# INPLASY PROTOCOL

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**Review Stage at time of this submission:** **Piloting of the study selection process.**

# Comparison of diagnostic value of PET/CT and MRI in patients with cervical cancer: A systematic review and meta-analysis

Tong Wang[1], Hongzan Sun[2], Zheng Fan[3], Lue Zou[4].

**Review question / Objective:** **P: cervical cancer I: PET/CT C:MRI O: diagnostic value S:RCT OR NOT RCT.**
**Condition being studied:** **Cervical cancer is a common gynecological malignant tumor, and the incidence rate has risen in recent years, tending to be younger.Cervical cancer treatment strategy is based on clinical and histopathological findings, mainly using 2018 FIGO staging. However, clinical staging is subjective and affected by many factors, and the accuracy of FIGO staging is low.With high soft tissue resolution, MRI can clearly display cervical lesions and parauterine infiltration, and is more sensitive to lymph node metastasis than FIGO staging and has a wide range of clinical applications.As a non-invasive examination, PET/CT can not only accurately display cervical anatomy and locate cancerous lesions, but also provide important information on tissue functional metabolism. It is more accurate to identify cervical cancer parauterine invasion and advanced patients than FIGO staging. Thus, these two methods have their own advantages in the application of cervical cancer.**

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 April 2020 and was last updated on 04 April 2020 (registration number INPLASY202040020).

## INTRODUCTION

**Review question / Objective:** **P: cervical cancer I: PET/CT C:MRI O: diagnostic value S:RCT OR NOT RCT.**

**Rationale:** **PET/CT and MRI have their own unique advantages in the application of cervical cancer.**

**Condition being studied:** **Cervical cancer is a common gynecological malignant tumor, and the incidence rate has risen in recent years, tending to be younger.Cervical cancer treatment strategy is based on clinical and histopathological findings, mainly using 2018 FIGO staging. However, clinical staging is subjective and affected by many factors, and the accuracy of FIGO staging is low.With high soft tissue resolution, MRI can clearly display cervical**

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## METHODS

**Search strategy:** PubMed、EMBASE、Cochrane library、Web of Science from date of inception to March 2020. Search strategy used the following keywords and syntax: "cervical cancer OR cervical carcinoma " AND "PET/CT OR PET OR positron emission tomography " AND "MRI OR MR OR magnetic resonance imaging".

**Participant or population:** Patients with cervical cancer.

**Intervention:** PET/CT

**Comparator:** MRI.

**Study designs to be included:** Diagnostic tests for detection of cervical cancer with PET/CT and MRI in the same population.

**Eligibility criteria:** Diagnostic tests for detection of cervical cancer with PET/CT and MRI in the same population.The results were confirmed by the gold standard: tissue biopsy, postoperative pathology or clinical and imaging follow-up as the reference standard. 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.

**Information sources:** By searching the databases of PubMed, EMBASE, Cochrane library and Web of Science, the search time was from date of inception to March 2020, and a comprehensive search was conducted on the published literature on the diagnosis of cervical cancer by PET/CT and MRI,without language restrictions. Search strategy used the following keywords and syntax: "cervical cancer OR cervical carcinoma " AND "PET/CT OR PET OR positron emission tomography " AND "MRI OR MR OR magnetic resonance imaging".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. In addition, we could further obtain the documents that meet the inclusion criteria from reviews or references.

**Main outcome(s):** Cervical cancer is a common gynecological malignant tumor. In recent years, the incidence of cervical cancer is on the rise and tends to be younger. It is estimated that 266,000 people have died of cervical cancer. Therefore, there is an urgent need for effective imaging methods to detect cervical cancer. PET/CT and MRI have their own unique advantages in the application of cervical cancer, but the number of cases is generally insufficient, and there are differences among the results of each study. This meta-analysis aims to evaluate and compare the diagnostic value of these two methods for cervical cancer patients, and provide some reference for the selection of clinical imaging examination and the evaluation of diagnostic efficiency. This experiment is scheduled to be completed before October 2020.

**Data management:** Using Meta-Disc 1.4, Stata 15.0 and Review Manager 5.2 software for statistical analysis.

**Quality assessment / Risk of bias analysis:** The diagnostic research quality 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 plan to conduct a subgroup analysis based on the type of study design(retrospective/ prospective), estimation method(patient-based assessment/ lesion-based assessment), site of metastatic lymph node, invasion and whether the blind method was adopted.

**Sensibility analysis:** Using Stata 15.0 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 significantly in general, the results showed good stability and reliability.

**Language:** No

**Countries involved:** China

**Keywords:** Cervical cancer; Positron emission tomography-computed tomography ;Magnetic resonance imaging;Diagnostic tests.

**Conflicts of interest:** We declare that we have no financial and personal relationships with other people or organizations that can inappropriately influence our work, there is no professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in.