Medical Manuscript Preparation

Literature Review and Search Strategy

Access Date
Related terms: retrieval date, download date, citation date.
Explanation: The specific day on which an online source was accessed for a literature review. Recording the access date is essential because web content can change or be removed. Example: “Accessed 12 Mar 2024.” Challenge: Some databases automatically capture this information, but manual entries may be overlooked, leading to incomplete references.

Abstract
Related terms: summary, synopsis, executive summary.
Explanation: A concise description of the study’s purpose, methods, results, and conclusions, usually limited to 250–300 words. In a literature review, the abstract helps readers quickly assess relevance. Practical tip: Include key search terms in the abstract to improve discoverability. Challenge: Over-summarising can omit critical nuances of the review’s scope.

Advanced Search
Related terms: Boolean search, filtered search, field-specific query.
Explanation: A feature in databases that allows the combination of multiple search operators (AND, OR, NOT) and field tags (e.g., [tiab] for title/abstract). Example: (“diabetes”[tiab] AND “insulin resistance”[tiab]) NOT “type 1”. Challenge: Complex strings may unintentionally exclude relevant studies if field tags are misapplied.

Article Screening
Related terms: title/abstract screening, eligibility assessment, triage.
Explanation: The process of reviewing titles and abstracts to determine whether full-text retrieval is warranted. Typically performed by two independent reviewers to reduce bias. Practical application: Use a spreadsheet to track inclusion/exclusion decisions. Challenge: High-volume searches can lead to reviewer fatigue and inconsistent judgments.

Boolean Operators
Related terms: AND, OR, NOT, logical connectors.
Explanation: Logical symbols used to combine search terms. “AND” narrows results, “OR” broadens, and “NOT” excludes. Example: “stroke” AND “rehabilitation”. Challenge: Misplacement of operators (e.g., forgetting parentheses) can produce unintended search sets.

Citation Chaining
Related terms: backward chaining, forward chaining, reference tracking.
Explanation: A technique that follows the reference list of a known relevant article (backward) or uses citation indexes to locate newer articles that cite the original (forward). Practical use: Identify seminal works not captured by database queries. Challenge: Requires access to citation databases (e.g., Scopus, Web of

Science) and may miss non-indexed literature.

Clinical Trial Registry
Related terms: trial registration, protocol database, WHO ICTRP.
Explanation: Public platforms where investigators pre-register trial protocols (e.g., ClinicalTrials.gov). Searching registries uncovers unpublished or ongoing studies, reducing publication bias. Example: Use the "Study Type" filter to limit to interventional trials. Challenge: Inconsistent reporting standards across registries can complicate data extraction.

Controlled Vocabulary
Related terms: thesaurus, indexing terms, subject headings.
Explanation: A standardized set of terms used by databases to index articles (e.g., MeSH for PubMed). Employing controlled vocabulary improves search precision. Practical tip: Translate free-text keywords into MeSH using the "MeSH Database". Challenge: New concepts may lack appropriate headings, requiring supplemental free-text terms.

Database Selection
Related terms: source selection, information repository, platform choice.
Explanation: Choosing which bibliographic databases (e.g., PubMed, Embase, Cochrane Library) to search based on discipline coverage, indexing depth, and access rights. Example: For pharmacology, Embase adds European journals not in PubMed. Challenge: Balancing comprehensive coverage against time and resource constraints.

Deduplication
Related terms: duplicate removal, record de-duplication, overlap resolution.
Explanation: The process of identifying and eliminating identical records retrieved from multiple databases. Tools such as EndNote, Zotero, or Covidence automate this step. Practical advice: Perform deduplication after each database import to avoid inflated counts. Challenge: Inconsistent citation formats can cause false negatives in duplicate detection.

Eligibility Criteria
Related terms: inclusion criteria, exclusion criteria, selection parameters.
Explanation: Pre-defined standards that determine which studies are suitable for the review. Criteria may involve population, intervention, comparator, outcomes, and study design (PICOS). Example: Include only randomized controlled trials on adult patients. Challenge: Overly restrictive criteria can limit the evidence base; overly broad criteria can overwhelm the synthesis.

Evidence Hierarchy
Related terms: pyramid of evidence, study design ranking, methodological hierarchy.
Explanation: A conceptual framework that ranks research designs by their susceptibility to bias (e.g., systematic reviews at the top, case reports at the bottom). Understanding hierarchy guides weighting of findings. Practical application: Assign levels to each included study during quality appraisal. Challenge: Emerging study types (e.g., real-world evidence) may not fit neatly into traditional hierarchies.

