSCLC
- diagnosis and staging of suspected loco-regional recurrence in patients treated for NSCLC
- staging of patients with SCLC

Methods
A panel of 20 experts, comprising nuclear physicians, radiologists, radiotherapists, surgeons, oncologists, pneumologists, haematologists and health directors working in health trusts and teaching hospital of Emilia-Romagna was convened to discuss and agree on the methodology for a research program aimed at defining the criteria for appropriate use of FDG-PET in lung cancer. For each indication a systematic review was performed. The GRADE approach was applied to assess the level of evidence of included studies. The RAND method was used to vote the appropriateness criteria.

To assign a level of appropriateness to the use of FDG-PET, the working group agreed on the following definitions:

Appropriate Clinical indications for which there is a rationale for change in management related to a patient-important clinical outcome, there is a high or moderate level of evidence for diagnostic accuracy of PET and the presumed benefit - resulting from the test results - is greater than the presumed harm.

Uncertain Clinical indications for which there is a rationale for change in management related to a patient-important clinical outcome, but there is a low or very low level of evidence for diagnostic accuracy of FDG-PET and balance between harms and benefit is unclear.

Inappropriate Clinical indications for which there is no rationale for change in management related to a patient-important clinical outcome or clinical indications for which there is a rationale for change in management related to a patient-important clinical outcome, there is a high or moderate level of evidence on poor diagnostic accuracy of FDG-PET and/or the presumed harm - resulting from the test results - is greater than the presumed benefit.

Indeterminate Clinical indications for which there is a rationale for change in management related to a patient-important clinical outcome, but there are no data on diagnostic accuracy of FDG-PET.

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