# INPLASY PROTOCOL

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**Review Stage at time of this submission: Data analysis.**

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

# Systematic review and Meta-analysis of Biomarkers for Diagnosing Malignant Pleural Mesothelioma

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**Review question / Objective:** Previous studies showed the accuracy of different antibodies as biomarkers in the diagnosis of malignant pleural mesothelioma （MPM）, but the results are not consistent. To explore preferable biomarkers, a meta-analysis was used to compare the accuracy of six antibodies in the diagnosis of MPM.

**Condition being studied:** Previous studies showed non-invasive diagnostic biomarkers showed huge benefits in the early-stage diagnosis of malignant pleural mesothelioma (MPM), but the accuracy of different biomarkers was controversial. Hence, a systematic search was conducted using PubMed, EMBASE and Cochrane Library to identify relevant studies from the inception to March 2021. QUADAS-2 for Quality Assessment of Diagnostic Accuracy Studies was used to evaluate the quality of eligible studies. Meta-analysis was performed utilizing Stata 15.0 and Review Manager 5.4 software.the following six biomarkers. A meta-analysis was conducted to compare the accuracy of the following six biomarkers.

## INTRODUCTION

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## METHODS

**Search strategy:** Until March 2021, a systematic search was conducted in PubMed, Embase and Cochrane Library. When the search was completed, the title and abstract of each study were screened independently by two authors. We obtain all articles deemed appropriate by any party in the full text for further evaluation. Then, the same two authors will evaluate potential full texts and select studies based on inclusion/exclusion criteria, discuss the included studies and reach agreement to resolve differences through discussion and consensus. If no agreement can be reached, the opinion of the third reviewer will be sought.

**Participant or population:** Patients diagnosed with MPM by histopathological examination.

**Intervention:** Patients with distant metastasis of MPM.

**Comparator:** The accuracy of antibody biomarkers in the diagnosis of MPM.

**Study designs to be included:** (a) Study type: evaluated the diagnostic accuracy of MPM antibody markers prospectively or retrospectively. (b)Participants: Patients diagnosed with MPM by histopathological examination; (c) Reference criteria: Pleural biopsy tissue obtained surgically for histopathological diagnosis. (d) Outcomes:

The area under the curve (AUC), Sensitivity (SEN), specificity (SPE), diagnostic odds ratio (DOR).

**Eligibility criteria:** (a) Study type: We evaluated the diagnostic accuracy of MPM antibody markers prospectively or retrospectively. There were no restrictions on quality, sample size or number of patients. (b)Participants: Patients diagnosed with MPM by histopathological examination were included, excluding those with distant metastasis of MPM. There are no restrictions on race, sex, age, or cancer stage. (c) Reference criteria: Pleural biopsy tissue obtained surgically for histopathological diagnosis. (d) Outcomes: The area under the curve (AUC), Sensitivity (SEN), specificity (SPE), diagnostic odds ratio (DOR), positive likelihood ratio (PLR), negative likelihood ratio(NLR).

**Information sources:** https://PubMed.ncbi.nlm.nih.gov/ https://www.cochranelibrary.com/ https://www.embase.com/landing?status=grey

**Main outcome(s):** Study Characteristics 58 studies assessed the diagnostic accuracy of biomarkers for MPM. Calretinin may be more appropriate to be one of the indicators for combined diagnosis but more studies are required to confirm.

**Quality assessment / Risk of bias analysis:** Quality was assessed using the revised Diagnostic Accuracy Research Quality Assessment Tool (QUADAS-2). Deek's funnel plot was conducted to detect publication bias where there were more than 10 studies available for an index test.

**Strategy of data synthesis:** Stata 15.0 and Review Manager 5.4 statistical software programs were used to test the heterogeneity of the research and perform meta-analysis. We obtained a 2×2 contingency table by extracting the sensitivity and specificity data of each study. The SEN, SPE, PLR, NLR and DOR of the study are calculated, and the SROC curve is generated.

**Subgroup analysis:** Subgroup analysis according to the clinical detection methods.

**Sensitivity analysis:** Sensitivity analysis was performed to compare the accuracy of the different biomarkers.

**Language:** English.

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

**Keywords:** MPM; biomarkers; meta-analysis.

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