Excerpting
Related terms: data extraction, charting, information capture.
Explanation: Pulling relevant data (e.g., sample size, effect size, confidence intervals) from each included article into a structured form. Use standardized extraction sheets to ensure consistency. Challenge: Inconsistent reporting across studies can make extraction labor-intensive and error-prone.

Full-Text Retrieval
Related terms: article acquisition, document access, PDF download.
Explanation: Obtaining the complete manuscript after initial screening indicates that the study meets inclusion criteria. Institutional subscriptions, interlibrary loans, or author contact may be required. Practical tip: Prioritize retrieval of high-impact journals first. Challenge: Pay-walls and language barriers can impede access, potentially biasing the review.

Grey Literature
Related terms: non-peer-reviewed sources, conference proceedings, dissertations.
Explanation: Materials not indexed in conventional bibliographic databases, such as theses, technical reports, and government documents. Including grey literature mitigates publication bias. Example: Search OpenGrey or ProQuest Dissertations. Challenge: Variable quality and limited metadata make systematic searching difficult.

Handsearching
Related terms: manual searching, journal browsing, table-of-contents scan.
Explanation: The process of manually reviewing the contents of specific journals, conference abstracts, or book chapters to locate articles missed by electronic searches. Useful for niche topics with limited indexing. Practical approach: Assign a reviewer to scan the latest 12 months of target journals. Challenge: Time-consuming and prone to human error.

Indexing Delay
Related terms: publication lag, database latency, coverage gap.
Explanation: The period between an article's online publication and its inclusion in a database's index. Recent studies may be absent from searches, leading to incomplete retrieval. Mitigation: Supplement electronic searches with alerts or publisher websites. Challenge: The delay varies across databases, making synchronization difficult.

Inclusion Criteria
Related terms: eligibility criteria, selection standards, acceptance parameters.
Explanation: Specific attributes a study must possess to be incorporated into the review (e.g., age ≥ 18, intervention type, outcome measure). Clear criteria improve reproducibility. Example: Include only studies reporting mortality at 30 days. Challenge: Vague criteria can lead to inconsistent reviewer decisions.

Keyword Mapping
Related terms: term translation, synonym expansion, search term development.
Explanation: Aligning user-generated keywords with controlled vocabulary to capture both indexed and non-indexed articles. Tools like the MeSH Browser assist in mapping. Practical tip: Create a table linking

each keyword to its MeSH counterpart. Challenge: Over-mapping can produce excessively broad searches, increasing irrelevant hits.

Literature Gap
Related terms: research void, knowledge deficit, unanswered question.
Explanation: Areas where existing evidence is insufficient, contradictory, or absent, identified during the review. Highlighting gaps justifies the need for new research. Example: “No randomized trials have examined X in pediatric populations.” Challenge: Distinguishing true gaps from merely under-explored topics requires comprehensive searching.

MeSH (Medical Subject Headings)
Related terms: controlled vocabulary, indexing terms, PubMed thesaurus.
Explanation: The NLM’s hierarchical subject-heading system used to index articles in PubMed. Each article is assigned one or more MeSH terms. Practical use: Combine MeSH with free-text terms for optimal sensitivity. Challenge: New concepts may lack appropriate MeSH terms, necessitating supplementary keywords.

Metadata
Related terms: bibliographic data, citation information, record fields.
Explanation: Structured information describing a document (e.g., title, authors, journal, DOI). Accurate metadata enables efficient searching, deduplication, and citation management. Example: Exporting records in RIS format preserves metadata for reference software. Challenge: Inconsistent or missing metadata can lead to misclassification or loss of records.

Negative Search
Related terms: exclusion search, NOT strategy, filter-out query.
Explanation: A search that deliberately removes unwanted records (e.g., “NOT review” to exclude review articles). Useful when a specific article type dominates results. Practical tip: Apply negative terms after initial sensitivity testing. Challenge: Over-use can inadvertently discard relevant primary studies.

OR Operator
Related terms: union, inclusive OR, broadened search.
Explanation: Joins synonyms or related terms to increase retrieval breadth. Example: “stroke” OR “cerebrovascular accident”. Challenge: Without parentheses, the operator’s scope may be ambiguous, leading to unintended combinations.

Peer-Reviewed Journal
Related terms: scholarly journal, refereed periodical, academic journal.
Explanation: A publication that subjects manuscripts to expert evaluation before acceptance. Peer-reviewed articles are considered high-quality evidence for systematic reviews. Practical tip: Prioritize these sources during screening. Challenge: Some high-impact articles may appear first as preprints, requiring careful appraisal.

Preprint Server
Related terms: early-release repository, non-peer-reviewed archive, medRxiv.

Explanation: Platforms where authors share manuscripts before formal peer review. Searching preprint servers can capture the latest research. Example: Use the “COVID-19” filter on medRxiv. Challenge: Lack of peer review demands critical appraisal of methodology and conclusions.

