# INPLASY PROTOCOL

**Corresponding author:**
**Wang Tong**

**18940253569@163.com**

**Author Affiliation:**
**Shengjing Hospital of China Medical University**

**Support: No.**

**Review Stage at time of this submission: Preliminary searches.**

**Conflicts of interest:**
**None declared.**

## Can quantitative parameters of spectral CT predict lymph node metastasis in lung cancer? A meta-analysis

Tong, W[1]; Zheng, F[2]; Lue, Z[3]; Yang, H[4].

**Review question / Objective:** P: lymph node metastasis in lung cancer; I: spectral CT; C:conventional CT; O: diagnostic value; S:RCT OR NOT RCT.

**Information sources:** The literature related to lymph node metastasis in lung cancer diagnosed by spectral CT was retrieved through the following databases: PubMed, EMBASE, Cochrane Library, web of science, CNKI and Wanfang up to September 2022. Search strategy used the following keywords and syntax: "Lung Neoplasms OR Lung Cancer " AND "Lymphatic Metastasis OR Lymphatic Metastases " AND "spectral CT".In order to maximize the search results, we used the combination of subject words and free words to adjust the retrieval strategies according to different databases.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 September 2022 and was last updated on 20 September 2022 (registration number INPLASY202290096).

## INTRODUCTION

**Review question / Objective:** P: lymph node metastasis in lung cancer; I: spectral CT; C:conventional CT; O: diagnostic value; S:RCT OR NOT RCT.

**Condition being studied:** Noninvasive spectral CT is a novel technique that has been used for lymph node staging of lung cancer and shows good diagnostic performance, but there are differences in the results among studies, and the aim of this study was to conduct a meta-analysis

of published papers to provide more evidence-based data.

## METHODS

**Search strategy:** "Lung Neoplasms OR Lung Cancer " AND "Lymphatic Metastasis OR Lymphatic Metastases " AND "spectral CT"The literature related to lymph node metastasis in lung cancer diagnosed by spectral CT was retrieved through the following databases: PubMed, EMBASE, Cochrane Library, web of science, CNKI and Wanfang up to September 2022.

**Participant or population:** Lymph node metastasis in lung cancer.

**Intervention:** Spectral CT.

**Comparator:** Conventional CT.

**Study designs to be included:** Diagnostic Tests.

**Eligibility criteria:** Diagnostic tests for detection of lymph node metastasis in lung cancer with spectral CT.The results were confirmed by the gold standard: tissue biopsy, postoperative pathology. The original datas of the studys were complete, and the outcome indicators included true positive (TP), false positive (FP), false negative (FN) and true negative (TN), and four grid table data could be extracted.

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**Main outcome(s):** Noninvasive spectral CT is a novel technique that has been used to stage lymph nodes in lung cancer and has shown good diagnostic performance, but there is variation among studies, and the purpose of this study was to perform a meta-analysis of published articles to provide more evidence-based data.This experiment is scheduled to be completed before December 2022.

**Data management:** Using Stata 17.0 and Review Manager 5.2 software for statistical analysis.

**Quality assessment / Risk of bias analysis:** assessment tool (QUADAS-2) was used to evaluate the quality of the included studies, and 14 items were evaluated according to "yes", "no" and "unclear" one by one. Data extraction and quality evaluation were independently completed by two reviewers, and differences were resolved through discussion. Funnel chart and Egger linear regression were used to evaluate whether publication bias exists in the included studies.

**Strategy of data synthesis:** The pooled sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and diagnostic odds ratio of PET/CT and MRI were calculated respectively according to the bivariate mixed effect model,and the receiver operating characteristic curve (SROC) was plotted to calculate the area under curve(AUROC).

**Subgroup analysis:** We planned to perform a subgroup analysis based on different parameters in arterial phase and venous phase.

**Sensitivity analysis:** Using Stata 17.0 and Review Manager 5.2 software, the sensitivity analysis was carried out after the low-quality research was eliminated. If the combined sensitivity and specificity ratio did not change signifificantly in general, the results showed good stability and reliability.

**Language restriction:** No.

**Contributions of each author:**
Author 1 - Wang Tong.
Email: 18940253569@163.com
Author 2 - Fan Zheng.
Author 3 - Zou Lue.
Author 4 - Hou Yang.