

# INPLASY PROTOCOL

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**Conflicts of interest:**  
None declared.

## Comparison of the diagnostic value of 18F PET/CT and 99mTc SPECT for bone metastases:a meta-analysis

Fan, Z<sup>1</sup>; Wang, T<sup>2</sup>; Wu, T<sup>3</sup>; Liu D<sup>4</sup>.

**Review question / Objective:** To evaluate and compare the diagnostic value of 18F PET/CT and 99mTc SPECT for bone metastases using meta-analysis.

**Information sources:** "Tomography, Emission-Computed, single-photon, SPECT, 99mTc, PET/CT positron emission tomography-computed tomography, 18F, Bone, Neoplasm Metastasis, Sensitivity and Specificity "was retrieved from PubMed, EMBASE, Cochrane Library, Web Of Science,CNKI, Wanfang, and other databases until September 2022. The literature related to PET/CT and SPECT in the diagnosis of bone metastases was searched. The search strategy was adjusted according to different databases, used a combination of subject terms and free words to further obtain literature that met the inclusion criteria from reviews or included references.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 09 October 2022 and was last updated on 09 October 2022 (registration number INPLASY2022100036).

**Condition being studied:** The above two examinations have their own unique advantages in the application of bone metastases, but there are differences between the published results. This meta-analysis aims to comprehensively evaluate and compare the diagnostic value of PET/

### INTRODUCTION

**Review question / Objective:** To evaluate and compare the diagnostic value of 18F PET/CT and 99mTc SPECT for bone metastases using meta-analysis.

CT and SPECT, and provide some reference for the selection of clinical examinations.

## METHODS

**Participant or population:** Bone metastases.

**Intervention:** 18F PET/CT.

**Comparator:** 99mTc SPECT.

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

**Eligibility criteria:** Inclusion Criteria: PET/CT and SPECT in the diagnosis of bone metastases were confirmed by gold standard in the same population; The gold standard was consistent: biopsy, postoperative pathology, imagings or clinical follow-up; Outcome indicators included true positive, false positive, false negative and true negative, which could extract four-griddata.

**Information sources:** "Tomography, Emission-Computed, single-photon, SPECT, 99mTc, PET/CT positron emission tomography-computed tomography, 18F, Bone, Neoplasm Metastasis, Sensitivity and Specificity" was retrieved from PubMed, EMBASE, Cochrane Library, Web Of Science, CNKI, Wanfang, and other databases until September 2022. The literature related to PET/CT and SPECT in the diagnosis of bone metastases was searched. The search strategy was adjusted according to different databases, used a combination of subject terms and free words to further obtain literature that met the inclusion criteria from reviews or included references.

**Main outcome(s):** 18F-FDG PET/CT, 18F-NAF PET/CT and 99mTc SPECT all have high sensitivity and specificity in the diagnosis of bone metastases, but it is necessary to fully understand the primary tumor and the characteristics of the above examinations to choose an individualized modality. SPECT combined with CT improves the diagnostic efficacy over SPECT alone and can be the first choice for

patients with suspected bone metastases, offering good cost performance.

**Data management:** Stata (version 17.0) and Review Manager (version 5.2) for statistical analysis.

**Quality assessment / Risk of bias analysis:** The included studies were evaluated using QUADAS-2, and 14 items were evaluated according to "Yes", "no", and "unclear".

**Strategy of data synthesis:** The pooled sensitivity, specificity, positive likelihood ratio, negative likelihood ratio, and diagnostic odds ratio of PET/CT and SPECT 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:** Subgroup analyses were performed according to study design, the different tracers of 18F, and whether blinding was used.

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

**Language restriction:** No.

**Country(ies) involved:** China.

**Keywords:** 18F; PET/CT; 99mTc; SPECT; Neoplasm Metastasis ; meta-analysis.

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