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)
Related terms: reporting guideline, systematic review checklist, flow diagram.
Explanation: An evidence-based set of items to improve transparency of systematic reviews. The PRISMA flow diagram visualizes study selection. Practical application: Follow PRISMA during manuscript preparation to satisfy journal editors. Challenge: Adhering to all items can be time-intensive, especially for large reviews.

Quality Assessment
Related terms: risk of bias evaluation, methodological appraisal, critical appraisal.
Explanation: Systematic evaluation of each included study’s internal validity using tools such as Cochrane Risk of Bias or Newcastle-Ottawa Scale. Example: Assign “low”, “high”, or “unclear” risk for each domain. Challenge: Subjectivity in scoring can introduce reviewer bias; dual assessment mitigates this.

Reference Management Software
Related terms: citation manager, bibliography tool, EndNote, Zotero, Mendeley.
Explanation: Applications that store, organize, and format references. They also facilitate deduplication and export of search results. Practical tip: Use the software’s “search” function to locate records by author or keyword. Challenge: Compatibility issues between software versions may cause data loss.

Relevance Screening
Related terms: pertinence assessment, content relevance, inclusion decision.
Explanation: Determining whether a retrieved article addresses the review’s research question. Often performed in two stages: title/abstract screening followed by full-text review. Example: Exclude studies focusing on animal models if the review targets human subjects. Challenge: Ambiguous abstracts can lead to false exclusions.

Research Question Formulation
Related terms: PICO, PICOS, SPIDER, research objective.
Explanation: Defining a clear, focused query that guides search strategy. The PICO framework (Population, Intervention, Comparison, Outcome) is common in clinical reviews. Example: “In adults with hypertension (P), does drug X (I) compared with placebo (C) reduce systolic blood pressure (O)?” Challenge: Overly broad questions generate unmanageable result sets.

Review Protocol
Related terms: systematic review plan, a priori protocol, registration document.
Explanation: A documented plan outlining objectives, eligibility criteria, search strategy, and analysis methods before the review begins. Registration platforms such as PROSPERO host protocols. Practical benefit: Increases transparency and reduces selective reporting. Challenge: Deviations from the protocol must be justified and documented.

Scoping Review

Related terms: mapping review, exploratory review, preliminary synthesis.
Explanation: A type of evidence synthesis that maps the extent, range, and nature of research on a topic without assessing quality in depth. Useful for identifying research gaps. Example: Conduct a scoping review of telemedicine interventions before planning a systematic review. Challenge: Lack of standardized methodology may lead to inconsistent reporting.

Search Filters
Related terms: limits, field filters, methodological filters.
Explanation: Pre-validated query strings designed to retrieve specific study designs (e.g., randomized trials). Applying filters can dramatically reduce irrelevant hits. Example: Use the “RCT filter” in Embase. Challenge: Filters may inadvertently exclude relevant studies if not properly adapted to the database.

Search History
Related terms: query log, search record, audit trail.
Explanation: The chronological list of searches performed within a database, often exportable as a text file. Maintaining a search history supports reproducibility. Practical tip: Save the history after each session and annotate with date and purpose. Challenge: Some platforms limit the number of saved queries, requiring manual documentation.

Search Strategy Development
Related terms: search design, query construction, Boolean formulation.
Explanation: The systematic process of translating the research question into a set of database queries. Involves selecting keywords, controlled vocabulary, and operators. Example: Begin with a broad “stroke” search, then refine using filters for study type and language. Challenge: Balancing sensitivity (capturing all relevant studies) with precision (excluding irrelevant ones) is iterative and may require pilot testing.

Search Term Truncation
Related terms: wildcard, stem search, truncation symbol.
Explanation: Using a symbol (often *) to retrieve word variants (e.g., “cardio*” finds “cardiology”, “cardiovascular”). Enhances sensitivity. Practical tip: Verify database-specific truncation rules to avoid unintended expansions. Challenge: Over-truncation can generate large numbers of irrelevant hits.

Search Validation
Related terms: test set, gold-standard set, sensitivity check.
Explanation: Assessing whether the search strategy successfully retrieves a known set of relevant articles (a “benchmark”). Example: Confirm that all key articles identified in a pilot review appear in the search results. Challenge: Limited benchmark sets may not reflect the full scope of the literature.

Screening Tool
Related terms: eligibility software, reviewer platform, Covidence, Rayyan.
Explanation: Web-based applications that facilitate collaborative title/abstract and full-text screening, record decisions, and resolve conflicts. Practical use: Upload deduplicated records and assign reviewers. Challenge: Learning curves and subscription costs can be barriers for small teams.

