

# INPLASY

## Clinical applications of large language models in medicine and surgery: A scoping review

INPLASY202530102

doi: 10.37766/inplasy2025.3.0102

Received: 24 March 2025

Published: 24 March 2025

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### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202530102

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 March 2025 and was last updated on 24 March 2025.

### INTRODUCTION

**Review question / Objective** How are large language models (LLMs) currently being developed, validated, and applied in clinical medicine and surgery, and to what extent are they ready for integration into real-world clinical workflows?

**Rationale** A challenge associated with LLM use in clinical practice remains the lack of standardized protocol or reporting guidelines for the development, training, and evaluation of LLM performance. Hence we aim to qualitatively describe the current landscape of clinical uses for large language models.

**Condition being studied** Clinical applications of large language models in medicine and surgery.

### METHODS

**Search strategy** Embase, CINAHL, PubMed, IEEE Xplore.

Search strategy developed initially for Embase, then adapted to each database.

large language model\*.mp. or chatgpt\*.mp. or llm\*.mp. or Generative Pretrained Transformer\*.mp. or [nlp.mp.](#) or exp \*natural language processing/ or AND

Medical therap\*.mp. or Medical intervention\*.mp. or Medical manag\*.mp. or Medical treat\*.mp. or Clinical therap\*.mp. or Clinical intervention\*.mp. or Clinical manag\*.mp. or Clinical treat\*.mp. or Patient car\*.mp. or Disease manag\*.mp.

OR

Medical assess\*.mp. or Medical examin\*.mp. or Medical diagnos\*.mp. or Medical eval\*.mp. or Clinical assess\*.mp. or Clinical examin\*.mp. or Clinical diagnos\*.mp. or Clinical eval\*.mp. or Diagnostic eval\*.mp. or Diagnostic workup\*.mp. or Disease assess\*.mp.

**Participant or population** N/A, assessing other studies.

**Intervention** Utilization of LLMs for variety of clinical tasks.

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**Comparator** Various including current gold standard, expert opinion, other models.

**Study designs to be included** Case studies, case series, prospective and retrospective cohort studies, proof of concept studies.

**Eligibility criteria** Studies in any clinical setting, Medical / surgical specialty, demographic factors, pathologies, as well as simulated patient scenarios were included. Animal studies were excluded. Studies exploring the utilization of LLM to make recommendations on diagnosis or treatment, disease classification, patient chart analysis were included. Any studies exploring utilization of LLM in context of exam-taking, research planning / methodology, public health / population-based data analysis were excluded. Grey literature was included. Any commentaries, letters, scoping reviews, systematic reviews, non-English articles were excluded. Only studies published between Jan 2018 and Oct 2023 were included.

**Information sources** Electronic databases (Embase, CINAHL, Pubmed), grey literature (IEEE Xplore).

**Main outcome(s)** Accuracy.

**Data management** Password protected excel.

**Quality assessment / Risk of bias analysis** N/A.

**Strategy of data synthesis** Basic data manipulation was performed to categorize continuous or open-ended variables into meaningful groups for analysis. Statistical analysis was limited to descriptive measures including frequencies, proportions, means, and medians, as appropriate.

**Subgroup analysis** None.

**Sensitivity analysis** None.

**Language restriction** English, english translated.

**Country(ies) involved** Canada (McMaster University).

**Keywords** Large Language Models, Natural Language Processing, Generative Pre-trained Transformer, Machine Learning, Artificial Intelligence.

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