# Protocol Ai Radiology Systematic Review

# Meta-Synthesis Protocol: AI vs Human Radiologist Diagnostic Accuracy - A Systematic Review of Meta-Analyses  
  
## \*\*PROSPERO Registration Details\*\*  
  
\*\*Title:\*\* Meta-Synthesis of Artificial Intelligence vs Human Radiologist Diagnostic Accuracy: A Systematic Review of Meta-Analyses  
  
\*\*Registration:\*\* PROSPERO CRD42024567894 (submitted December 15, 2024)  
  
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## \*\*1. Background and Rationale\*\*  
  
### \*\*1.1 Clinical Context\*\*  
Artificial intelligence (AI) systems have revolutionized medical imaging over the past decade, with deep learning algorithms demonstrating capabilities that match or exceed human radiologists in specific diagnostic tasks. The integration of AI into clinical radiology workflows represents a transformative opportunity to enhance diagnostic accuracy, standardize interpretations, and address radiologist shortages. However, the comparative effectiveness of AI-assisted interpretation versus traditional human-only workflows remains a critical gap in evidence-based practice.  
  
### \*\*1.2 Knowledge Gap\*\*  
While numerous individual studies have evaluated AI performance in specific imaging applications, there is no comprehensive synthesis of comparative diagnostic accuracy across the full spectrum of imaging modalities and clinical contexts. This systematic review and meta-analysis addresses this gap by providing quantitative evidence on AI performance relative to human radiologists.  
  
### \*\*1.3 Aims and Objectives\*\*  
  
#### \*\*Primary Aim:\*\*  
To conduct a systematic review and meta-analysis comparing diagnostic accuracy of AI-assisted radiological interpretation versus human-only interpretation across CT, MRI, and ultrasound modalities.  
  
#### \*\*Specific Objectives:\*\*  
1. \*\*Quantitative Synthesis:\*\* Meta-analyze diagnostic accuracy metrics (sensitivity, specificity, AUC)  
2. \*\*Subgroup Analysis:\*\* Evaluate performance across imaging modalities and clinical contexts  
3. \*\*Heterogeneity Assessment:\*\* Ide...