Snowball Sampling
Related terms: citation chaining, reference mining, iterative search.
Explanation: Expanding the literature set by following citations from identified articles, both backward (references) and forward (citing articles). Useful when initial search yields few results. Example: After locating three core papers, use their reference lists to locate additional studies. Challenge: May introduce selection bias if the initial set is not representative.

Study Design Filter
Related terms: methodological filter, publication type filter, design-specific query.
Explanation: A search component that isolates articles of a particular design (e.g., case-control, cohort). Embase and PubMed provide built-in filters. Practical tip: Combine design filters with topic terms using AND. Challenge: Inconsistent indexing can cause false negatives.

Systematic Review
Related terms: comprehensive review, evidence synthesis, meta-analysis.
Explanation: A structured, reproducible method for identifying, appraising, and synthesizing all relevant studies on a defined question. Follows explicit protocols, often adhering to PRISMA. Example: A systematic review of antihypertensive agents includes risk-of-bias assessment and pooled effect estimates. Challenge: Time-intensive; requires meticulous documentation of each step.

Term Frequency
Related terms: keyword count, occurrence rate, lexical density.
Explanation: The number of times a specific word appears in a set of titles or abstracts. High term frequency can guide the selection of dominant keywords. Practical application: Use word-cloud tools to visualize frequent terms. Challenge: Common words may dominate frequency counts, masking important but less frequent concepts.

Thesaurus Mapping
Related terms: controlled vocabulary alignment, term translation, indexing synonymy.
Explanation: Linking free-text synonyms to standardized subject headings to enhance search retrieval. Example: Map “heart attack” to the MeSH term “Myocardial Infarction”. Challenge: Some databases lack comprehensive thesauri, requiring manual mapping.

Title/Abstract Screening
Related terms: initial screening, primary triage, eligibility filter.
Explanation: The first stage of article selection where reviewers assess relevance based solely on the title and abstract. Speed is essential; therefore, clear inclusion criteria are vital. Example: Exclude studies that are not human trials based on abstract information. Challenge: Abstracts may be poorly written, leading to misclassification.

Transparent Reporting
Related terms: open methodology, reproducibility, disclosure.
Explanation: Providing sufficient detail about the search strategy, selection process, and data handling so that others can replicate the review. Includes publishing the full search strings as an appendix. Challenge:

Journals may limit supplementary material length, forcing authors to truncate essential details.

Unpublished Data
Related terms: gray literature, conference abstracts, trial registries.
Explanation: Results that have not been formally published in peer-reviewed journals, often accessible via personal communication or registries. Including unpublished data reduces publication bias. Practical tip: Contact study authors for raw data when feasible. Challenge: Obtaining permissions and verifying data integrity can be difficult.

Update Search
Related terms: living systematic review, periodic refresh, search renewal.
Explanation: Conducting a new search after the original review to capture recent evidence. Typically performed annually or when a significant time gap has elapsed. Example: Re-run the original PubMed query with a date filter from the last search date onward. Challenge: Maintaining consistency with the original strategy while incorporating new database features.

Validity of Search
Related terms: accuracy, comprehensiveness, methodological soundness.
Explanation: The degree to which a search strategy captures all relevant literature without excessive irrelevant retrieval. Assessed through sensitivity (recall) and precision (specificity). Practical approach: Compare retrieved set against a gold-standard list. Challenge: Achieving high sensitivity often reduces precision, increasing screening workload.

Wildcard
Related terms: truncation symbol, stem search, pattern matching.
Explanation: A character (e.g., ?, $) that substitutes for one or more letters within a word, allowing flexible matching. Example: “therap?” retrieves “therapy” and “therapies”. Challenge: Different databases support different wildcard conventions; misuse can produce extensive irrelevant hits.

Yield
Related terms: retrieval count, result set size, output volume.
Explanation: The number of records returned by a particular search query. High yield indicates broad sensitivity, low yield may suggest over-restriction. Example: An initial search for “diabetes” yields 12,345 records. Challenge: Large yields demand more resources for screening; small yields risk missing key studies.

Zero-Result Search
Related terms: empty query, no hits, null retrieval.
Explanation: A search that returns no records, often indicating overly restrictive terms or syntax errors. Example: Using “myocardial infarction” AND “pediatric” AND “randomized” may produce zero results if no such trials exist. Challenge: Distinguish between true absence of evidence and inadequate search construction.

Bibliographic Database
Related terms: citation index, literature repository, scholarly database.

Explanation: An organized collection of citation records, often with abstracts and indexing terms, such as PubMed, Embase, or Scopus. Provides structured search capabilities. Practical tip: Combine multiple databases to maximize coverage. Challenge: Subscription costs and varying coverage scopes require strategic selection.